SIBLING INTERACTION IN ADULTHOOD

by

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TABLE OF CONTENTS

TABLE OF CONTENTS - continued

LIST OF TABLES

CHAPTER ONE

INTRODUCTION

Relationships between brothers and sisters - siblings - have the potential to have the longest duration of any human relationship (Cicirelli, 1980b). Over 80% of American children grow up in a family including brothers and sisters (Mussen, Conger, & Kagan, 1974), and even in late adulthood, 79% have living brothers and/or sisters (Harris, 1975). Siblings, then, are a part of the daily life experience of most people through adolescence, and a continuing part of their world throughout life. The forces which contribute to relationship interaction over the long duration of its existence are not adequately defined.

The sibling relationship is unique. Although commonly experienced, it is unlike other interpersonal relationships. Cultural expectations that the relationship should be more emotionally close, meaningful and enduring than other interpersonal associations are reflected in its use as a standard by which to measure other non-kin relationships. People who have friends they view as especially intimate may refer to them as "like a brother" or "like a sister." In religious organizations, fraternal orders, or the military, the titles brother or sister connote solidarity and equality (Pollak, 1967). Liebow (1967) documented the practice of impoverished

urban blacks lacking family ties of constructing such associations by "going for brothers" as an attempt to create more stable, dependable relationships.

Sibling relationships in adulthood have received little research attention. Most previous research has dealt with how sibling contact varies with individual well-being. Research has not addressed the question of what determines whether contact between siblings occurs, and what the motivation for contact is - that is, whether it is perceived as discretionary or obligatory.

The relational and situational influences on adult sibling interaction to be considered in this study are derived from the literature and are grouped into four conceptual sets. These sets are relationship variables, sibling structure variables, family structure variables, and demographic variables.

The relationship variables include emotional closeness to sibling, emotional closeness to sibling's spouse, sense of sibling obligation, and frequency of sibling conflict. The sibling structure variables include the sex of the sibling pair, age difference in the sibling pair, birth order of the respondent and sibling, family size, and spacing in the birth order of the sibling pair.

Family structure includes marital status of the respondent and the pair, parental status of the respondent and the pair, whether the respondent has children at home,

whether the pair both have children at home, and whether the siblings' parents are still living. The demographic variables examined are sex of respondent, age of respondent, social class, and the difference in social class between siblings. Geographic proximity is included as a predictor, though not included in a conceptual set.

Previous Sibling Research

Despite the commonness of the sibling role and the unique cultural expectations surrounding it, sibling relationships have been a neglected area of family research. The paucity of this research may be in large part due to the assumption that parental influence on a child is more powerful than sibling influences (Irish, 1964; Sutton-Smith & Rosenberg, 1970). Pleas for further research to document the nature of this family role have remained practically unchanged over the last 20 years (Cicirelli, 1980b; Irish, 1964; Schvaneveldt & Ihinger, 1979; Streib & Beck, 1980; Troll, 1971). Most of the research in response to such suggestions has focused on sibling relationships in childhood and adolescence (Allan, 1977). This research, rather than addressing the "determinants and effects of sibling interaction" (Schvaneveldt & Ihinger, 1979), has dealt primarily with the effects of birth order on a variety of factors ranging from mental illness to educational attainment (Schooler, 1972).

Another focus of sibling research has been sibling rivalry. Irish (1964) suggested that this single-minded devotion to research on rivalry stems from the Freudian theory that children are forever competing for parental favor. Researchers have traced the effects of rivalry from childhood into early adulthood (Symonds, 1961) and documented the nature of inter-sibling competitiveness in adulthood (Adams, 1968). This line of research has not answered the more general question of whether or not adult sibling interaction is characterized more by rivalry or cooperation (Cicirelli, 1980b). The present research addresses this issue in part by examining the amount of conflict and the emotional closeness reported between siblings.

Previous research has dealt narrowly with sibling interaction in terms of focus and population. Research with adult samples has dealt almost exclusively with the elderly. Attempts to evaluate the role of siblings in the support system of the elderly (Borland, Bergman, & Keith, 1981; Shanas, Townsend, Wedderburn, Friis, Milhøj, & Stehouwer, 1968; Ward, 1978) have tended to ignore the broader question of sibling interaction throughout adulthood.

The Role of Adult Siblings in American Kinship

Research has yet to establish the salient, relevant features of the sibling in adulthood. Understanding the

adult sibling role is difficult, due to the fact that the role varies, among other things, by sex (Adams, 1968; Shanas et al., 1968; Townsend, 1963), marital status (Shanas et al., 1968; Townsend, 1963), ethnic background (Johnson, 1982), social class (Adams, 1968; Allan, 1977), and perhaps by age (Cumming & Schneider, 1961).

A major impediment in understanding the sibling role, and the other roles in the kinship system as well, is the use of frequency of contact data as the primary indicator of sibling involvement (Adams, 1967a). Contact per se has been assumed necessarily to better the lives of people, a notion that Mancini (1980b) has referred to as the "enrichment myth." Attempts to demonstrate a relationship between sibling contact and morale in later life, for example, have been fruitless (Arling, 1976; Lee & Ihinger-Tallman, 1980). Proximity has also been thought to indicate emotionally close relationships, and researchers have assumed that sibling relationships cannot exist without frequent contact and geographic proximity (Rosenberg & Anspach, 1973).

For frequency of contact measures to be useful as evidence of satisfying relationships that contribute to higher morale (Weiss, 1969), it is necessary to examine the influences on the frequency of contact. It seems logical that in some situations, sibling contact may facilitate individual well-being, while in others it may not. There is a need, therefore, to specify under what conditions sibling

contact occurs before it is possible to examine the positive or negative consequences of such contact.

The movitation for contact may be as important as whether contact occurs. Distinguishing between obligatory contact and contact occurring by choice has not been previously addressed.

The Purpose

The purpose of this study is to examine the predictors of frequency of contact between adult siblings, as well as the predictors of obligation as the motivation for contact, and the predictors of contact occurring by choice and desire. The investigation is undertaken in an attempt to more fully understand the nature of the sibling role in adulthood. The examination of the value of various factors in predicting sibling interaction may provide a more adequate explanation of the expectations for the adult sibling role can be attained. In addition, the most relevant predictors can be isolated.

The central questions of this study are:

1. What is the relative importance of the relationship variables, sibling structure variables, family structure variables, and demographc variables in predicting the frequency of contact between siblings in adulthood?

2. What is the relative importance of the relationship variables, sibling structure variables, family structure variables, and demographc variables in predicting the nature of adult sibling interaction as obligatory?

3. What is the relative importance of the relationship variables, sibling structure variables, family structure variables, and demographic variables in predicting the nature of adult sibling interaction as motivated by desire and choice?

CHAPTER TWO

REVIEW OF THE LITERATURE

This chapter will review the literature pertinent to the study of sibling relationships in adulthood. The review is necessarily somewhat brief, due to the relatively small amount of research attention that has been devoted to the topic (Rodgers, 1973; Cicirelli, 1980b). To make the discussion of the large number of variables more manageable, the literature will be organized under the four sets of variables pertinent to this study. The criterion variables will be discussed first.

Adult Sibling Interaction

Frequency

As in other social interaction research, the frequency of contact between siblings has been used as the primary index of involvement with the relationship (Adams, 1967a, 1968). Though it must be recognized that such data do not necessarily indicate the conditions under which contact occurs, or the meaning ascribed to such contact, it is helpful to have some notion of the extent of contact between siblings.

In a national probability sample of people 18 years of age and older, Harris (1975) found that 31% had seen a sibling within the last day, 62% had seen a sibling within

the last week, and 74% had seen a sibling within the last month. Focusing on those 65 years of age and older, Harris found that 22% had seen a sibling within the last day, 44% within the last week, and 59% had seen a sibling in the last month. Approximately equal numbers of adults had living siblings as had living children, i.e. 79% have living siblings, 81% of the elderly have children; in the general population, 91% have siblings and 73% have children. Thus, availability of siblings and children was comparable, but the rate of contact with siblings was about half that with children.

Several other studies have documented the availability of siblings, and the frequency of contact between adults and their siblings. Adams (1968) found that 88% of his young adult sample (median age 33 years) had living siblings, and 65% had monthly contact with siblings who lived within 100 miles. Clark and Anderson (1967) reported that 93% of their sample of elderly people in San Francisco had living siblings, and that this was the most available kin tie for this sample. Shanas et al. (1968) found that the number of people over 65 with living siblings was 75-80% in their national probability sample of the U.S., Denmark, and the United Kingdom. For elderly women in this sample, siblings were the most available kin, with six out of seven having living siblings, but only about half having living children. However, like the Harris data (1975), contact

with siblings was less frequent than contact with children. About one-third reported seeing a sibling within the last week, and about one-half reported contact during the previous month (Shanas et al., 1968). As is evident from these studies, most of the data we have on the frequency of sibling interaction is drawn from elderly populations.

Defining Sibling Contact

In the studies reviewed above, contact is defined as face to face interaction. Streib and Beck (1980) suggest that our understanding of contact need not be limited to only in-person interaction, but should include letters and phone calls. Another aspect of contact that is more difficult to assess is the phenomenon of keeping "in touch" indirectly through parents or other members of the kinship network. Allan (1977) and Handel (1965) have argued for the necessity of being able to measure such network effects in order to fully understand kinship interaction. Unfortunately, such research presents complexities, such as gaining information from all the members of the network, which have not yet been resolved. In this study, the position of Streib and Beck (1980) is taken which defines sibling contact as including face to face interaction, phone calls, and letter writing.

Discretionary Versus Obligatory Interaction

Cicirelli (1980b) has argued that, with adulthood, sibling "contact becomes voluntary except on certain ritual occasions, and most life experiences are no longer shared" (p. 455). Cumming and Henry (1961) also saw sibling contact as being discretionary rather than as being based on dependency and obligation, and compared it to friendship interaction. This voluntary nature of adult sibling interaction means that it must somehow be rewarding or it will not be maintained (Hess & Waring, 1978). However, Reiss (1962) found that a majority of people feel that an obligation exists to maintain contact with kin. Similarly, Allan (1977) found that respondents in his study adhered to the cultural expectation that siblings should maintain their kinship ties in adulthood.

Is adult sibling interaction characterized by voluntary desire for contact, or by a sense of obligation that such contact ought to be maintained? Or, does the motivation for maintaining contact vary depending on other conditions?

Studies that have attempted to correlate sibling contact with morale of the elderly (Lee & Ihinger-Tallman, 1980) or to correlate parent-child contact with morale (Lee, 1979) have failed to demonstrate an association between such kin interaction and the self-reported life-satisfaction of the elderly. On the other hand, studies that have examined the relationship between friend interaction and

morale (Mancini, 1980a) and between marital status and morale (Lee, 1978; Mancini, 1979) have found a positive association in both cases. Arling (1976) has argued that friendship ties and marital status are positively associated with morale in old age because of the voluntary nature of these relationships. Similarly, although marriage includes many obligations, it is entered into voluntarily, based on the common interests and values of the pair. Kin relationships are not voluntarily chosen.

In adulthood, however, separate residences make continued interaction with siblings more subject to personal choice. Interaction can be undertaken either because one wants to, because one feels one ought to, or because circumstances coerce one into contact. Voluntary sibling contact may represent different kinds of sibling relationships than those relationships represented by obligatory sibling contact. Such qualitiatively different sibling relationships can logically be expected to have different outcomes for the people in them. If relational and situational variables in adult sibling relationships differentiate between discretionary and obligatory sibling interaction, such relationships must be, in fact, qualitatively different with different outcomes for the people in them.

Contributors to Adult Sibling Interaction

Kinship interaction has been explained from two different perspectives, the sociological perspective and the

psychological perspective (Cicirelli, 1981). The sociological tradition emphasizes variables such as propinquity, sex linkage and other family structure factors, and cultural expectations. The psychological tradition has looked at the internal states that determine interaction, such as the emotional or affectional bonds between people which can be inferred from their attempts over time to maintain the relationship. The recognition that both these traditions have merit led to their inclusion in the present examination of sibling interaction.

In examining the influence on sibling interaction - both in terms of frequency of contact and the movitation for contact - the role of several predictor variables is assessed. These predictors are grouped into four conceptual sets of predictors: relationship variables, sibling structure variables, family structure variables, and demographic variables. Geographic proximity is also examined.

These sets of predictors will be discussed in terms of the rationale for their inclusion in this study. The literature regarding these variables that is pertinent to this research is also discussed.

Geographic Proximity

Residential proximity has been associated with frequency of contact in several studies (Adams, 1968; Reiss, 1962). Using the means available to the modified extended

family (Litwak, 1960), interaction can be maintained even when geographical distance prevents frequent in-person contact. Adams (1968) found that some considered close proximity to be a liability in that it obligated them to more frequent contact than they desired. Reiss (1962) reported that about 50 miles was the modal distance respondents in his study desired between themselves and kin. So, although the contact frequency may be greater if siblings live close to each other, such contact does not necessarily represent a close sibling relationship. Propinquity does place obvious constraints on sibling interaction, however, and therefore it cannot be overlooked.

Relationship Variables

Emotional Closeness

Although geographic proximity imposes definite limitations on face-to-face contact between siblings and other kin, the emotional closeness of the relationship may be a factor influencing the desire for more or less contact with siblings. Emotional closeness includes a sense of shared experience, trust, concern, and enjoyment of the relationship.

In a study of kin interaction with a sample of white, middle-class adults in Boston, Reiss (1962) found that people explained their own infrequent contact with kin as being a result of insufficient time and money. However,

when asked "What are the reasons some people keep in touch with some relatives more than other relatives?", respondents named qualitative relationship characteristics such as common interests and personality. Borland et al. (1981) reported that of elderly people who were willing to consider living with a sibling, the most frequent reasons given for such willingness were enjoyment of the relationship, and similarity of views and interests.

Emotional closeness between sibling may be an expectation, whether achieved or not. In a sample of elderly people from retirement homes and senior centers. those who perceived themselves as having achieved closeness in their sibling relationships viewed this achievement with a sense of accomplishment. Those who perceived themselves as having failed at this task regarded this failure with guilt and pain (Ross, Dalton, & Milgram, 1980).

Adams (1968) found, however, that kin contact is maintained regardless of affective feelings. In his sample, a combination of obligation and affection between siblings was characteristic. Horowitz and Shidelman (1981) found that affection did not influence the amount of help given to elderly kin, but affection did create a perception of the need to help as not burdensome.

Emotional Closeness to In-Law

Allan (1977) found that a potent influence on sibling interaction was the compatibility and affection felt by

respondents for a sibling's spouse. Informal conversations of the present researcher with adults who have living siblings have revealed the same theme. When general emotional closeness to an in-law is greater (where in-laws are present), sibling interaction is more likely (Allan, 1977).

Sibling Obligation

Obligation has been noted as the factor which makes kinship relationships more durable than friendships (Streib & Beck, 1980). Little has been done to investigate further the expectations for sibling obligation, or the responsibility and duty that adult siblings have for each other in our kinship system.

Allan (1977) has described the expectations of adult sibling interaction as being for limited but enduring contact over the life course. Meeting these expectations is accomplished through occasional visits and maintaining a general knowledge of the sibling's activities and well being. A sense of duty to maintain sibling ties, or to "keep in touch" with siblings, was found to be held by a majority of respondents in Allan's (1977) study.

Scott and Roberto (1981) found that expectations for sibling role fulfillment among white, middle-class adults were for limited but positive involvement, with the exchange of aid taking place more between parents and children

than siblings. They did not assess, however, what normative expectations these respondents held about the mutual responsibilities adult siblings have, and whether such expectations influenced interaction frequency.

Arling (1976) has suggested that obligation is the motive for much of kin contact, and that this obligatory nature is antithetical to the enjoyment of the relationship. According to Arling, where obligation is high, interaction will also be high, but the relationship is not perceived as something one does because one wants to and is therefore not rewarding.

Sibling Conflict

Schvaneveldt and Ihinger (1979) noted that sibling rivalry is one of the prevalent themes of research on siblings. Whether adult sibling relationships are generally competitive or cooperative has not been established (Cicirelli, 1980b). Sibling rivalry is a specific type of conflict arising out of competition for parental rewards. Differences and disagreements between adult siblings may be based on rivalries formed in childhood, or conflict may occur over issues arising in adulthood.

Conflict is defined in the present study as the frequency of conflict behaviors such as arguing or expressing dissatisfaction with the sibling or the relationship. How extensive such conflict is between adult siblings and how conflict affects adult sibling interaction will be examined.

Sibling Structure

The influences of birth order on personality development has long been one of the main focuses of research involving siblings. This line of research has been overly simplistic (Schvaneveldt & Ihinger, 1979), and is probably tapping some underlying processes of sibling interaction that create different personality outcomes. Sutton-Smith and Rosenberg (1979) have detailed the complexities of sibling structure which must be assessed to account for the different socialization effects that sibling structure can have. Not only must birth order be known; age range, sex, relative numbers of each sex, spacing, age of parents at time of birth, and the age of children when launched all have an effect on sibling relationships. The present study will examine sex of the sibling pair, birth order of the respondent and pair, family size, age differences and spacing of the sibling pair.

Sex of the Pair

In a middle-class Boston sample, Reiss (1962) found that sibling contact was most frequent between sisters, then between brother-sister pairs, and then least frequent between brothers. Adams (1968) found that sister-sister pairs were more likely to interact weekly. There were negligible differences between the three sibling combinations on monthly contact. Adams (1968) suggested that this

seeming equivalence of interaction frequency might be due to the male's greater control over occupational choice and, hence, geographic location.

Birth Order

With regard to birth order and sibling interaction, Bowerman and Dobash (1974) found that siblings felt closer to their older, rather than their younger, siblings. Cicirelli (1980a), however, concluded that later born siblings tend to be emotionally closer to their siblings than are first borns. These findings may, in fact, be consonant if later borns are closer to siblings, and it is first borns that they feel closer to, but first borns do not reciprocate.

Age, Spacing, Family Size

Findings are limited on other sibling structure variables. Cicirelli (1980a) found that close spacings were associated with positive emotional bonds between college-age siblings. Adams (1968) used only age-near siblings in his research.

Spacing, used here to mean whether siblings are adjacent to each other in the birth order, may also be an important influence on sibling contact. It has not previously been studied separately from the relative ages of the sibling pair.

Schvaneveldt and Ihinger (1979), in their appraisal of the theoretical status of sibling research, postulated that larger family size will be related to greater sibling solidarity. More work to specify the effects of sibling structure on the form interaction takes is needed. Structural variables, in and of themselves, probably affect socialization very little. They are significant in that they create different family interaction patterns which result in different socialization outcomes. The explication of these patterns will make important contributions to our understanding of family process.

Family Structure

In adulthood, the nature of sibling interaction is also shaped by the effects of siblings' procreative family structures - i.e. marital status and parenthood status. Whether or not parents are still living also affects sibling interaction. In our kinship system, ascendent-descendent nuclear family roles become the primary ones, and sibling roles and other collateral kin roles appear to become secondary.

Townsend (1963) and Shanas et al. (1968) have found evidence that sibling interaction is more important for those who are not married and do not have children. Troll, Miller, and Atchley (1979) have also reported this pattern. Shanas et al. (1968) explained further that never marrieds

interacted most with siblings, and previously marrieds interacted more than married but less than never marrieds. Those previously marrieds with children interacted less than childless previously marrieds.

Whether or not the respondent's and sibling's parents are still living has also been found to affect the frequency of sibling interaction. According to previous research (Shanas, et al., 1968; Townsend, 1963), interaction is greatest where respondents are not married, are childless, and where their parents are still living.

Demographic Variables

Age

One of the interesting theses about sibling relationships in adulthood, advanced by Cumming and Schneider (1961), is that a curvilinear relationship exists between sibling solidarity and age. Solidarity was operationalized when Cumming and Schneider asked elderly respondents to name the person they felt closest to outside of their immediate household. When siblings were mentioned most frequently, they theorized that this represented a resurgence of solidarity between siblings in old age. Atchley (1977) has also stated that old people seek to pick up old relationships and renew family ties. Streib and Beck (1980) suggested that this pattern is due to the fact that "kin networks...are overshadowed in the middle years by immediate

responsibilities" (p. 939). Though solidarity is different than sibling interaction, the frequency and nature of contact may also change with age.

An opposing view has been presented by Rosenberg and Anspach (1973). They found that proximity to siblings, and the frequency of contact with them, both decline with age. However, even if proximity and contact do decline, closeness and affection may react independently. Cumming and Schneider's thesis is that interaction in late adulthood (60 years of age and older) will be more frequent than in early (25 years to 45 years) or middle adulthood (45 years to 60 years). Because of the increasing dependency needs in late adulthood, however, interaction may be more obligatory in nature for those in the oldest age group.[1]

The pertinent issue to this question may be in the involvement in the sibling role relative to other kinship roles. As the individual's social network shrinks in old age (Atchley, 1977; Cumming, 1963), the sibling relationship, which has endured at a limited level of involvement, now becomes one of the more involved relationships of the old person relative to other relationships.

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[1]Note: Age divisions are not from Cumming and Schneider (1961) but are derived for the present study based on Levinson (1980), deleting the transition to early adulthood stage from 22 years to 25 years. Adulthood is defined as beginning at 25 years to ensure that respondents are more fully established in their adult roles.

Sex

In general, females are given the role of maintaining kin ties. This results in more interaction taking place with the wife's kin than the husband's (Adams, 1968; Townsend, 1963). Sex has been shown to have a significant effect on the social interaction patterns of the elderly (Petrowsky, 1976; Powers & Bultena, 1976). Townsend (1963) and Shanas et al. (1968) have found that in sibling interaction among the elderly, female siblings interact more, and married couples interact more with the wife's siblings than they do with the husband's. After the death of parents, the eldest sister may take over the role of coordinating family activities and maintaining family ties.

Not only may there be sex differences in instrumental kinship roles, but sex-linked relationship differences may exist as well which explain the differences in interaction patterns. In a large sample of junior- and senior-high students, Bowerman and Dobash (1974) found that females were more likely to feel close to siblings than were males. Whether or not this pattern persists into adulthood remains to be answered.

Social Class

Some differences may exist in sibling interaction according to social class. Adams (1967b, 1968), among others, has examined the effect of social class on sibling

interaction. The level of social class and the congruence of social class levels between siblings are both thought to covary with the amount of contact and discretionary quality of adult sibling interaction. Adams (1967b, 1968) found that social class status, as measured by occupational prestige, was inversely related to frequency of interaction. The similarity of social class statuses was positively associated with the frequency of interaction.

Allan (1977) ascertained that among blue-collar siblings, close, involved companionship was a feature of sibling interaction for a significant number. While sibling relationships were positive in the middle class group, involvement was more limited.

Summary

The study of sibling involvement in adulthood has been limited to measuring the frequency of contact between siblings. Statements about the consequences of such contact for adults are tenuous, inasmuch as the determinants of contact have not been identified. Distinguishing discretionary from obligatory contact in such analyses of interaction outcome has likewise been neglected. The present research will attempt to specify the influence that relationship variables, sibling structure and family structure variables, and demographic variables have on the frequency of contact and the motivation for contact between adult siblings.

Hypotheses

This study will be undertaken in order to expand the limited research on the sibling role in adulthood, and to identify the influences on the frequency of contact and the obligatory or discretionary motivation for adult sibling interaction. The hypotheses to be tested are general in nature, with one for each criterion variable.

H_1: A significant portion of the variance in the frequency of contact between adult siblings will be explained by the combination of the predictor variables including proximity, relationship variables, sibling structure, family structure, and demographic characteristics.

H_2: A significant portion of the variance in the extent of obligation as the movitation for contact between adult siblings will be explained by the combination of the predictor variables including proximity, relationship variables, sibling structure, family structure, and demographic characteristics.

H_3: A significant portion of the variance in the degree to which choice and desire motivate contact between adult siblings will be explained by the combination of the predictor variables including proximity, relationship variables, sibling structure, family structure, and demographic characteristics.

CHAPTER THREE

RESEARCH METHODS

This chapter will set forth the methods used to test the research hypotheses. Included in this discussion is a description of the research site, the sampling procedure and the size of the sample. Also included are descriptions of the research instruments and the data collection procedures and analysis.

Research Site: Roanoke, Virginia

The population for this study consisted of adults who live in the urban area of Roanoke, Virginia, who are 25 years of age and older, and who have at least one living sibling. Roanoke is located in the Southwest highlands region of the state. The population for the Roanoke Standard Metropolitan Statistical Area was 224,548 in 1980 (U.S. Bureau of the Census, 1981).

More detailed statistics from the 1970 Census show that of 181,436 people in the Roanoke SMSA, 103,554 or 57.1% were over 25 years old.[2] For the Roanoke urban area, the 1970 figures were 89,802 people over 25 years old out of 156,621, or 57.3%. The age distributions for the two

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[2]Note: The Roanoke SMSA was enlarged from 1970 to 1980 so that by 1980 boundaries, the 1970 population figure would have been 203,153.

areas were very similar, indicating that the Roanoke urban area is representative of the SMSA as a whole.

Because the sampling procedure utilized telephone listings as the sampling frame, it was most efficient to use the listings for the Roanoke urban area, rather than the SMSA as a whole. The Roanoke directory listings cover an area corresponding closely to the Census-designated Roanoke urban area according to Census maps (U.S. Bureau of the Census, 1982) and telephone company records (Whitehurst, 1982). This urban area in 1980 included 177,475 (U.S. Bureau of the Census, 1982). In 1982, telephone listings for the Roanoke area represented 77,204 households (Whitehurst, 1982).

Sampling Procedure: A Two-Stage Probability Design

To obtain the specialized population required to meet the objectives of this research, a two-stage, probability design was used. Such a procedure is described in Dillman (1978), and more extensively by Lee and Finney (1977).

The steps in this two-stage procedure for sampling a special population include first generating a list of eligible respondents having the characteristics of the target population, and then mailing the survey to this obtained sample. To obtain the sample, a "screening" survey is done by either mail or telephone. Households are contacted and asked to identify the number of persons in the

household that have the special characteristics of the population under study. These persons are then asked to participate in the research, and a questionnaire is mailed.

In a recent paper, Lee, Burkett, Cassidy, Greenwood, Lee, Randall, and Sherman (1981) concluded that the telephone is preferable to mailing because it yields more accurate information. A mailed survey which requests that eligible respondents reply provides inadequate information for estimating how many are not replying because they do not fit the study criteria or because of non-response. Therefore, the response rate to such a screening survey cannot be accurately determined. Also, mailings based on addresses from phone directories may be hampered by inaccuracies due to outdated listings. Telephone surveys avoid these problems. Telephone surveys using random digit dialing can also contact unlisted numbers not included in directories or people whose listing has changed.

The present study used a telephone survey to accomplish the first or screening stage. Due to budget constraints, computerized random digit dialing was not employed. Problems with outdated listings were minimal, since the phone directory for Roanoke was published and distributed only 30 days prior to sampling.

By making the initial contact by phone, an accurate response rate was determined. The telephone interview schedule (see Appendix A) determined if an eligible respon-

dent was available, and if so, if the respondent was willing to participate in the study. In addition to obtaining response rate data, the initial telephone contact established some interpersonal contact with the respondent and perhaps a sense of obligation to return the questionnaire once having agreed to do so by phone (Dillman, 1978).

The second stage of the sampling procedure consisted of mailing the questionnaire to those who agreed to participate in the study after having been contacted by the initial screening survey and having been found to meet the sample criteria.

Systematic Sampling

The screening sample of the general population was done by systematically selecting every Nth case from the Roanoke telephone directory to obtain a sample size of 700. The total number of residential listings in the Roanoke directory is 77,204 (Whitehurst, 1982).

The sample interval was computed from the total centimeters in the directory. Each column in the directory is 26 cm. long. This, times four columns per page, and 259 pages (excluding government listings) yielded a sampling interval of 38.4 cm. This distance was then measured from a random start, and repeated until the sample was drawn (Dillman, 1978; Sudman, 1976). When the interval fell on a listing that was not a residential one, the process was to

alternate between the next closest residential listing above or below the one measured to. The next interval was measured from where the last interval ended, not from the alternate name. If the assumption is tenable that such a sytematic sampling procedure is functionally equivalent to a random procedure, then this method provided a representative sample (Lee & Finney, 1977).

Selection of Respondent Within Households

When a household contained more than one member meeting the criteria for inclusion in the sample, one member of the household was randomly selected using a table of random numbers (see telephone interview schedule in Appendix A). The general use of a table of random numbers has been discussed by Sudman (1976).

Selection of Respondent's Sibling

After respondents were obtained who met the sample criteria and agreed to participate in the study, a sibling of the respondent was randomly selected as the sibling for the respondent to discuss in the mailed questionnaire. The random selection was done in the telephone interview by asking the number of siblings the selected household respondent had, and randomly picking one, using a table of random numbers (see Appendix A). If a respondent had only one sibling, no such selection was necessary. Before the questionnaire was mailed, the name of the respondent's

sibling was written on it to serve as a reminder when the respondent filled out the questionnaire.

Sample Size

For a simple random sample of the 77,000 Roanoke household units, a sample size of 217 would be necessary for a precision level of 98%, and a confidence level of .01 (Slonim, 1960). A sample of this size is adequate to test the four sets of predictor variables, including 21 variables in all, using the rule of thumb that 10 cases are needed per variable in a regression analysis.

To obtain approximately 200 completed questionnaires, 350 would need to be mailed, assuming a response rate of 55-60%. The initial telephone survey would require double that number, or 700, to obtain 350 willing to participate in the mail survey. Thus, 700 people were to be contacted by the initial telephone screening procedure. The first stage was estimated to yield 350 adults who would meet the sample criteria and agree to participate.

When the sampling was carried out, 697 names were obtained from the Roanoke telephone listings. The discrepency between 697 and 700 was due to encountering more government and business listings than first expected. From this telephone screening of 697 households, 400 eligible people agreed to participate in the study.

Sample Characteristics

Table 1 contains information regarding the characteristics of the obtained sample (N=313), and also some comparative data from the 1970 Census, and advance reports from the 1980 Census. The respondents in the sample had a median age of 44.9 years. The majority were married (69%), 81% had children, and about half (49%) of the entire sample had children still living at home. The mean years of education for the sample was 13.5, and 83% had at least a high school education.

In comparison to the 1970 Census data, the sample is overrepresented by females, married persons, and those with higher educational level. Exact comparisons between the sample's characteristics and those of the Census may be different when the 1980 Census data become available. Unfortunately, at the time of this study the more detailed population characteristics from the 1980 Census were not yet published. On the whole, the sample characteristics correspond well to the Census statistics and lend credence to the sample as fairly representative.

Data Collection Procedures

The data were collected by mailed questionnaire following the methods set forth by Dillman (1978). Dillman's method was chosen based on reported response rate of 80% or better, depending on the population studied (Dillman, 1978).

In accordance with Dillman's method, non-response was minimized by painstaking attention to questionnaire construction. Not only was attention to item wording important, but the ordering of items and the format of response categories was also critical. General appearance of the questionnaire, professional printing, and a booklet format were all employed to make the questionnaire attractive, easy to understand and fill out. All of these factors were given careful attention in the construction of the questionnaire for this research. (See cover letters in Appendix B, and questionnaire in Appendix C.)

Survey Implementation

After subjects were identified by telephone contact, they were mailed a cover letter, questionnaire, and a return addressed, stampled envelope. The questionnaire packet was mailed on the day after the telephone contact, since most respondents were contacted in the evening. The sampling procedure has been found to not only be successful in sampling special populations, but also to contribute to higher response rates than that normally expected in a mailed questionnaire survey (Lee & Finney, 1977; Lee et al., 1981). Combining this with Dillman's (1978) so-called total design method of mailed survey administration can make the mailed survey method a viable one.

Table 1

Demographic Characteristics of the Sample in Comparison to the Roanoke Urbanized Area *

	Sample (%)	Roanoke Area (%)
Age:[a]		
25 to 44 years old	50.0	42.7
45 to 59 years old	25.0	30.3
60 + years old	25.0	27.0
Sex:		
Female	61	52.9
Male	39	47.1
Marital Status:		
Married	69	62
Widowed	9	11
Separated	1	3
Divorced	5	5
Remarried	7	-
Never married	9	22
Children:		
Children at home	49	-
Children not at home	51	-
Children under 18	-	52
Years of Education:		
< 5	0	5.7
< 1 yr High School	8	31.2
1 yr H.S. to 3 yrs H.S.	8	-
4 yrs H.S. +	55	48.2
4 yrs College +	28	9.3

* Source: U.S. Bureau of the Census, 1973

Note. Comparisons with Census data except for age percentages are for all persons 14 years and older and therefore do not directly correspond to sample parameters.

[a] $\bar{X}$ age of the sample is 44.9

Each questionnaire was plainly labeled with an identification number so that the respondent's name could be dropped from the mailing list once each completed questionnaire was received. The cover letter had the respondent's name individually written and each letter was personally signed. Envelopes were individually typed and first-class stamps affixed. One week after the initial mailing, a postcard follow-up was sent to transmit thanks to those who had responded and serve as a reminder to those who had not.

A third mailing was sent out two-and-a-half weeks after the initial mailing. This mailing included a questionnaire, return envelope, and a cover letter emphasizing more strongly than the original letter, the importance of returning the questionnaire. After allowing three-and-a-half weeks for returns, data collection was concluded with 313 completed returns. The entire data collection process took approximately eight weeks after beginning telephone screening.

Response Rates

The combination of the telephone screening survey and Dillman's (1978) mail questionnaire methods yielded a high net response rate to the mailed questionnaire of 82%. The net response rate to the screening survey was 75.3%.

Telephone survey. Households in the sample were called three times, once in the day and on two different evenings,

before being classified as non-respondents. When non-response, unreachable numbers, and households with no one over 25 years old with siblings were accounted for, the net rate for the telephone survey was 75.3%.

Mail survey. Four hundred questionnaires were mailed. of which eight were returned as undelibarable, apparently because of respondents moving. Two were returned as not applicable through a mistake in the telephone interview, and nine were returned without being completed. Subtracting these 19 cases from the 400, yields a net mail-out of 381, and hence the 313 completed cases represent a net response of 82%. Table 2 provides a summary of the response rate data.

Criterion Measures

Sibling interaction was assessed in terms of the frequency of contact and the motivations for contact between the respondent and the respondent's sibling selected at random for the study. Though no established scale for determining sibling interaction was available, some studies that examined kin interaction provided helpful guidelines for item construction (Adams, 1968; Harris, 1975; and Reiss, 1962).

Frequency of Contact

Contact was at first defined as interaction between siblings that occurred either in person or by phone or

Table 2

Response Rates for Telephone and Mail Surveys

Telephone Survey N=697	
No Answer	65
Unlisted, Changed, Disconnected	29
No Siblings	47
Not 25 Years Old	25
Total Unusable N	166
Refusals	131
Usable Sample	400
Net Response Rate	75.3%
Mail Survey N=400	
Undeliverable	8
Respondent Ineligible	2
Incomplete Returns	9
Total Unusable N	19
Non-return	68
Completed Cases	313
Net Response Rate	82%

letter. Three items (numbers 4, 6, & 7) assessed this frequency: How often do you usually see this brother or sister?; How often do you write to your brother or sister?; and, How often do you call your brother or sister on the phone? The same six response categories were used for each item. The responses ranged from "less than once a year" to "every day". The frequency of contact score was to be the response representing the most frequent contact on any one of the three questions.

However, when the data were examined it was found that the frequency of phoning and the frequency of seeing in person were highly correlated ($r = .67$, $p < .001$). The frequency of letter writing had a weak negative correlation with the frequency of seeing ($r = .09$) and a weak positive correlation with the frequency of phoning ($r = .19$). The frequency of writing was less than once a year for 61% of the respondents, and no respondents reported letter writing as their most frequent form of contact. For these reasons the contact measure was computed as the mean score for contact in person or by phone, and letter writing was deleted. This also had the beneficial effect of increasing the variance in the contact measure. Because the writing scores were so uniformly low, their inclusion has reduced the variance in the contact score.

Motivation for Contact

The motivation for contact, as discretionary or obligatory, was to be examined with two scales (number 9 and 10) and then computed to one score. The scales have the same eight items with five-point Likert-type response categories. The first scale (number 9) measures the extent to which contact occurs because of feelings of obligation, and the second scale (number 10) measures the extent to which contact occurs because of free choice or desire for such contact. Closer examination of the data showed that these two scales were correlated moderately (.53), but were not just opposite ends of the same continuum, and would be better addressed as two separate dependent measures: obligation to have contact and desire for contact.

Obligation to have contact. The scale measuring to what degree obligation motivates contact has eight types of contact activities and includes ritual activities, exchange of aid activities, and social activities. For each item, the respondent indicated the extent to which the activity was engaged in because of obligation. The mean response value for the scale was used as the measure.

Analysis of the scale properties for this measure provided justification for its use as a summated measure. Internal consistency was high (Cronbach's Alpha = .88). Factor analysis revealed only one significant factor, with this factor explaining 55.5% of the variance. All of the

items loaded .73 or better on this factor, with the exception of item g (letter writing) which loaded at .47. All items were retained in the scale.

Desire for contact. The scale measuring to what degree free choice and desire motivate adult sibling contact utilized the same eight contact activities as the obligation for contact measure described above. The mean response value for the scale was the criterion measure.

Internal consistency of the scale was high (Cronbach's Alpha = .91). The scale was shown to be unidimensional with only one significant factor which explained 62.1% of the variance. All factor loadings were .77 or higher with the exception of the item relating to letter writing (.55). All items were retained in the scale.

Predictor Measures

Relationship Variables

Intimacy. The 10-item scale measuring general emotional closeness between the respondent and sibling was derived by Thompson (1982) from a 50-item measure of intimacy developed by Walker (1979). This larger scale was submitted to factor analysis by Thompson, who included only items with loadings of .75 or higher in the 10-item version (question 11, a-j).

Post hoc analysis of the scale with the present sample showed it to have just one factor. This principal factor

accounted for 76.1% of the variance. Factor loadings for the items were .80 to .92. The internal consistency of the scale was high (Cronbach's Alpha = .96). The mean response value for the 10-item scale was used as the emotional closeness predictor variable.

Closeness to the sibling's spouse. The general quality of the respondent's relationship to the brother-in-law or sister-in-law was assessed with one global item on perceived emotional closeness. The response categories for this item (question 16A) range from extremely close to extremely distant on a six-point scale. The closeness to in-law score was the response value on this item.

Obligation. The sense of obligation to siblings was assessed using a six-item scale developed by Seelbach (1978) in research on filial piety. The items were reworded to be applicable to adult brothers and sisters, and consequently no previous data on the validity of the scale in this form were available. The six items (question 12, a-f) were summed, and then the mean response value was calculated. This mean value was used in the analysis as the obligation score.

Analysis of this revised scale with data obtained in the present study showed it to be internally consistent and unidimensional. Factor analysis showed the presence of one principal factor which accounted for 61% of the variance in the scale. All factor loadings were .74 or higher. Cron-

bach's Alpha was .87. These analyses justify treating the items as a summated scale.

Conflict. The perceived amount of conflict in the sibling relationship was assessed using a five-item scale developed by Braiker and Kelley (1979) for studying conflict in intimate relationships. The frequency of occurrence of five conflict behaviors in the relationship was measured with a five-point Likert-type response category which ranged from "never" to "very often". The conflict score was obtained by summing the responses (question 13, a-e) and then calculating the mean response-value for the scale.

The conflict scale had one factor, which accounted for 65.2% of the variance. The factor loading was .71 for item b. The other four loadings were .80 or higher. Cronbach's Alpha was .86. These analyses support the use of this measure as a summated scale.

Sibling Structure

Birth order. The birth order variable consisted of the combination of the birth order position of the respondent and the sibling. The respondent's position (question 25) and the sibling's position (question 15) were obtained by asking the respondent to circle the appropriate birth order rank - e.g. first born, second born, etc. There was a wide range of birth order positions (first born through twelfth born). However, most respondents and siblings fell into

first born through fourth born (86%). The categories were therefore collapsed into first born, middle born, or last born for analysis. To assess the effect of various birth order combinations, the sibling pair combinations were dummy-coded (e.g. if respondent was middle born and sib was last born, that equaled dummy variable D4).

Age difference. The ages of the sibling and the respondent were obtained from questions 14 and 22. The absolute difference in age was calculated and used for this score.

Sex of sibling pair. The sex of the respondent and sibling was obtained from question 23 (respondent's sex) and the previously obtained sex of the sibling during the telephone screening sampling process. The four combinations of sex (respondent-male, sibling-male, etc.) were dummy-coded for analysis.

Spacing. The difference in birth order positions was calculated by subtracting the sibling's position from the respondent's and using the absolute difference. This difference score showed whether siblings were adjacent or separated by one or more siblings.

Family size. Size of the family of origin was obtained in question 24. This number was entered as reported into the analysis.

Family Structure

Marital status. Marital status included both the status of the respondent, and the combination of the respondent's and sibling's statuses. This information was obtained in questions 16 and 20. Because of low frequencies of response in the non-married categories, these were collapsed into married or unmarried. The respondent's marital status and the pair's combination status were each dummy-coded for analysis.

Parental status. Parental status included two variables (question 17 and 21). First, whether the respondent was a parent. Second, the combination of whether the respondent and sibling were both parents, both were not, or one was and one wasn't. The first aspect is a dichotomous variable, the second aspect has three possible combinations (both married, both unmarried, and mixed). Both aspects were dummy-coded for analysis.

Children. This variable dealt with whether children of the respondent were living at home (question 21A). It was simply a yes or no variable. Also examined was the influence of the combinations of both siblings having children at home, both not having children and one with children at home and the other without them. The variables were dummy-coded for analysis.

Demographic Data

Age. The age of the respondent was used as a raw score to test the relationship of age to the dependent measures.

Sex. The sex of the respondent was obtained in question 23. It was also dummy-coded for analysis.

Social class. Social class of the respondent and sibling were determined using Hollingshead's two-factor index of social status (1958). This index uses the occupation and education of an individual to compute a social status score. Questions 18 and 19 (sibling's occupation) and questions 28 and 29 (respondent's occupation) are the standardized items developed by the Center for Coordination of Research on Social Indicators (Van Dusen & Zill, 1975). The responses were coded according to the seven occupational categories developed by Hollingshead. Education (question 30, a and b) was similarly coded into seven categories according to Hollingshead's criteria. The class score was computed by multiplying occupation by a weight of seven and education by a weight of four and then summing these products. The social class score was this sum rather than one of the five class rankings Hollingshead derived from these scores, inasmuch as these rankings may no longer be the same as when Hollingshead developed them. A class difference score was

obtained by computing the absolute difference in social scores for the sibling pair.

Geographic Proximity

One question (number 2) was used to determine the geographic proximity of the respondent to the selected sibling. It is simply a measure of the approximate actual distance from the sibling. It has seven response categories ranging from "less than one mile" to "more than 500 miles". The response categories were recoded so the order went from "more than 500 miles" (1) to "less than a mile" (7). Thus the higher the response value the closer the proximity.

To assess the relative contribution of each conceptual set of predictors, proximity was included in each set. For the main analysis, proximity was treated as equal with the other predictors.

Data Analysis

Regression analysis was used to test the hypotheses proposed in this research. The full model was tested for each hypothesis, then the model was tested with each set of predictors removed to assess the contribution of each set to the explained variance, and finally the model was reduced to determine the best group of predictor variables.

Missing Values

Missing values were left as missing throughout the research with the exception in some cases of the computed scale scores for emotional closeness, sibling obligation, conflict, obligation to have contact, and desire for contact. In the case of these scales, mean response values were computed using the complete responses if there were an allowable number of missing responses. For example, on the closeness scale, if seven or more items of the ten-item scale were complete, the mean response was calculated and included in analysis.

Using mean response values allows scores to be compared along the same continuum as the one responses were given for, and it makes dealing with missing values in the way described above possible. This comparability, and the superiority of using the mean of completed items rather than assigning an average to missing scores makes using mean responses preferable to using raw scale scores (Hull & Nie, 1981). This technique was appropriate for the five scales used in this research, given high internal consistency and unidimensionality for each of the five scales.

A high number of missing values on three variables (emotional closeness to in-law, class, and class difference) made it necessary to delete these from the model after initial inspection of the regressions. Correlations

between these variables and the other variables were calculated however, and some sense of their influence was obtained.

Categorical Variables

Because of the large number of categorical variables in the analysis, an explanation of how they were dealt with for regression analysis is necessary. Categorical variables are usually dummy-coded for regression analysis. Using the General Linear Model Procedure (Proc GLM) in the Statistical Analysis System computer program (Helwig & Council, 1979) it is possible to enter these categorical variables as intact variables. Thus, all levels of a variable can be tested at once rather than testing each dummy vector singly. When a categorical variable was significant, then the differences in the means for each level of the variable were tested for significant differences to determine which category within the variable was accounting for the significant effects.

Model Reduction

In the interests of parsimony, and because interpretation of a large number of variables becomes problematic with multiple regression (Warwick, 1975), the initial model was reduced to those variables that best explained the variance in the criterion measures. By "best", it is

meant that those variables in the reduced model are limited to those in the full model that were significant on one of the three criterion measures. For consistency, the same reduced model was used for all three hypotheses.

CHAPTER FOUR

RESULTS

This chapter provides the results of the statistical tests of the three hypotheses. First, the summary of the distribution of responses on the criterion and predictor variables is discussed. The correlations among the predictors, and between the predictors and the dependent measures is presented next. The relative contribution of each conceptual set of predictors is presented, and the reduced and full models are compared. Finally, the statistical tests of the reduced model for the three criterion measures are discussed.

The hypotheses were tested with multiple regression analysis, with the significance of the F-statistic determining whether the hypotheses was supported at the .05 level of significance. Examining the magnitude of the F-statistic, in the case of the categorical variables, and the beta weights gave a sense of the relative contribution of the predictor variables to the explained variance in frequency of contact, obligation to have contact, and desire for contact.

Distribution of Responses

Table 3 shows the distribution of responses for the predictor and criterion measures. For the continuous

Table 3

Summary of Responses for Independent and Dependent Variables

Variable	N	Frequency (%)	Mean	Range	SD
Emotional Closeness	298	--	5.46	1-7	1.57
Closeness to In-law	230	--	4.10	1-6	1.30
Sibling Obligation	299	--	3.06	1-5	.89
Sibling Conflict	303	--	1.87	1-5	.80
Pair Birth Order	281				
First Born/Later Born		34.5	--	--	--
Middle Born/First Born		15.3	--	--	--
Middle Born/Middle Born		21.4	--	--	--
Middle Born/Last Born		8.2	--	--	--
Last Born/Early Born		20.6	--	--	--
Sex of Pair	308				
Brother/Brother		19.5	--	--	--
Sister/Sister		33.1	--	--	--
Cross Sex		47.4	--	--	--
Age Difference between Sibs	296	--	6.05	1-66	5.77
Number of Brothers and Sisters	309	--	3.41	1-12	2.50
Difference in Birth Order Positions	304	--	1.81	1-12	1.50
Respondent's Marital Status	309				
Married		76.4	--	--	--
Unmarried		23.6	--	--	--
Pair's Marital Status	303				
Married/Married		57.8	--	--	--
Unmarried/Unmarried		7.3	--	--	--
Mixed Status		35.0	--	--	--

Table 3 - continued

Variable	N	Frequency (%)	Mean	Range	SD
Respondent's Parental Status	307				
Had Children		81.1	--	--	--
Did Not Have Children		18.9	--	--	--
Pair's Parental Status	303				
Parent/Parent		64.4	--	--	--
Not parent/Not parent		7.9	--	--	--
Mixed Status		27.7	--	--	--
Children Living with Respondent	302				
Yes		49.0	--	--	--
No		51.0	--	--	--
Children at Home for Pair	298				
Both had children in home		29.2	--	--	--
Neither had children in home		34.6	--	--	--
Mixed		36.2	--	--	--
Siblings' Parents Living	310				
Both living		33.5	--	--	--
Mother living		24.2	--	--	--
Father living		6.8	--	--	--
Neither living		35.5	--	--	--
Sex	310				
Male		39.0	--	--	--
Female		61.0	--	--	--
Age	303	--	46.72	24-90[a]	15.03
Class	303	--	53.43	11-84	15.57

[a]Four subjects were 24 years old.

Table 3 - continued

Variable	N	Frequency (%)	Mean	Range	SD
Class Difference	266	--	15.78	1-61	11.54
Geographic Proximity	300	--	4.30	1-7	1.86
Dependent Measures					
Frequency of Contact	300	--	3.00	1-6	1.28
Obligation to Have Contact	296	--	3.05	1-5	1.07
Desire for Contact	297	--	3.99	1-5	0.96

variables, the mean, range, and standard deviation are given. For the categorical variables however, these statistics are not meaningful, and so frequency percentages are displayed.

For the relationship variable scales - closeness to sibling, closeness to spouse, conflict, and sibling obligation - the responses were skewed towards the socially desirable end of the response continua. The standard deviations for these four measures indicate that the items did discriminate however, and the relationships among these variables and others in the model are still possible to examine. The same observation pertains to the criterion measures, obligation to have contact and desire for contact.

As Table 3 shows, the sample was fairly evenly distributed in terms of birth order combinations, sex of the sibling pair, respondents who were married, parents, and people with children still at home. The even distribution of responses on the categorical and demographic items, lends confidence to the validity of the other scaled and continuous variables.

Relationships Among the Variables

Intercorrelations Among the Predictor Variables

Table 4 shows the correlations among the predictor variables. The predictor variables have been grouped so

Table 4

Correlation Matrix for the Predictor Variables

	Variables	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1.	Emotional Closeness	46	-39	07	16	14	19*	01*	17*	14	13	56	-14	-10	07*	08*	15*	10*	07*	08*	12*
2.	Sibling Obligation		-09	11	13	20	16*	05*	02*	09	14	26	-29	-08	03*	00*	13*	16*	15*	08*	06*
3.	Sibling Conflict			-08	-07	10	05*	03*	06*	-15	-09	-17	00	19	09*	09*	12*	00*	10*	00*	12*
4.	Difference in Ages				13	-02	06*	04*	06*	19	64	13	-10	-03	11*	06*	13*	02*	06*	09*	17*
5.	Total Number of Siblings					04	05*	00*	08*	21	50	05	-30	07	12*	15*	54*	00*	10*	05*	21*
6.	Geographic Proximity						04*	10*	00*	03	06	10	-19	-01	11*	06*	14*	11*	15*	13*	08*
7.	Sexes of Siblings							13^{+}	83^{+}	08*	04*	10*	17*	10*	12^{+}	09^{+}	19^{+}	23^{+}	24^{+}	19^{+}	18^{+}
8.	Respondent's Children at Home								06^{+}	37*	06*	02*	07*	08*	47^{+}	61^{+}	18^{+}	31^{+}	29^{+}	88^{+}	38^{+}
9.	Sex of Respondent									06*	00*	12*	09*	00*	07^{+}	13^{+}	12^{+}	23^{+}	12^{+}	17^{+}	14^{+}
10.	Age of Respondent										15	11	-12	-07	35*	29*	20*	04*	13*	41*	69*
11.	Spacing in Birth Order of Sibling Pair											07	-18	-07	09*	14*	12*	07*	10*	07*	15*
12.	Closeness to Sibling's Spouse												-02	03	14*	06*	16*	12*	18*	04*	06*
13.	Social Class of Respondent													19	10*	09*	23*	11*	05*	09*	17*
14.	Difference in Social Class of Siblings														10*	05*	20*	00*	10*	11*	21*
15.	Parental Status of Sibling Pair															85^{+}	24^{+}	34^{+}	58^{+}	63^{+}	31^{+}
16.	Parental Status of Respondent																12^{+}	42^{+}	49^{+}	44^{+}	29^{+}
17.	Birth Order Combination of Siblings																	08^{+}	27^{+}	17^{+}	34^{+}
18.	Marital Status of Respondent																		83^{+}	30^{+}	06^{+}
19.	Marital Status of Sibling Pair																			40^{+}	14^{+}
20.	Children at Home for Both Siblings																				39^{+}
21.	Siblings' Parents Living																				--

Note. Decimal points have been deleted.

$^{+}$Correlations between categorical variables were obtained with the Phi-Prime (ϕ') statistic. $\phi' = \frac{C}{C_{max}}$.

*Correlations between categorical variables and continuous variables are multiple correlation coefficients.

--These statistics do not indicate the direction of association.

that those retained in the reduced model are in the upper left of the matrix. These are most pertinent to the discussion, but relationships among the other variables are also interesting.

In the reduced model, collinearity is not a problem among any of the predictor variables. Sex of respondent and the sex combination of the sibling pair are correlated highly (Ø'=.83), but the variables do discriminate as shown in regression analysis to be discussed below. Emotional closeness to sibling is correlated moderately with sense of sibling obligation, and sibling conflict. All other correlations among the predictors are such as to present no problems with stability of the regression coefficients. This was even demonstrated during analysis as sample size fluctuated depending on the inclusion or exclusion of cases.

Relationships Between the Predictors and Criterion Measures

Table 5 contains the simple correlations between the 21 predictor variables and the three criterion variables. It is interesting to note that some of the predictors correlated significantly with the criterion variables in a zero-order correlation, but were not included in the reduced model. Likewise, some of the predictors included in the final model were not significant in the simple or zero-order, correlation. This is explained by the inter-

Table 5

Correlations Between Predictor Variables and Criterion Measures

		FREQUENCY OF CONTACT	OBLIGATION TO HAVE CONTACT	DESIRE TO HAVE CONTACT
1.	EMOTIONAL CLOSENESS	44**	51**	74**
2.	SIBLING OBLIGATION	37**	49**	47**
3.	SIBLING CONFLICT	-01	-15*	-33**
4.	DIFFERENCE IN AGES	01	08	09
5.	TOTAL NUMBER OF SIBLINGS	-10	08	06
6.	GEOGRAPHIC PROXIMITY	68**	22**	01
7.	SEXES OF SIBLINGS	22**	18**	27**
8.	RESPONDENT'S CHILDREN AT HOME	08	10	05
9.	SEX OF RESPONDENT	11	14*	28**
10.	AGE OF RESPONDENT	-07	01	00
11.	SPACING IN BIRTH ORDER OF SIBLING PAIR	-03	09	06
12.	CLOSENESS TO SIBLING'S SPOUSE	33**	27**	47**
13.	SOCIAL CLASS OF RESPONDENT	-08	-03	-03
14.	DIFFERENCE IN SOCIAL CLASS OF SIBLINGS	-12	-03	-13
15.	PARENTAL STATUS OF SIBLING PAIR	15*	09	03
16.	PARENTAL STATUS OF RESPONDENT	08	04	01
17.	BIRTH ORDER COMBINATION OF SIBLINGS	13	07	18
18.	MARITAL STATUS OF RESPONDENT	10*	16**	07
19.	MARITAL STATUS OF SIBLING PAIR	17**	12	06
20.	CHILDREN AT HOME FOR BOTH SIBLINGS	08	18*	10
21.	SIBLINGS' PARENTS STILL LIVING	11	07	14

Note. Correlations for the categorical variables and the criterion variables were obtained by multiple regression and are multiple correlations. Correlations for the continuous variables are Pearson product-moment correlations. Decimal points have been deleted.

*$p < .05$
**$p < .01$

correlations among the variables, and the extent to which variance explained by a predictor was unique to that predictor. This is illustrated more with the comparison of simple r's and partial r's presented in Tables 9, 10, and 11, to be discussed below.

Intercorrelation of Criterion Measures

As Table 6 shows, the three dependent measures are all significantly intercorrelated ($p < .001$). One would expect this when examining closely related aspects of a phenomenon, and it should not be considered a major impediment to the present study. Part of the correlation between obligation to have contact and desire for contact may be due to the use of the same eight items for each, with only the response categories changed. The shared variance between these measures is significant ($r^2 = .31$) but still indicates that these represent distinct dimensions. The similarity in r for frequency of contact with these two measures (.40 and .41) may indicate that it is correlated with this shared variance in contact obligation and contact desire. A majority of the variation in each dependent variable is unique.

The Conceptual Variable Sets

Analyzing each set of variables as a separate set would create some problems that would compromise the results. First, the experiment-wise error would be

Table 6

Correlations Among the Criterion Measures

	2	3
1. Frequency of Contact	.41*	.40*
2. Obligation to Have Contact	--	.56*
3. Desire for Contact		--

*$p < .001$

greater than .05 because the 12 tests (four sets of predictors x three dependent measures) are not independent tests. Second, controlling for some variables in the model in one test and not in another creates some conceptual problems although it has the advantage of allowing fewer variables to assume the variance and thereby observe their association with the criterion.

This problem was addressed by evaluating the contribution of the individual sets by removing each set from the full model and testing the change in R^2. As Table 7 shows, the relationship variables set (emotional closeness, closeness to in-law, sibling obligation, and sibling conflict) caused a significant change in R^2 when removed, for each of the three criterion. Sibling structure variables (pair birth order, pair sex, age difference, number of siblings, and difference in birth order) contributed significantly only to the frequency of contact. The family structure variables set (marital status of respondent and pair, parental status of respondent and pair, having children at home for respondent and pair, and having living or deceased parents) was only significant for the frequency of contact measure. The demographic variables (sex, age, class, and class difference) were significant for frequency of contact ($p < .001$) and tended towards significance on the desire for contact measure

Table 7

Relative Contribution of Predictor Sets to Explained Variance in Criterion Measures

Predictor Set	Frequency of Contact R^2 Change[a]	Obligation to Have Contact R^2 Change	Desire for Contact R^2 Change
Relationship Variables	.54**	.29**	.48**
Sibling Structure Variables	.37**	.02	.03
Family Structure Variables	.37**	.05	.02
Demographic Variables	.34**	.03	.03*

Note. N=152 before the variables Closeness to in-law, Class, and Class difference were deleted.

[a] R^2 Change represents the change in total R^2 as each set is removed from the full model.

*$p < .10$

**$p < .0001$

(p=.07). However, the magnitude of this R^2 change (.03) suggests that the practical importance of this difference is slight.

Reducing the Model

Multiple regression becomes more unwieldy as the number of variables in the equation increases (Warwick, 1975). Meaningful interpretation of the findings is difficult unless some reduction in the equation is introduced. In addition, large sample sizes are required to deal with the number of variables. Although the number of cases in the present study was deemed minimally adequate, this point was also a concern.

Deleting Closeness to in-law, Class, and Class-difference

Practical problems also arose in dealing with missing data for three of the variables (closeness to in-law, class, and class-difference). Seventy-three respondents had siblings who were unmarried, thus making closeness to in-laws non-applicable, and seventy-two cases had non-computable scores for occupation because of the inability of Hollingshead's (1957) scheme to classify full-time homemakers or students. To assign averages to these cases without scores is inappropriate inasmuch as they are not randomly missing. Furthermore, because of the large number to which such averages would be assigned, the

homogeneity of response is greatly increased which overestimates the influence of the variables. Because of the large decrease in cases these variables caused and the lack of another alternative, these variables were dropped from the model. The closeness to in-law variable appeared to make a contribution and was significantly correlated with all three dependent measures (see Table 5). However, Table 4 shows that it was strongly correlated with emotional closeness to sibling ($r=.56$) and in regression analysis the partial correlation coefficient for closeness to in-law declined markedly, while the partial r for sibling closeness remained high. Examining the Beta weights also showed that emotional closeness to sibling was the better predictor (e.g. for the desire for contact measure, the Beta for sibling closeness =.56; for closeness to in-law, Beta =.08).

The class and class difference variables were not highly intercorrelated with other predictors. However, neither variable significantly correlated with the criterion measures. Regression analyses with the full model showed class differences to be significant for the frequency of contact measure (Beta =.15, $F=7.67$, $p<.01$), and it was unfortunate to drop it from the equation.

Significance Tests for Variable Inclusion

The other variables that were deleted from the model were deleted based on their significance at the .05 level.

Using the significance of the type IV Sums of Squares (the Sums of Squares if a variable is entered in the equation last), the model was reduced to three categorical and six continuous variables. Table 8 shows the difference in explained variance using the reduced model compared to the full model. The gain in efficiency and parsimony of the reduced model resulted in only a minor reduction in the explained variance for each of the dependent measures.

Examination of Hypotheses

The hypotheses tested by the present study were general, and similar for each dependent variable. The hypotheses stated that the combination of the predictor variables would explain a significant portion of the variance in the dependent measures. As Table 8 shows, the three research hypotheses were supported, in that the null hypotheses were rejected.

Frequency of Contact

Table 9 summarizes the results of the multiple regression of frequency of contact on the reduced model of nine variables. The total explained variance was significant and functionally large as well (R^2=.69, $p<.001$). By comparing the beta weights for the continuous variables it is possible to judge the relative contribution of the variables to the prediction of the criterion. Geographic proximity had the largest relative influence (Beta=.61),

Table 8

Explained Variance in Criterion Measures for Full and Reduced Models

Model	N	Frequency of Contact			Obligation to Have Contact			Desire for Contact		
		R^2	F	Adjusted R^2	R^2	F	Adjusted R^2	R^2	F	Adjusted R^2
Full Model	262	.71	20.80*	.67	.40	5.89*	.34	.69	19.07*	.66
Reduced Model	264	.69	55.89*	.68	.37	14.98*	.35	.65	48.16*	.64

*$p < .001$

Table 9

Frequency of Contact Regressed on Reduced Model

Variable	B	Beta	Simple r	Partial r	F	p > F
1. Emotional Closeness	.31	.39	.45	.47	78.13	.0001
2. Sibling Obligation	.14	.10	.38	.14	4.35	.04
3. Sibling Conflict	.17	.11	-.01	.16	9.56	.002
4. Age Difference	-.02	-.07	-.08	-.11	4.41	.04
5. Total Number of Siblings	-.09	-.18	-.12	-.30	24.73	.0001
6. Geographic Proximity	.42	.61	.69	.73	280.33	.0001
7. Sex of Sibling Pair	--	--	.22*	--	5.86	.003
8. Respondent's Children at Home	--	--	.08*	--	.58	.45
9. Sex of Respondent	--	--	.11*	--	.23	.63

Note. Regression and correlation coefficients obtained through SPSS program New Regression (Hull & Nie, 1981) with the exception of the F-tests which were obtained through SAS program Proc GLM (Helwig & Council, 1979). F's are for Type IV SS, that is, they represent the significance of X if entered on the last step.

*These are multiple correlation coefficients inserted into the table for illustrative purposes.

emotional closeness to sibling was next (Beta=.39), and number of siblings was third in importance (Beta=-.18). Comparing the F-statistics to assess the contribution of the categorical variables, sex of the sibling pair (F= 5.86) was about equal in importance to sibling obligation (F=4.35) and age difference (F=4.41). The sex of the respondent, and whether the respondent had children at home, did not significantly contribute.

Comparing the zero-order correlations and the partial correlations indicates how much of the association between an independent variable and the criterion is unique to that predictor (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975). The partial r for each variable indicates the magnitude of association with the criterion when the variance explained by all the other predictors is removed from both the predictor and the dependent variable. When the partial increases from the simple r it indicates an even higher correlation between the residuals of the predictor and criterion. When the partial r decreases, this indicates that the variance predictor 1 explains is shared by predictor 2.

The simple for obligation is .38 but the partial r is .14. This is probably due to the correlation between emotional closeness and sibling obligation (r=.46). The partials for the other continuous variables actually increase through controlling for the other variables.

A post-hoc test to determine which level of the categorical variable, sex of the sibling pair, was significant when performed. Comparing the least squares means for the pair sex variable on frequency of contact showed sister-sister pairs to have significantly more contact than brother-brother pairs ($p=.02$) or cross-sex sibling pairs ($p=.0007$). Cross-sex and brother-brother pairs did not differ significantly from each other on frequency of contact.

Obligation to Have Contact

The obligation to have contact measure indicated the extent to which contact with the sibling was out of obligation. The total explained variance was significant ($R^2=.37$, $p<.001$). The summary of results for the multiple regression of the obligation to have contact measure on the reduced model is shown in Table 10. Only four variables out of the reduced model were significant. Emotional closeness to sibling and sibling obligation were of equal importance (Beta=.33 and .32 respectively). Geographic proximity was much less important (Beta=.10) and about equal in importance to the categorical variable, respondent having children at home (proximity-F=4.19; children-F=4.11).

The examination of the simple correlations and the partial correlations shows that the partials all declined

Table 10

Obligation to Have Contact Regressed on Reduced Model

Variable	B	Beta	Simple r	Partial r	F	p > F
1. Emotional Closeness	.22	.33	.49	.31	27.02	.0001
2. Sibling Obligation	.38	.32	.50	.33	28.12	.0001
3. Sibling Conflict	.02	.02	-.16	.01	.19	.67
4. Age Difference	.01	.03	.08	.04	.29	.59
5. Total Number of Siblings	.00	.00	.10	.01	.07	.79
6. Geographic Proximity	.06	.10	.22	.13	4.19	.04
7. Sex of Sibling Pair	--	--	.18*	--	.23	.79
8. Respondent's Children at Home	--	--	.10*	--	4.11	.04
9. Sex of Respondent	--	--	.14*	--	.72	.40

Note. Regression and correlation coefficients obtained through SPSS program New Regression (Hull & Nie, 1981) with the exception of the F-tests which were obtained through SAS program Proc GLM (Helwig & Council, 1979). F's are for Type IV SS, that is, they represent the significance of X if entered on the last step.

*These are multiple correlation coefficients inserted into the table for illustrative purposes.

when entered together into the equation for predicting obligation to have contact. The fact that both sibling obligation and emotional closeness declined indicates they are about equally important in contributing to the prediction of the criterion. This is also indicated by the nearly equal Beta weights. The fact that all the other simple correlation coefficients decline probably indicates that the variance explained by emotional closeness and sibling obligation is also the explained variance that the other predictors were contributing to, though not as importantly.

The post hoc comparison of the least squares means for respondents having children at home showed subjects with children at home to feel significantly less obligation to have contact than those without children at home. Post hoc comparisons for the other two categorical variables are unnecessary since sex and sex of pairs were not significant in the regression analysis.

Desire for Contact

The third dependent measure tapped the respondent's perception of the extent to which contact occurred with the selected sibling because it was desired. The total variance explained by the reduced model was high (R^2=.65, $p<.001$). Table 11 summarizes the regression of this measure on the reduced model.

Table 11

Desire for Contact Regressed on Reduced Model

Variable	B	Beta	Simple r	Partial r	F	p > F
1. Emotional Closeness	.40	.65	.76	.66	179.12	.0001
2. Sibling Obligation	.26	.24	.49	.32	27.88	.0001
3. Sibling Conflict	-.03	-.03	-.34	-.04	.44	.51
4. Age Difference	.00	.02	.08	.03	.23	.63
5. Total Number of Siblings	-.03	-.07	.06	-.12	5.04	.03
6. Geographic Proximity	-.07	-.13	-.01	-.20	9.83	.002
7. Sex of Sibling Pair	--	--	.27*	--	.37	.69
8. Respondent's Children at Home	--	--	.05*	--	.50	.48
9. Sex of Respondent	--	--	.28*	--	5.02	.03

Note. Regression and correlation coefficients obtained through SPSS program New Regression (Hull & Nie, 1981) with the exception of the F-tests which were obtained through SAS program Proc GLM (Helwig & Council, 1979). F's are for Type IV SS, that is, they represent the significance of X if entered on the last step.

*These are multiple correlation coefficients inserted into the table for illustrative purposes.

Five predictors out of the nine variable set were significant for the multiple regression. Examining the Beta weights shows that emotional closeness is nearly three times as important (Beta=.65) as sibling obligation (Beta=.24). Emotional closeness was five times as important as geographic proximity (Beta=-.13). Comparing the F-statistics in order to evaluate the relative contribution of sex of respondent shows number of siblings (F=5.04, Beta=-.07) and sex (F=5.02) to be nearly equivalent.

The partial correlations for the continuous variables decline from the simple correlations, except in the case of number of siblings and geographic proximity. The decline in the partial correlation coefficient for emotional closeness, sibling obligation and sibling conflict probably indicates that the intercorrelations among these variables (see Table 4) results in shared contribution to the explained variance. Number of siblings and age difference are also correlated (r=.13), though weakly. Apparently, number of siblings is the better contributor to the explained variance that number of siblings and age difference have in common. For number of siblings and proximity, controlling for the other predictors increases and magnitude of the correlation with the criterion.

Post hoc comparisons of the least square means for the levels of the categorical variable sex showed that women were significantly more likely to perceive contact occurring because they desire it ($p=.03$).

Summary of Results

The three research hypotheses were supported, inasmuch as the null hypotheses were rejected. The predictors were significant for each of the three dependent measures: frequency of contact, obligation to have contact, and desire for contact. The original model of 21 predictor variables was reduced to nine significant predictors based on the significance of F for each predictor when entered on the last step into the equation. These nine predictors explained only slightly less of the variance than the full model did.

The relative contributions of the conceptual sets of variables were also examined. Using the change in R^2 for removing each set in turn from the full model, it was ascertained that each set contributed significantly to the explained variance in frequency of contact. The relative contribution of the relationship variables was greatest. For the other two criterion measures, only the relationship variable set was significant, although demographic variables approached significance for the desire for contact criterion. Geographic proximity was included in

each set for this analysis inasmuch as it did not fit specifically in any one set.

It is important to note that the magnitude of the R^2 statistics was functionally important as well as statistically significant. The R^2 for frequency of contact was .69. For obligation to have contact, R^2 was .37. The regression of desire for contact on the reduced model yielded an R^2 of .65.

Frequency of Contact

Seven variables of the nine-variable reduced model entered significantly into the regression equation for frequency of contact. Geographic proximity made the largest relative contribution to the explained variance, with emotional closeness being about two-thirds as important. Number of siblings, age difference between siblings, and the frequency of sibling conflict were also contributors. The sex of the sibling pair was significant, with sister-sister pairs more likely to have contact than brother-brother or cross-sex pairs. Brother-brother pairs or cross-sex pairs did not differ significantly on frequency of contact.

Obligation to Have Contact

Emotional closeness, sibling obligation, number of siblings, and the respondent having children at home were significant for predicting the respondent's perception of

contact as occurring due to obligation. Emotional closeness and sibling obligation made the main contribution to R^2 and were about equal. Number of siblings and having children at home were also about equal in importance, and only about one-seventh as important as closeness and obligation. Those with children at home felt less obligation to have contact than those without children at home.

Desire for Contact

Five variables were significant in predicting desire for contact. Emotional closeness made by far the largest contribution, and sibling obligation was next in importance. The number of siblings and geographic proximity were about equal in importance, and were negatively associated with desire for contact. Sex of respondent was also significant and of about equal importance as number of siblings and proximity. Women were more likely to have contact because they desire it than were men.

CHAPTER FIVE

SUMMARY AND CONCLUSIONS

This investigation examined the influences on the interaction between siblings after they are adults. A review of literature suggested that research attention in this area had been lacking, and that the research that existed dealt with how sibling interaction influenced morale, particularly in the elderly.

Contact with siblings, and with kin in general, has been assumed to necessarily better the lives of people. When attempts to demonstrate a relationship between contact and morale were unsuccessful, researchers concluded that sibling interaction was unrelated to morale (Arling, 1976; Lee & Ihinger-Tallman, 1980).

Before the consequences of sibling interaction can be examined, it is necessary to understand the influences on the occurrence of sibling interaction. It is probable that contact arising from different factors would have different consequences for individuals and for adult sibling relationships. This investigation's purpose was to examine the influences on interaction.

The variables studied were drawn from the literature and were grouped into conceptual sets: relationship variables, sibling structure variables, family structure

variables, and demographic variables. Relationship variables included emotional closeness to sibling, closeness to sibling's spouse, sibling conflict, and sense of sibling obligation.

Sibling structure variables included sex of the sibling pair, age difference, number of siblings, difference in birth order positions, and birth order combination of the pair. Family structure variables included marital status of the respondent, marital status of the sibling pair, parental status of the respondent and the pair, whether the respondent had children living at home, whether the pair both had children at home, and whether the siblings' parents were still living. The fourth set was grouped under demographic variables including sex, age, class, and difference in class. Geographic proximity was also considered in the study.

The influence of the predictor variables was examined for three criterion measures: frequency of contact, the extent to which obligation motivates contact, and the extent to which choice and desire motivate contact. The three dependent measures were regressed on the predictor model to assess the amount of the explained variance in the criterion measures the predictors could account for.

The data were collected from a sample of adults age 25 years or older, with living siblings. Using a two-stage systematic sampling procedure of telephone and mail

survey, a sample of 400 adults was drawn from the Roanoke, Virginia, urbanized area. A completed sample of 313 subjects was obtained for a net response rate of 82%.

The portion of variance explained by the predictors was significant and substantial for each criterion. In general, the relationship variables and geographic proximity were the most relevant predictors, and it was found that a reduced set of nine predictors was as explanatory as the full model.

Conclusions and Discussion

The results of the study lend support to the formation of some conclusions about the nature of adult sibling interaction. This first section discusses the conclusions regarding the significant influences on the three dependent variables: frequency of contact, the obligation to have contact and the desire for contact. The limitations of the study are then discussed, and the chapter concludes with a presentation of the suggestions for further research in the area of sibling interaction in adulthood.

Conclusions Regarding Frequency of Contact

The general question that guided the study of the frequency of contact was what variables influence the frequency of contact between adult siblings? Based on the data, it can be concluded that geographic proximity and the qualities of the sibling relationship are most important in

predicting the frequency of contact. More specifically, a higher level of interaction occurs among adult siblings who are emotionally close, come from a smaller family with less age difference between them, are sisters, and have a sense of obligation to each other. Conflict between siblings was also positively related to frequency of contact. Geographic proximity has an almost over-riding effect on contact, and is almost a necessary condition even if the other factors exist. Even though contact included telephoning, contact was correlated highest (r= .68) with proximity.

Some of the factors found to be important in previous research such as marital status and whether the siblings' parents are still living (Shanas et al., 1968; Townsend, 1963) were not significant in the present analysis. Though marital status was significant in the bivariate correlation (r=.10 for respondent, r=.17 for pair), the effects of this factor were suppressed in the multiple correlation and were therefore not significant in the regression analysis. Part of the explanation, then, of why some variables were not significant in the current investigation is due to the fact that in previous research variables had not been tested in combination with the others included in the present analysis. Only the most powerful predictors held up when entered together with such a large set.

Conclusions Regarding the Obligation to Have Contact

From the regression of the obligation to have contact measure on the predictors, it is apparent that this subjective perception is only slightly dependent on proximity - the best predictor of actual contact. The combination of emotional closeness and obligation explain nearly all of the variance. This suggests, then, that the perception of sibling contact as an obligation is influenced by subjective factors different from the actual behavior of having sibling contact. Whether children were at home or not was probably significant because of the precedence people accord ascendent-descendent kin ties compared to horizontal ties such as those with siblings.

Adults acknowledge responsibilities to children as taking precedence over responsibilities to siblings. In a sense, children at home may provide an "out" from sibling obligations. Adults without children at home do not feel so excused from sibling obligations.

Desire for Contact

Although desire for contact and obligation to have contact were correlated .56 (possibly because of scale similarity, in part) the factors influencing the two variables are different. Whereas contact obligation is motivated by closeness and sibling obligation about equally, contact desire is motivated much more importantly

by emotional closeness than a sense of sibling obligation. Also, although conflict positively influenced the actual frequency of contact, there is a significant negative influence on contact desire depending on sibling conflict. Likewise, proximity was positively associated with both actual contact and contact obligation; it negatively influences desire for contact ($p<.05$).

The sex of the respondent is significant for contact desire, which is consistent with previous research (Adams, 1968; Petrowsky, 1976; Powers & Buttena, 1976) and the general pattern of female sex-linkage in American adult kinship. Since desire for contact in the present investigation was shown to be largely dependent on emotional closeness, this also supports the finding of Bowerman and Dobash (1974) that females are more likely to feel close to siblings than are males.

Conclusions and Discussion Regarding the Significant Predictors

This section will briefly relate the findings of the present study to previous research. The discussion will be limited to the nine variables that were included in the reduced predictor model.

Proximity. The present study found proximity to be clearly related to the actual occurrence of sibling contact. Even though contact included phoning - letter writing having been dropped - contact seemed circumscribed

by proximity. This is in agreement with previous studies (Adams, 1962; Reiss, 1962) regarding actual face-to-face contact. It differs, however, with the concept of the "modified extended family" (Litwak, 1960) maintaining interaction through other means. The modified extended family may rely heavily for cohesion on the indirect interaction that occurs through the kinship network.

Adams (1968) found that too close proximity was considered a liability by his sample, in that it obligated people to more contact than they desired. The present study also found this pattern in that subjects reported a positive relationship between proximity and the obligation to have contact, but an inverse relationship between the desire for contact and proximity. This is illustrated by the average preferred proximity to siblings of 5.4 or between being within a two hour drive and being in the same state. In other words, respondents preferred being close enough to have contact without undue costs, but distant enough to be free from obligation to interact too much. Although it was not tested, the relationship between proximity and the desire for contact is probably curvilinear.

Emotional Closeness. Perceived emotional closeness to the sibling was positively associated with all three dependent measures. Reiss (1962) found that adults excused infrequent kin interaction with reasons such as time and

money, but explained more frequent interaction in terms of similarity and affection. Adams (1968) concluded that interaction occurs regardless of intimacy. The results of the present study are perhaps consonant with both theses. Closeness is not the only factor influencing contact frequency, but where proximity is held constant, closeness is probably the main predictor. As with Horowitz and Shidelman's (1981) finding that closeness mediated the impact of giving aid to an elderly relative, closeness may mediate the outcome sibling contact has for the relationship.

Sibling obligation. The sense of having a duty or obligation to one's kin has been suggested as the factor which makes kinship relations more durable than other associations (Streib & Beck, 1980). The mean response on the sibling obligation scale in the present study was 3.06 out of a possible 5.0. Thus, sense of obligation to siblings was present and moderate for most respondents. Obligation was a significant predictor for all three aspects of adult sibling interaction studied. The fact that it was positively correlated .46 with emotional closeness and negatively .39 with conflict suggests that there are positive components to this sense of obligation. Contrary to Arling's (1977) thesis that contact motivated by obligation is antithetical to the enjoyment of such

interaction, in the present study obligation was the second best predictor of the desire for contact with siblings. It may be that there are positive and negative aspects of obligation, perhaps dependent on whether meeting obligations is done as a way of reducing costs or maximizing benefits. Alternatively, the perception of obligation may be mediated by the emotional closeness of the relationship. That is, where emotional closeness exists, obligation is not perceived as onerous.

Sibling conflict. The frequency of conflict with a sibling was only a significant predictor for the actual frequency of contact. Although it had a significant negative bivariate correlation with desire for contact, this correlation declined when the others were controlled for.

The fact that conflict was positively correlated with the frequency of contact is surprising. By itself, conflict was not significant, but in the presence of the other variables it was. Frequent interaction can engender conflict as well as closeness. It may be that since most of those having high contact are those who live near each other, conflict is higher among this group who have more contact. In the presence of the other variables in the study, conflict can then appear to be a predictor of frequency of contact. In fact, it may be that more frequent sibling conflict behaviors result from more frequent

interaction. In other words, a cyclic association may exist between conflict and frequency of contact.

Age difference. Previous research on the influence of relative age in adult sibling interaction was very limited. In the present study, age difference was negatively associated with the frequency of contact. Age-near siblings would be likely to have had more shared experiences during childhood and adolescence, and also to be in similar stages in the life course as adults, with similar experiences and family situations. If this is true, it would seem likely that this would also affect the two more subjective measures of motivation for contact. Age-near siblings were no more likely to live near each other than those more disparate in age ($r=-.02$).

A tentative reason for this finding may involve where the age-near siblings are in the life cycle. Litwak (1960) did find a trend in his data for families to reconsolidate geographic locations as career moves became more discretionary in middle-age. Inasmuch as the present sample's mean age was 46.7 for respondents and 45.9 for siblings, the sample may have been at career stages where such reduction of geographic distance was possible, thus making contact more likely. Age was not significantly related to proximity in the present study, however, but the linear correlation may have underestimated the relationship if

age and proximity are curvilinear. This was not tested, however.

Number of siblings. The total number of siblings the sibling pair had was significant in predicting frequency of contact and desire for contact, with number of siblings negatively correlated for each criterion. This differs from Schvaneveldt and Ihinger's (1979) postulate that greater family size is related to greater sibling solidarity. This may be a result of the principle that as the number of siblings increases, the tangible and intangible resources one has to utilize for sibling contact may decrease per sibling.

Sex of sibling pair. The finding that sister-sister pairs had the most contact agrees with Reiss' (1962) result that sister-sister pairs were more likely to interact weekly where proximity was equal. Maintenance of kinship ties has been previously documented as an aspect of the female role in Western kinship (Adams, 1968; Townsend, 1963). This is probably part of the traditional sex role expectation that women are more adept at expressive roles, and these roles are therefore assigned to them. Since women facilitate this interaction it more often occurs with their kin.

Having children at home. Having children, and also whether or not these children are at home, have been found

to be predictive of frequency of adult sibling contact in previous research (Shanas et al., 1968; Townsend, 1963). In the present study, it was predictive of only obligation to have contact. Those without children were found more likely to feel obligated to have contact with siblings. Those with children at home are filling a role that is generally accorded higher priority and they may therefore perceive a freedom from obligation towards siblings.

Sex of respondent. Females were more likely to want contact with siblings than males, but sex was not significant for the other two criterion variables. As discussed above, kin relations are female-linked, but no previous literature has suggested that women desire kin contact more than men do. Females were probably less likely overall to have greater frequency of contact with kin because of the husband's traditional control over geographic location of the family. Thus, although women are motivated by choice and desire to have contact with siblings, they are no more likely to have contact than males. Table 12 summarizes the significance of each predictor on each of the three criterion.

Summary of Conclusions

Geographic proximity places definite constraints on the actual occurrence of contact. Close proximity may also

Table 12

Summary of Predictor's Significance for Criterion Measures

Predictor Variables	Criterion Measures					
	Frequency of Contact		Obligation to Have Contact		Desire for Contact	
	F	p>F	F	p>F	F	p>F
Geographic Proximity	280.33	.0001	4.19	.04	9.83	.002
Emotional Closeness	78.13	.0001	27.02	.0001	179.12	.0001
Sibling Obligation	4.35	.04	28.12	.0001	27.88	.0001
Sibling Conflict	9.56	.002	.19	.67	.44	.51
Age Difference	4.41	.04	.29	.59	.23	.63
Number of Siblings	24.73	.0001	.07	.79	5.04	.03
Sex of Sibling Pair	5.86	.003	.23	.79	.37	.69
Respondent's Children at Home	.58	.45	4.11	.04	.50	.48
Sex of Respondent	.23	.63	.72	.40	5.02	.03

Note. Comparing the magnitude of the F-statistic must be done with caution, but it gives a sense of the relative importance of the various predictors. This also allows meaningful comparison of the continuous and discrete predictors . Probabilities indicate which predictors were significant for each criterion.

make adult sibling contact less discretionary and more obligatory.

More important than actual contact, however, may be the motivation for which contact occurs. The reasons for which siblings have interaction with one another may be more important in terms of benefitting the individual or the relationship than how frequently contact occurs. The important contributors influencing the motivation for contact were the relationship variables.

Having sibling contact because one wants to or because one feels obligated do not appear to be opposite ends of a continuum. Both emotional closeness and sibling obligation were strongly predictive of contact obligation and contact desire. They were also intercorrelated.

Sibling obligation was about equally predictive for both types of contact motivation. Emotional closeness was an important contributor to both types of motivation also, but much more important for contact desire. It may be that obligation, or the underlying construct the present measure of obligation taps, is a commonly held expectation present in all motivation for contact.

When the combination of obligation and moderate emotional closeness motivate contact, contact is perceived as mainly obligatory. When obligation and a higher level of emotional closeness motivate contact, the sibling contact is perceived as discretionary.

Contact may occur in response to sibling obligation regardless of higher levels of emotional closeness. Emotional closeness may mediate how the siblings feel about the obligation to have contact, however. When emotional closeness is higher, the obligation to have contact may be perceived as a positive thing. When emotional closeness is relatively lower, the obligation to have contact may be perceived as burdensome.

In general, geographic proximity and relationship qualities were most important in predicting the three aspects of sibling interaction addressed in this research. While each of the predictors contributed to the criterion measures, relationship variables influenced motivation for contact much more than actual proximity did. Obligation is present in both types of motivation for contact, but emotional closeness may mediate whether such obligation is perceived negatively or positively.

Limitations of the Study

Instrumentation

Due to the lack of previous research in the area of influences on adult sibling interaction, the research instrument in the present research was largely original. Although a concerted effort was made to utilize existing instruments, and the instrument analysis that was done proved satisfactory, the extent to which the underlying

concepts are being measured is not established. Also, even though the sample size was adequate, it was compromised by missing data for variables that have not been adequately operationalized yet (e.g., determining social class status for non-employed individuals).

Self-Reported Data

A major criticism of social research is the prevalence of using self-report as the mode of data collection. Response set and social desirability are two of the biases affecting response that probably affected this investigation the most. This research is therefore subject to the limitations of many investigations, but due to careful questionnaire construction and survey administration these limitations are not considered of such severity as to invalidate the findings.

Heterogeneity of Sample

No attempt was made to control for race, ethnic background, or religion in the present study. The sample was treated as homogeneous when in fact it was from a heterogeneous urban population.

What is considered "family", and expectations for family involvement are affected by cultural expectations. Some religions emphasize family ties especially, as do some ethnic groups. The nuclear family is the ideal type for the white middle-class, but more collateral kin are

defined as family among blacks, for example. Thus, different factors may influence adult sibling interaction in such sub-sets of the population. These differences need to be examined.

Suggestions for Further Research

The following suggestions relate to extensions of the present research. Also, some ideas for alternative analyses of the existing data are presented.

Data Re-Analysis

Re-analysis of the data would allow for closer examination of the potentially curvilinear relationships of proximity and age with the criterion measures. By sorting the sample on the basis of each of these factors, curvilinearity would be demonstrated if it exists. The relationships of these predictors to sibling interaction would then be better understood.

Sibling interaction may be higher in young adulthood and later adulthood than in middle-age. A linear test, such as regression, underestimates this relationship and age appears unrelated to interaction. Similarly, if the association of proximity and desire for contact is curvilinear, this is unclear with a linear test. Due to the importance of geographic proximity and sex to sibling interaction, this association needs clarification.

The motivation for contact dimension also needs further clarification. Re-analysis of the data with subjects grouped into categories based on the two types of motivation would be informative. Subjects may be grouped as high on both obligation and desire, low on both, or high on one and low on the other. With motivation category as the dependent variable, frequency of contact, emotional closeness, sibling obligation, and conflict would become independent variables in a multivariate analysis of variance. Interaction effects of the four combinations of contact motivation would then become more clear.

Closeness to In-law and Class

Emotional closeness to a sibling's spouse is a potentially important influence on sibling interaction. The effects of closeness or the lack of it need to be assessed for those who have married siblings. Examining whether conflict with an in-law lessens closeness to one's sibling, as well as actual contact, would enhance understanding of the factors influencing emotional closeness among adult siblings.

Social class is also an important factor in many aspects of family research. The present data showed that higher social class was negatively correlated with the obligation to have contact. The influence of social class

in the presence of the other predictors needs to be further explicated, however. Determining class for nonemployed individuals needs to be better operationalized before the effects of this potentially important variable can be assessed.

Health of Adult Siblings

Health is a factor frequently found to be important in research on middle-aged and older adults. Including health as a factor influencing sibling interaction patterns seems a profitable line of research.

Health places obvious constraints on mobility, which would directly influence the obligation siblings feel to be in contact with each other. An adult is likely to feel more obligation toward an ill sibling than towards a self-sufficient, healthy sibling. Whether emotional closeness positively mediates obligation to an ill sibling also needs to be examined.

Population Sub-Group Analysis

The present study demonstrated that across a heterogeneous population of adult siblings, proximity and relationship factors were most predictive of sibling interaction. To more accurately document the influences on sibling interaction in more homogeneous segments of the population, the same conceptual sets of predictors used in

the present research could be tested on more homogeneous samples.

Theory Construction

In the present study, the relationship qualities of emotional closeness, obligation, and conflict proved important in predicting sibling interaction. These variables fit well into a social exchange perspective of costs and benefits. Adult sibling interaction may be perceived positively when benefits from the relationship (e.g., emotional closeness and fulfilling obligations) outweigh costs (e.g., conflict). Specifying the conditions under which it is perceived as a cost, and the conditions under which it is perceived as a benefit, would help to understand the role of obligation in sibling contact and other adult kin contact as well.

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APPENDICES

APPENDIX A

The Telephone Interview Schedule

TELEPHONE INTERVIEW SCHEDULE

HELLO. My name is Tom Lee and I'm calling from Virginia Tech in Blacksburg. I am a graduate student in the Department of Family and Child Development. I am doing some research on the family relationship between brothers and sisters who are now adults. Your household was selected at random to participate in this study. May I ask you three or four questions? It will only take a couple of minutes.

1. Are any members of your household over 25 years old?

   A. If NO: I see. Well, for this study I need to talk to people over 25. Thanks anyway. Goodbye.

   B. IF YES: How many #_____? OK.

2. Do any of these people have brothers or sisters who are still living?

   A. If NO: I see. Well, since this is a study about relationships between brothers and sisters, I need to talk to people with brothers or sisters. Thanks anyway. Goodbye.

   B. If YES: How many people have brothers or sisters? _____
   (If more than one, choose one at random, with random number table. The husband will be #1, the wife will be #2, and another household member will be #3). I would like to ask a few more questions about relations between adult brothers and sisters. Would you be willing to fill out a short questionnaire that I will send in the mail? It will take about 20 minutes to complete.

   The questionnaire will ask about _____ relationship with just one brother or sister. How many brothers or sisters does _____ have? (Select one with random number table.) Using a random number method, I have selected number _____. Which brother or sister would that be? May I have their name to put on your questionnaire as a reminder?

   I have your address as _____.
   Is that correct?
   What is your zip code there?_____

Thank you for your help. I'll mail your questionnaire today. Goodbye.

APPENDIX B

The Cover Letter for the First Mailing

The Reminder Postcard

The Cover Letter for the Follow-up Mailing

COLLEGE OF HOME ECONOMICS

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061 - 8299

DEPARTMENT OF MANAGEMENT, HOUSING AND FAMILY DEVELOPMENT (703) 961-4794 or 4795

April, 1982

Dear

As adults in today's society, we often live far away from the people we spent up to one third of our lives with - our brothers and sisters. Government and business take this for granted as employees are moved around the country. However, no one really knows how people like you feel about this, or how where you live affects the relationship you have with your adult brothers and/or sisters.

You are one of a small number of people who are being asked to give their opinion on this question. You were selected in a random sample of the City of Roanoke. When a member of your household was contacted by phone, you were selected to answer the questionnaire for your household. Using a random process, we then chose _____ as your brother or sister that you would answer these questions about. In order that the results will truly represent people's thinking, it is important that we hear from everyone who is contacted. It is important that your questionnaire be completed and returned as soon as possible.

You may be assured of complete confidentiality. Your brother or sister will not be contacted. The questionnaire has an identification number on the cover for mailing purposes only. It is there so your name can be checked off our list when we receive your returned questionnaire. After that, your name and the identification number will not be connected.

The results of this research will be made available to employers, counselors and others who are interested in helping people build good family relationships. You may receive a summary of the results by writing "copy of results requested" on the back of the envelope, and printing your name and address below it. Please do not put this information on the questionnaire itself so your confidentiality can be protected.

I would be happy to answer any questions you might have. If you want information, or if you need assistance in answering the questionnaire, please write or call. The telephone number is shown above, or I can be reached collect at (703) 552-6610.

Thank you for your assistance.

Sincerely,

Thomas R. Lee
Project Director

Reminder Postcard

May 5, 1982

Last week a questionnaire seeking your opinions about the nature of relationships between adult brothers and sisters was mailed to you.

If you have already completed it and returned it to me, please accept my sincere thanks. If not, please do so today. Because it has been sent to only a small number of households, it is important that your response be included to give me an accurate picture of people's opinions regarding this topic.

If by some chance you did not receive the questionnaire, or it got misplaced, please call me right now, collect (552-6610) and I will mail you another one today.

Sincerely,

Thomas R. Lee
Project Director

COLLEGE OF HUMAN RESOURCES

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061 - 8299

DEPARTMENT OF FAMILY AND CHILD DEVELOPMENT (703) 961-4794 or 4795

May 17, 1982

Dear

About three weeks ago, I wrote to you seeking your opinion regarding the relationships between adult brothers and sisters. You were asked to fill out the questionnaire about your relationship with _____, your brother or sister. As of today, we have not yet received your completed questionnaire.

This research has been undertaken because so little is known about this basic family relationship between brothers and sisters after they become adults. Understanding this aspect of family life in our modern society would give vital information to those working to strengthen the family.

I am writing to you again because of the importance each questionnaire has to the accuracy and usefulness of this study's findings. Your name was drawn in a scientific sampling process of the Roanoke-area telephone listings. Only about one out of every 175 households was included. To get a representative picture of the opinions of all people, it is essential that each person in the sample return their questionnaire.

In the event that your questionnaire has been misplaced, a replacement is enclosed. If you have recently mailed your questionnaire, please accept our sincere thanks.

Your cooperation is greatly appreciated.

Cordially,

Thomas R. Lee
Project Director

APPENDIX C

The Research Instrument

Survey #_____

BROTHERS & SISTERS IN ADULTHOOD

We are interested in your thoughts and feelings about the relationships between adult brothers and sisters.

Please answer all the questions. If you have comments to explain your answers, use the margins. It will take only a few minutes to complete your questionnaire. Return it as soon as you can in the postage paid envelope.

Thank you very much.

Department of Family and Child Development
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24060
Spring 1982

Please answer these questions about your relationship with _____, your brother or sister. Remember that these questions are about your relationship with _____ only, and are not about your other brothers or sisters.

1. Suppose you could determine how close you could live to your adult brother or sister. From the choices below, pick the distance you would choose to live from your brother or sister.

   (Circle Only One Number)

Most Preferred
1 . . . . . NEXT DOOR NEIGHBORS
2 . . . . . WITHIN WALKING DISTANCE
3 . . . . . WITHIN 10-MINUTE DRIVE
4 . . . . . WITHIN SAME TOWN OR CITY
5 . . . . . WITHIN 2 OR 3 HOUR DRIVE
6 . . . . . WITHIN SAME STATE
7 . . . . . OUTSIDE SAME STATE
8 . . . . . IN A DIFFERENT PART OF THE COUNTRY

2. About how far away does this brother or sister live? (Circle Number)

   1 LESS THAN 1 MILE
   2 LESS THAN 5 MILES
   3 LESS THAN 30 MILES
   4 30 TO 150 MILES
   5 150 MILES TO 300 MILES
   6 300 MILES TO 500 MILES
   7 MORE THAN 500 MILES

3. How much time have you spent face to face with this brother or sister in the last <u>month</u>? (Circle Number)

   1 NO TIME
   2 LESS THAN 30 MINUTES
   3 BETWEEN 30 MINUTES AND 1 HOUR
   4 1 HOUR OR TWO
   5 3 OR 4 HOURS
   6 5 TO 10 HOURS
   7 MORE THAN 10 HOURS

4. How often do you usually see this brother or sister? (Circle Number)

1 LESS THAN ONCE A YEAR
2 ONCE OR TWICE A YEAR
3 SEVERAL TIMES A YEAR
4 ONCE OR TWICE A MONTH
5 ONCE OR TWICE A WEEK
6 EVERY DAY

5. When did you last see this brother or sister? (Circle Number)

1 WITHIN LAST DAY OR SO
2 WITHIN LAST WEEK OR TWO
3 A MONTH AGO
4 TWO TO THREE MONTHS AGO
5 WITHIN LAST YEAR
6 MORE THAN A YEAR AGO

6. How often do you write to your brother or sister? (Circle Number)

1 LESS THAN ONCE A YEAR
2 ONCE OR TWICE A YEAR
3 SEVERAL TIMES A YEAR
4 ONCE OR TWICE A MONTH
5 ONCE OR TWICE A WEEK
6 EVERY DAY

7. How often do you call your brother or sister on the phone? (Circle Number)

1 LESS THAN ONCE A YEAR
2 ONCE OR TWICE A YEAR
3 SEVERAL TIMES A YEAR
4 ONCE OR TWICE A MONTH
5 ONCE OR TWICE A WEEK
6 EVERY DAY

8. Indicate which <u>one</u> of these activities is most often the occasion for getting together with your brother or sister. (Circle Only One Number)

1 OBSERVING A HOLIDAY (CHRISTMAS, THANKSGIVING, ETC.)
2 OBSERVING A FAMILY OCCASION (WEDDING, BIRTHDAY, ETC.)
3 EXCHANGING HELP OF SOME KIND
4 WORKING TOGETHER TO HELP ANOTHER RELATIVE
5 VISITING JUST TO TALK AND SEE EACH OTHER
6 DOING SOME KIND OF PLEASURABLE OR RECREATIONAL ACTIVITY

9. Some activities that brothers and sisters might do together are listed below. Indicate how much obligation you feel to do each activity with your brother or sister. Circle 1 for No Obligation, circle 5 for Strong Obligation, etc.

NO OBLIGATION		SOME OBLIGATION		STRONG OBLIGATION
1	2	3	4	5

	Circle the Number				
	NO OBLIGATION				STRONG OBLIGATION
	1	2	3	4	5
a. Observing a Holiday (Christmas, Thanksgiving, etc.).	1	2	3	4	5
b. Observing a Family Occasion (Wedding, Birthday, Etc.). . . .	1	2	3	4	5
c. Exchanging Help of Some Kind . . .	1	2	3	4	5
d. Working Together to Help Another Relative	1	2	3	4	5
e. Visiting Just to Talk and See Each Other	1	2	3	4	5
f. Doing Some Kind of Pleasurable or Recreational Activity	1	2	3	4	5
g. Writing Your Brother or Sister a Letter	1	2	3	4	5
h. Calling Your Brother or Sister on the Phone	1	2	3	4	5

10. Another concern of this study is how much brothers and sisters do things together because they want to. Please circle the number from 1 to 5 to indicate the extent to which you would want to do each activity with your brother or sister. Circle 1 for Don't Want To, Circle 5 for Strongly Want To, etc.

DON'T WANT TO		SOMEWHAT WANT TO		STRONGLY WANT TO
1	2	3	4	5

	Circle the Number				
	DON'T WANT TO				STRONGLY WANT TO
	1	2	3	4	5
a. Observing a Holiday (Christmas, Thanksgiving, etc.). .	1	2	3	4	5
b. Observing a Family Occasion (Wedding, Birthday, Etc.).	1	2	3	4	5
c. Exchanging Help of Some Kind	1	2	3	4	5
d. Working Together to Help Another Relative	1	2	3	4	5
e. Visiting Just to Talk and See Each Other	1	2	3	4	5
f. Doing Some Kind of Pleasurable or Recreational Activity	1	2	3	4	5
g. Writing Your Brother or Sister a Letter	1	2	3	4	5
h. Calling Your Brother or Sister on the Phone	1	2	3	4	5

11. This next section of statements is about how close you feel to your brother or sister _____. Please indicate the degree to which the following statements are true about your relationship with your brother or sister. Circle 1 for Never True, 7 for Always True, etc.

NEVER TRUE	RARELY TRUE	SOMETIMES TRUE	TRUE ABOUT 1/2 THE TIME	MOSTLY TRUE	ALMOST ALWAYS TRUE	ALWAYS TRUE
1	2	3	4	5	6	7

		Circle the Number						
		NEVER TRUE						ALWAYS TRUE
		1	2	3	4	5	6	7
a.	We comfort each other.	1	2	3	4	5	6	7
b.	We like each other	1	2	3	4	5	6	7
c.	We share a mutual trust.	1	2	3	4	5	6	7
d.	We enjoy the relationship.	1	2	3	4	5	6	7
e.	Our lives are better because of each other	1	2	3	4	5	6	7
f.	We understand each other	1	2	3	4	5	6	7
g.	We care about each other's feelings. . .	1	2	3	4	5	6	7
h.	We make one another feel better.	1	2	3	4	5	6	7
i.	We share a feeling that nothing can come between us	1	2	3	4	5	6	7
j.	We're devoted to each other.	1	2	3	4	5	6	7

12. Now I would like your opinion about how much responsibility adult brothers and sisters should have for each other. Circle 1 if you Strongly Disagree with the statement, 5 if you Strongly Agree, etc.

STRONGLY DISAGREE	DISAGREE	HALF AGREE HALF DISAGREE	AGREE	STRONGLY AGREE
1	2	3	4	5

	Circle the Number				
	STRONGLY DISAGREE				STRONGLY AGREE
	1	2	3	4	5
a. Adult brothers and sisters should live close to each other.	1	2	3	4	5
b. Adult brothers and sisters should take care of each other, in whatever way necessary, when they are sick.	1	2	3	4	5
c. Adult brothers and sisters should be willing to give each other financial help	1	2	3	4	5
d. If adult brothers and sisters live near each other after they grow up, they should visit one another at least once a week.	1	2	3	4	5
e. Adult brothers and sisters who live at a distance should write each other at least once a week.	1	2	3	4	5
f. Adult brothers and sisters should feel responsible for each other . .	1	2	3	4	5

13. Even in close family relationships, there is some conflict. Indicate how often the following types of conflict occur between you and your brother or sister. Circle 1 for Never, circle 5 for Very Often, etc.

NEVER 1 2 SOMETIMES 3 4 VERY OFTEN 5

	Circle the Number				
	NEVER 1	2	3	4	VERY OFTEN 5
How often do you and your brother or sister...					
a. argue	1	2	3	4	5
b. try to change things about each other.	1	2	3	4	5
c. feel angry or resentful	1	2	3	4	5
d. have arguments that are serious . .	1	2	3	4	5
e. express negative feelings (anger, dissatisfaction, etc.)	1	2	3	4	5

Now, I need to ask you for some background information about _____, your brother or sister.

14. How old is your brother or sister? (Write Number) _____

15. What is the birth order position of your brother or sister?

1 FIRST BORN
2 SECOND BORN
3 THIRD BORN
4 FOURTH BORN
5 FIFTH BORN
6 SIXTH BORN
7 SEVENTH BORN
8 OTHER (SPECIFY): _____ _____

16. Is your brother or sister married? (Circle Number)

1 NO (IF NO, SKIP TO QUESTION 17)
2 YES (IF YES, ANSWER THE QUESTION BELOW)

16A. On the whole, how close do you feel to your brother-in-law or sister-in-law? (Circle Number)

1 EXTREMELY CLOSE
2 QUITE CLOSE
3 SOMEWHAT CLOSE
4 SOMEWHAT DISTANT
5 QUITE DISTANT
6 EXTREMELY DISTANT

17. Does your brother or sister have children? (Circle Number)

1 NO (IF NO, SKIP TO QUESTION 18)
2 YES (IF YES, ANSWER THE QUESTION BELOW)

17A. How many children are living at home? (Write in Number) _____

Now, please tell me a little about the work your brother or sister does. If your brother or sister is retired or unemployed, describe the last regular job held.

18. What kind of work does your brother or sister do (or did at his/her last regular job)? What is (was) his/her main occupation called?

_____

_____

19. Tell me a little bit more about your brother's or sister's main duties and what he or she actually does.

_____

_____

Now, I would like to ask you a few questions about yourself. This background information about you will just be for making comparisons between the adults in this study.

20. What is your present marital status? (Circle Number)

1 NEVER MARRIED
2 WIDOWED
3 SEPARATED
4 DIVORCED
5 MARRIED
6 REMARRIED

21. Do you have children? (Circle Number)

1 NO (IF NO, SKIP TO QUESTION 22)
2 YES (IF YES, ANSWER THE QUESTION BELOW)

21A. How many children are still living at home?
(Write in Number) _____

22. How old are you today? (Write in Number) _____

23. What is your sex? (Circle Number)

1 MALE
2 FEMALE

24. How many brothers and sisters do you have? (Circle Number)

1 2 3 4 5 6 7 8 9 10 11 or More

25. What is your place in the birth order of your family? (Circle Number)

1 FIRST BORN
2 SECOND BORN
3 THIRD BORN
4 FOURTH BORN
5 FIFTH BORN
6 SIXTH BORN
7 SEVENTH BORN
8 OTHER (SPECIFY): _____

26. Are your parents still living? (Circle Number)

1 BOTH ARE STILL LIVING
2 ONLY MOTHER IS STILL LIVING
3 ONLY FATHER IS STILL LIVING
4 NEITHER IS STILL LIVING

IF A PARENT IS LIVING, ANSWER QUESTION 27. IF NOT, SKIP TO QUESTION 28.

27. How far do you and your brother or sister live from your parents? Circle the number for how far you live from your parent or parents, and how far your brother or sister lives from your parent(s).

(Circle Number) You	(Circle Number) Brother or sister	
1	1	LESS THAN 1 MILE
2	2	LESS THAN 5 MILES
3	3	LESS THAN 30 MILES
4	4	30 TO 150 MILES
5	5	150 MILES TO 300 MILES
6	6	300 MILES TO 500 MILES
7	7	MORE THAN 500 MILES

The next two questions are about your employment. Please describe the job you are in now. If you are retired or unemployed, describe your last regular job.

28. What kind of work do you do (did you do on your last regular job)? What is (was) your main occupation called?

_____

_____

29. Tell me a little more about what you actually do (did) in that job. What are (were) some of your main duties?

_____

_____

30. Circle the number of years of school completed for yourself and your brother or sister.

(Circle Number)	Junior High	High School	College or Trade School	Post College
a. you	7 8 9	10 11 12	13 14 15 16	17 18 19 20+
b. your brother or sister.	7 8 9	10 11 12	13 14 15 16	17 18 19 20+

Is there anything else you would like to tell us about the role of relationships with brothers or sisters in adulthood? If so, please use this space for that purpose.

Also, any comments you wish to make that you think may help us in future efforts to understand these issues will be appreciated, either here or in a letter.

Your contribution to this effort is greatly appreciated. If you would like a summary of results, please print your name and address on the back of the return envelope (NOT on this questionnaire). We will see that you get it.

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SIBLING INTERACTION IN ADULTHOOD

by

Thomas R. Lee

(ABSTRACT)

The influences affecting sibling interaction among adults were investigated. Twenty-one predictor variables, subsequently reduced to nine, were examined through multiple regression analysis for their contribution to the explained variance in three dependent measures: frequency of contact with an adult sibling, obligation to have contact with the sibling, and desire for contact with the sibling. The predictor variables represented four conceptual areas of influence on sibling interaction: qualities of the sibling relationship; structure of the sibling constellation; structure of the siblings' families of procreation; and demographic characteristics of the siblings. Geographic proximity was also examined.

The investigation utilized adult respondents over 25 years of age, with living siblings. The sample was drawn from the Roanoke, Virginia, urbanized area using a two-stage systematic design involving telephone and mail surveys. A completed sample of 313 adults was obtained, yielding a net response rate of 82%. The respondent in each household and the respondent's sibling were chosen at random.

The reduced predictor equation explained 69% of the variance in frequency of contact, 37% of the variance in obligation to have contact, and 65% of the variance in desire for contact. The combination of the predictors was statistically and substantively significant for each of the criterion measures.

The results suggest that proximity, emotional closeness, obligation, and sex are the most important influences on adult sibling interaction in general. The relative contribution of these predictors, however, varies for the different aspects of interaction represented by the criterion measures. Proximity is more explanatory of actual behavior, but relationship qualities are more important in explaining the motivation for contact.