

The Long-Term Implications of Childhood Social Relations

by

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## Dedication

To my family, who were first to teach me that social relations matter.

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## Abstract

Social relations are important developmental contexts throughout the lifespan. Yet the nature and function of social relations changes substantially with development. Many theories propose that early social relations can impact later functioning (e.g., Bowlby, 1969; Whitbeck, Hoyt, & Huck, 1994; Kahn & Antonucci, 1980). The objective of this dissertation was to examine both the short- and long-term implications of children's social relations, including the extent to which social relations exhibit continuity from middle childhood into early adulthood. Data from the Social Relations and Health Across the Life Course Study were used to address this objective. Patterns of social relations were identified and the long-term implications of social relations examined among 8-12 year-old children followed up 12 years later, when they were young adults. Results indicated four primary patterns of social relations exhibited by children. Patterns were distinguished primarily by the extent to which children's social networks included immediate family, extended family, and friends. There was little apparent continuity in social relations from middle childhood to early adulthood. Social relations during middle childhood were minimally associated with concurrent educational orientation, and were more strongly associated with well-being, educational attainment and adoption of adult social roles 12 years later. Reporting proximal social networks that include immediate as well as extended family, and include many adults was beneficial for children's long-term functioning. Reporting that one's mother is the primary supporter was also beneficial.

Results are discussed with respect to the relative influence of social network structure, network composition, and social support. Findings are also discussed in the context of the convoy model of social relations and of lifespan human development.

## **Chapter I: Introduction**

Relationships with others are an important part of the human experience throughout life. Yet there is considerable developmental and individual variation in both the structure and quality of these relationships. Moreover, the social experiences of childhood, and the ways in which social relations may change or remain consistent into adulthood, may have implications for development over the long term.

*Objective: The objective of this dissertation is to examine both the short- and long-term implications of children's social relations, including the extent to which social relations exhibit continuity from middle childhood into early adulthood.*

This dissertation is organized as follows: In the remainder of the first chapter, the major conceptual issues inherent to a consideration of this objective will be introduced and considered with respect to various theoretical perspectives on human development. Prior research pertaining to the dissertation objective will also be reviewed. In the second chapter, the present study will be specified in greater detail. Its intended contributions will be noted. Based on the theoretical and empirical work presented, the specific research questions addressed by the dissertation will be outlined, and hypotheses will be proposed. In the third chapter, the methodology used to investigate these research questions will be described. In the fourth chapter, results of statistical analyses employed to address the first research question will be presented. In the fifth chapter, the results of statistical analyses employed to address the second, third, and fourth research questions will be presented. In the sixth chapter, results will be discussed and contextualized.

## *Theoretical Perspectives on Social Relations and Human Development*

Various theoretical perspectives within psychology and from other fields have considered both the development of social relations and their implications. Several of these perspectives are considered below.

### *Social Relations throughout Development*

In order to facilitate a thorough discussion of how social relations influence human development, an understanding of how social relations have been conceptualized and examined, as well as a consideration of the ways in which social relations may develop over the lifespan is essential. A brief overview of the term social relations and discussion of distinctions between various aspects of social relations will be presented first. A brief description of the developmental course of social relations will follow.

*Defining social relations.* The term ‘social relations’ is used to refer, broadly, to the set of interpersonal relationships that an individual engages in throughout his or her lifespan. One major function of social relations is the exchange of a variety of types of social support. The partners with whom this support is exchanged comprise an individual’s *social network*. Social networks can be described in terms of their structure (objective characteristics of the group as a whole) and their composition (who is included in the network). Although social relations can also be described in other ways, for the purposes of this study, network structure, network composition, and social support will be the components of social relations considered. These components are closely related, yet have distinct roles within development. Breaking down the complex concept in this way is therefore both practically and theoretically important, and allows a clear system

for conceptualizing social relations.

Each of these three components (network structure, network composition, and social support) can be specified by a number of distinct constructs that can be operationalized and measured. For instance, the *structure* of the social network describes the network as a whole, and how the individual interacts with it. Examples of structural network characteristics include the number of individuals in the network, the geographical proximity of network members, and the frequency with which the individual has contact with network members. The *composition* of the social network, on the other hand, refers to who is actually included in the network. For instance, compositional characteristics may describe the proportion of the network that consists of a particular category of people, such as family, females, or children. Another way of describing the composition of the social network is by whether or not a specific type of relationship (e.g., sibling) is included in the network. *Social support* refers to the role, or function, of the network in the life of the individual. For instance, the total amount of support available from network members or the type of support available from a particular relationship can be examined (Antonucci, 2001). The term ‘social relations’ is intended to connote the aggregate of these characteristics.

*The development of social relations.* Most individuals have relationships with others throughout the entire lifespan. The specific nature of social networks and social support, however, vary with the development of the individual. For instance, a given individual may progress from an infant dependent on one or more caregivers to an older adult, potentially having lost many former network members, but still invested in relations with peers, children and grandchildren. This individual would likely experience



a number of other manifestations of social relations in between these two points. Such changes may be due to the developmental tasks that individuals are focused on at a given point in time, their changing abilities to relate to others, and their evolving needs.

A variety of theoretical perspectives can inform our understanding of how and why social relations change with development. Some have focused on changes over time whereas others have focused on social relations during specific developmental periods. Although not an exhaustive listing of potentially relevant work, several such theories are considered below.

Erikson's (1966) seminal theory considers psychosocial development over the entire lifespan. Erikson proposes that during each of eight stages from infancy through old age, a certain developmental task is prioritized over others. Many of these tasks are closely connected with social relations. For instance, toddlers' striving for autonomy involves pulling away from the control of a caregiver, young adults' search for intimacy necessitates building satisfying dyadic relationships, and middle-aged adults' focus on achieving generativity involves providing for the next generation. According to this perspective, then, social relations would be expected to change over the lifespan in ways that reflect the individual's changing needs and desires. Thus, one would expect that preschoolers' relationships with their parents would be somewhat more reciprocal and less dependent than those of infants, that romantic relationships would become more intimate over the course of young adulthood, and that middle-aged adults may place an increased emphasis on providing specific types of support to children and younger colleagues.

During each of Erikson's stages, social relations both evolve to keep pace with the

individual's changing capabilities and serve as ways of meeting developmental needs. Grotevant & Cooper's (1998) theory of individuation proposes developmental change as well, but takes a different, and more specific, focus. This theory proposes that the balance between individuality and connectedness within relationships undergoes a shift within adolescents' interactions with their parents. As adolescents become not only more capable of negotiating with their parents, but also desirous of developmentally appropriate levels of increased autonomy, the parent-child relationships must adapt to these developments.

Eccles' stage-environment fit theory (Goldstein, Davis-Kean, & Eccles, 2005; Gutman & Eccles, 2007) also focuses on the changing needs of individuals as they move through the life course, and emphasizes the role of the environment in adapting to meet these developmentally-specific needs. Applying this perspective to social relations, it is clear that relationships with others must also change over the course of development if they are to meet the needs of the developing individual. For instance, one's need to be cared for by another in order to meet physical needs and remain safe decrease dramatically from infancy through adolescence, and for some may increase again in old age. The need for emotional connection with others remains strong throughout the lifespan for most people, but may change in form from a calming and reliable presence during infancy toward support for goals, enhancement of self-esteem, and shared joy or sorrow during adulthood.

All three perspectives described are thus consistent in predicting that due to developmental changes in the individual's capabilities and needs, some aspects of social relations should change throughout the life course. Yet, social relations are expected to

retain their function as important sources of support and stability throughout development.

### *The Implications of Social Relations*

Social relations not only vary within the lifespan according to developmental needs and competencies, they may also impact the developing individual. Nearly all theoretical perspectives within developmental psychology acknowledge that a developing person interacts with others in his/her social environment. Current theories, in particular, emphasize the importance of studying development within context and of explicitly considering the environment in which development occurs. Environments are expected to actually influence the developing person in various ways. Social relations, as one component of that environment, would be expected to have implications for development under these perspectives.

Perhaps the most prominent developmental theory emphasizing the role of context is Bronfenbrenner's ecological model (1977; 1986). Bronfenbrenner proposes what he refers to as a "person-process-context model" of human development, emphasizing the need to explicitly consider the complex interplay (process) among personal characteristics (person) and characteristics of the environment (context). His theory explicitly considers not only relationships the developing individual has with various others (e.g., within families, with peers, with school personnel), but also interpersonal relationships in which the individual is not directly involved (e.g., between one's parent and one's teacher, or between one's mother and her boss) as important influences on the developing person. Furthermore, he emphasized the role of time, encouraging investigators to consider changes within both the individual and the context. Magnusson

& Stattin's person-context interaction perspective (1998) similarly emphasizes the role of context in influencing human development. Both perspectives thus would presume that social relations have important implications for development, as one component of an influential environmental context.

Using a different perspective, Elder's Life Course Theory (e.g., see Elder, 1995; 1998) also emphasizes the important connections between individual development and social relations. More specifically, Elder's theory proposes that the family itself changes over time, and that the development of the individual is closely interconnected with the development of the family. Individuals and the families of which they are a part are proposed to influence one another in a bidirectional fashion.

Thus, several influential perspectives in developmental psychology suggest broad implications of social relations for development. More specific theoretical propositions regarding the influence of social relations have also been offered. The particular ways in which social relations are believed to be relevant, however, may vary by the theoretical orientation considered. Two common approaches have included a focus on early experiences in relationships structuring the individual's beliefs and expectations and a focus on the exchange of social support throughout the lifespan.

*Early interactions set up expectations* Several approaches to understanding the role of social relations have focused on the ways in which early social relations shape an individual's system of beliefs and expectations concerning social interactions, which affect behavior and, in turn, later social relations and well-being. Such theories began appearing early in developmental psychology's history, and continue, albeit in different formulations, to the present. The early roots of developmental psychology were heavily

based in the clinical work of Sigmund Freud (Cairns, 1998). Freud's influential psychosexual theory holds that early experiences with one's mother, in particular, form the basis for adult personality as well as psychopathology. Although such views are not common today, more recent theories nevertheless have frequently shared Freud's view of early experiences as exerting long-lasting influence.

Perhaps most prominent among modern approaches of this type is Bowlby's theory of attachment (e.g., Bowlby, 1969, 1973, 1980). This highly influential theory proposed that the infant not only learns what to expect of other people, but also develops important beliefs about the self through early interactions with a caregiver. These expectations, which form an "internal working model" of the self in relationships, have major long-term implications for development under this theory. Attachment theory continues to be widely studied by developmentalists today, and many current proposals regarding the implications of social relations continue to focus on the notion that experiences in early close relationships, particularly caregiving relationships, are tied to later functioning through self-appraisal and expectations of others learned early in life (e.g., see Cicirelli, 1991; Stocker 1994). Others have explicitly used attachment theory as a basis upon which to create a more inclusive organizational framework for the study of close relationships more broadly. One such framework (Hazan & Shaver, 1994) proposes that, while taking a substantially different form, close relationships later in life are likely to be fundamentally similar to early attachment relationships, through the influence of internal working models. Similar to attachment theory, Hazan & Shaver propose that internal working models influence the development of new relationships. Yet, this theory also importantly holds that internal working models can in turn be modified based on

these new experiences.

Other theories have emphasized the role of earlier relationship experiences influencing later development through individual expectations, beliefs, and behavior without necessarily prioritizing the earliest caregiving (typically parent-child) relationships over others. For instance, according to Social Learning Theory, individuals learn ways of behaving within relationships, which they then repeat in later situations, particularly those that are ambiguous, thus leading to strong continuity between early relationship experiences and later ones (e.g., see Whitbeck et al., 1994; Whitbeck, Simons, & Conger, 1991). Similar to Social Learning Theory, but with a specific focus on family interactions, Lidz (1992) argues that relationship experiences within the family influence later relationships throughout life by influencing one's interpretations of events and shaping expectations of other people.

Similar models delineate more specific skills or behavioral patterns that may be learned within social relationships and in turn affect later behavior. For instance, within conflictual interactions, problem-solving and reasoning, as well as specific ways of resolving conflict, can be learned and later applied to other contexts, including other relationships (Herrera & Dunn, 1997). Moreover, even social relations in which the child is not directly involved can influence later development through their influence on expectations and behavior. Emotional security theory proposes that the relationship between a child's parents affects the developing child, through exposure to marital interactions. According to this theory, exposure to discord and hostility within the parents' relationship can result in increased emotional reactivity and insecurity on the part of the child (Davies & Cummings, 2006).

*Social support as a resource throughout life.* A second set of theoretical perspectives also propose that relationships and interactions with others are important influences on human beings and their development, but posit different mechanisms. They focus on the social support and/or stress that one experiences through interactions with others. These theories postulate that social support can help the individual to more successfully navigate life's challenges and transitions, whereas stress experienced within social relations can, like other types of stress, have a negative impact on functioning (e.g., Cohen, 2004; Cohen & Syme, 1985; Fiore, Becker, & Coppel, 1983; Sarason, Sarason, & Gurung, 2001; Tardy, 1988). Theories of this type generally do not specifically privilege the effect of early experiences over more recent ones. Instead, social support is conceptualized as a resource that can be drawn on as needed throughout the lifespan (e.g., Antonucci & Jackson, 1990). Yet, cumulative longitudinal effects of support or its absence are not discounted. Importantly, not only positive but also negative social support (e.g. irritation, demandingness), are incorporated into some theories.

Social support is a broad phenomenon. In order to consider its effects, it is often helpful to further specify the aspects that are of interest (see Wolchik, Beals, & Sandler, 1989). For instance, House & Kahn (1985) discussed the importance of considering the *type, source, quantity* and *quality* of support. *Types* of support are frequently categorized according to function, for instance instrumental, informational, or emotional support (e.g., Cohen, 2004). Similarly, Kahn & Antonucci (1980) conceptualized the social convoy as providing aid, affect, and affirmation, three distinct types of support. Such support can be derived from a variety of *sources*. Support can come from family members and friends with whom one has a close relationship, from acquaintances, or

even from strangers who provide only fleeting support. Although related, the *quantity* or amount of support exchanged is distinct from the *quality* of that support. In addition to these distinctions, support can vary in other ways that may influence the effects it has on development. For instance, support that is given may have different implications from support that is received, perceptions of support may be more or less important than actual support, the consequences of having support available may differ from those of actually enacting such support, and examining objective descriptions of support may differ from examining subjective evaluations of its adequacy. Thus, the complexity of social support must be considered in assessments of its impact.

Individuals are presumed to exchange support with others throughout the lifespan, though the form such support takes, and the balance of support given vs. support received is believed to change a great deal with development (e.g., Antonucci, 1989). Accordingly, the implications of social relations may vary with development. Among children, social support is believed to exert a positive effect on school performance (Rosenfeld, Richman, & Bowen, 2000) and to buffer children from the negative effects of stress (Sandler, Miller, Short, & Wolchik, 1989). Among older adults, instrumental support or positive interactions are often viewed as helping individuals cope with the challenges of aging or poor health, whereas negativity within relationships is seen as a source of chronic strain (e.g., Ingersoll-Dayton, Morgan, & Antonucci, 1997; Krause & Rook, 2003; Lee & Ishii-Kuntz, 1987). Thus, considerations of social support must take into account the age and developmental status of the individual.

Although many theories propose that social support has important implications for development, the exact mechanisms by which this occurs are not necessarily agreed



upon. The role that positive support plays, in particular, has been alternately conceptualized as universally beneficial, or as helping mainly in times of need. Theorists and researchers alike have considered the relative merits of the stress-buffering model, which argues that support primarily benefits those under high stress, and the main effects model, which posits that support has positive benefits for all (e.g., Cohen, 2004; Cohen & Wills, 1985; Demaray & Malecki, 2002).

In most cases, social support occurs within social relationships. Thus, other aspects of social relations, for instance social integration, have been considered as also affecting well-being (e.g., Cohen, 2004). Some authors have argued for a view that explicitly considers how qualities of the relationship influence both the support actually exchanged and how it is perceived by both parties (Badr, Acitelli, Duck, & Carl, 2001). Thus, it may be important to consider not only social support per se, but also characteristics of the relationship, or the structure and composition of the social network, in which social support is embedded.

#### *Patterns of Social Relations.*

While much theoretical, and certainly most empirical work has examined the influence of one or more specific aspects of social relations, in reality an individual's social experience is comprised of multiple relationships, each with its own structure and content. While isolating specific components can certainly be useful, an approach that considers the overall pattern of social relations in a person's life may be at least equally important. Moreover, individual aspects of social relations may have competing, compensatory, or synergistic effects on well-being (e.g., see Stocker, 1994). As such, some theories emphasize the importance of social relations as a whole or focus

specifically on the interactive nature of multiple relationships (e.g., Takahashi, 2005). Such approaches may be needed to develop a full understanding of the complex influences social relations may have on development. Considering multiple social relationships simultaneously may help the field toward a more nuanced understanding of the roles that social relations play in individuals' development.

Those developmental perspectives already considered emphasizing the relevance of context for development would also predict connections among relationships themselves. These theories emphasize broadly the interplay of multiple forces within the bigger picture of an individual's development (e.g., Bronfenbrenner & Morris, 1998; Gottlieb, Wahlsten & Lickliter, 1998). Other theoretical perspectives consider the interconnectedness of multiple social relationships more specifically. For instance, Family Systems Theory views the family as multiple connected subsystems that have not only independent effects, but synergistic ones as well (see Bank, Burraston, & Snyder, 2004; Cox & Paley, 1997). Relatedly, the network perspective used by Furman & Buhrmester (1992) emphasizes examination of each relationship within the context of other relationships in which the individual is involved. Thus, there are many strong theoretical reasons for considering the various components of social relations together, rather than in isolation.

### *The Convoy Model*

Incorporating aspects of many of the perspectives outlined above, the convoy model of social relations (Antonucci, 2001; Antonucci, Akiyama, & Takahashi, 2004; Kahn & Antonucci, 1980, 1981) describes an individual as surrounded by a network of close others with whom he or she maintains a relationship and exchanges social

support. This network functions as a convoy by moving with the individual throughout life, even while the specifics of its composition and function may change. The convoy is thought to provide a secure base that allows the individual to explore the world, similar to the function of an attachment figure. Yet unlike attachment theory, the convoy model also emphasizes the exchange of social support with multiple partners and the dynamic nature of social relations over time. The authors note that the nature of an individual's social convoy is influenced by both personal (e.g., gender, personality) and situational (e.g., socioeconomic status, social roles) factors. The support received or, even more importantly, *perceived*, from the convoy is expected to influence the individual's health and well-being, and to offer some protection against the negative effects of stress (Antonucci, 2001; Kahn & Antonucci, 1980, 1981).

Levitt (2005) focuses on applying the convoy model to children specifically, emphasizing that for children, like adults, the social network is more than the sum of the dyadic relationships that comprise it. Her work on children's convoys incorporates not only those relationships most commonly studied among children (i.e., mothers), but other potentially important relationships as well (e.g., grandparents, other extended family). It looks not only at each relationship itself, but at the inherent interconnections among relationships.

A longitudinal version of the convoy model served as the theoretical basis for this dissertation. This model is an appropriate framework from which to address the objective of the dissertation for several reasons. First, it emphasizes change and stability within social relations and well-being over time, situated within a recognition of developmental periods as one of several relevant personal characteristics. Second, it

takes into account multiple relationships simultaneously, and allows for the possibility of combined or synergistic effects. Finally, it situates the influence of social relations within a complex ecological context. The specific model used here is illustrated in Figure 1. It was adapted from Antonucci's work to reflect the specific timeline and constructs to be examined within the proposed study. As shown, social relations, well-being, and educational outcomes are expected to be interconnected both within and across time, and to be situated within the context of personal and situational characteristics. The specific research questions proposed following the literature review will be based on this model.

### *Relevant Prior Research*

Following from one or more of the various theoretical perspectives outlined above, much research has been conducted regarding social relations throughout development and their implications for well-being. More specifically, research has examined the changes in social relations from childhood through adulthood, and some has considered the role that children's social relations may play in shaping their development. Such work has taken a variety of approaches. Studies have focused on both the short- and long-term implications of social relations, and have considered the influence of social relations on a variety of outcomes, including later relationships, mental health and academic achievement. They have employed both variable-centered approaches that isolate the effects of specific aspects of social relations and person-centered (also referred to as pattern-centered) approaches that attempt to capture the complete picture of an individual's social network.

To summarize this research, I begin with a brief discussion of studies describing the typical nature of social relations during childhood, adolescence, and adulthood. Next, I review literature concerning the concurrent and long-term implications of social relations. Special consideration will be given to the distinction between variable-centered and pattern-centered approaches, and to distinctions among network structure, network composition, and social support.

### *Description of Social Relations throughout the Lifespan*

#### *Childhood*

A few studies have examined children's network structure and composition, and many others have focused on support within specific relationships. Investigations of

children's social relations frequently focus on the parent-child relationship, but children's relationships with siblings, grandparents, extended family members, friends, and non-familial adults have all been examined as well. Some studies have described the social relations of children in general, whereas others have examined how children's relationships change with development. The majority of this work is variable-centered, but pattern-centered approaches have been used in a few cases.

*Variable-centered examinations.* Variable-centered examinations of children's network structure and composition have found that during middle childhood, the closest individuals in children's social networks are typically close family members, including parents, siblings, and grandparents (Levitt, Guacci-Franco, & Levitt, 1993). Most children in these studies also included friends and extended family members, but identified these relations as less close using the hierarchical mapping technique developed by Antonucci (1986). The majority of 3- through 9-year-olds' friends are same-sex, particularly by age 9, but both boys' and girls' networks (as reported by their mothers) tend to include more female than male adults, and children tend to have more frequent contact with the females than the males in their networks (Feiring & Lewis, 1991a).

Children report receiving social support from members of their social networks. In addition to feeling closest to them, school-aged children through early adolescents (ages 7-14) reported that they received more support from close family members than from any other source (Levitt et al., 1993). For school-aged children, parents, specifically, tend to be the primary support providers overall (Furman & Buhrmester, 1992; Reid, Landesman, Treder, & Jacard, 1989). Yet, other types of relationships also

fill important functions. Children's sibling relations have been proposed as a unique context for acquiring conflict-management skills (Herrera & Dunn, 1997), and indeed siblings (and parents) are frequent sources of conflict during middle childhood (Furman & Buhrmester, 1992). Moreover, friends, despite the low levels of overall support they provided relative to parents (Furman & Buhrmester, 1992), are good providers of companionship and fairly good at emotional support (Reid et al., 1989). Non-parental adults in a child's life may also function as secondary attachment figures, fulfilling needs for nurturance and assistance (Furman & Buhrmester, 1992). For instance, teachers are seen as particularly good sources of informational support (Reid et al., 1989).

Perceived social support from different network members may not be independent. Children who have a high-quality relationship with one partner may be more likely to have a high-quality relationship with others. For instance, among 2<sup>nd</sup> graders, self-reported warmth with their mothers was positively correlated with warmth with a sibling and negatively correlated with sibling rivalry. Warmth with a friend was positively correlated with warmth with both their mother and a sibling, and conflict with the friend was negatively associated with mother-child warmth (Stocker, 1994).

The nature of social relations during childhood tends to change with development, as a result of children's changing developmental needs and capabilities. For instance, the development of theory of mind during early childhood is intricately tied with children's ability to relate to others (Hughes & Leekam, 2004).

Children's social networks, which consist of those individuals who are important in the child's life, tend to increase in size by about 2 or 3 people from age 7 to age 10, as children's opportunities and abilities to form relationships with others outside the family

expands. The bulk of the increase tends to occur among peripheral network ties, whereas the number of individuals who are closest to the child remains fairly constant over this period. Corresponding to the increasing size of the social network, children also report increases in overall support from network members from ages 7 to 10 (Levitt et al., 1993).

The composition of children's social networks tends to shift with development as well. Feiring & Lewis (1991b) found that during childhood (from ages 3 through 9), the number of kin and the number of non-kin adults in children's networks typically undergoes a slight increase, and the number of and frequency of contact with friends in children's networks increases even more dramatically (Feiring & Lewis, 1991a). Ten-year olds in another study included more extended family in their networks than either younger (age 7) or older (age 14) participants, and after relying primarily on close family support at age 7, children also report increased support from extended family at age 10 (Levitt et al., 1993). Extended family members are seen as particularly strong emotional supporters during middle childhood (Reid et al., 1989). Together, these studies suggest that middle childhood is a key period for expanding one's social circle beyond the immediate family, with extended family members playing perhaps a particularly important role during this time.

Despite these normative developmental changes, however, individual children's social relations do tend to exhibit some stability over time, particularly in the short term. When asked about sources of social support, six to twelve-years-olds have shown good test-retest correlations over a 3 week period (Reid et al., 1989). When individuals do not show continuity in their social relations over time, it may be due to developmental or



structural changes. For instance, Reid et al. (1989) found that those children with low test-retest correlations on a measure of who provides social support tended to be those experiencing major family upheaval at the time.

*Pattern-centered examinations.* Examination of social networks allows a pattern-centered approach to describing social relations, as multiple social relationships can be considered simultaneously. Prominent among pattern-centered approaches to examining children's social relations are those that group individuals based on which network members are reported to provide substantial levels of support to the individual. Among children, all groups identified typically include support from close family members (parents, siblings, and grandparents), with the major differences lying in whether children feel supported by extended family and/or friends as well. These patterns of support providers tend to be somewhat stable over 2 years (Levitt, Levitt, & Bustos, 2005).

Overall, then, children's social networks can be characterized as dominated by family, and to some extent, females. Networks tend to become larger and more diverse with development, and subject to important individual differences.

### *Adolescence*

Studies of social relations during adolescence frequently focus on changes occurring within this period. These include the adolescent's changing relationship with his or her parents, emerging relationships with romantic partners, and the increased focus on friends and peers thought to characterize adolescence.

*Variable-centered examinations.* Compared to younger children, some evidence indicates that adolescents perceive lower levels of social support than children do from

sources including parents, teachers, friends, and classmates (Demaray & Malecki, 2002). Examining the parent-child relationship specifically, Furman & Buhrmester (1992) found that ratings of support received from parents was lower among 7<sup>th</sup> and 10<sup>th</sup> grade adolescents than among 4<sup>th</sup> grade children or college-age young adults, while reports of conflict with parents was highest among the adolescents (Furman & Buhrmester, 1992). In a study that followed adolescents from age 13 to age 19, however, both negative and positive qualities of the relationship appeared subdued during most of the adolescent period. Although the trajectories varied somewhat by race/ethnicity and gender, overall, adolescents' perceived negative interactions with their parents as well as positive identification with their parents began high at age 13, decreased through age 17, then increased slightly from 17 to 19 (Gutman & Eccles, 2007). Support reported from grandparents is also lower during adolescence than during childhood, and sibling relationships tend to become both more egalitarian and less intense with age (Furman & Buhrmester, 1992).

Support from friends, on the other hand, may increase during adolescence, as friends come to be increasingly relied upon as important sources of social support (see Levitt et al., 2005). Intimacy and affection with friends was higher in 7<sup>th</sup> and 10<sup>th</sup> grades (approx. age 12-16) than during either earlier or later developmental periods (Furman & Buhrmester, 1992). In addition, the perceived quality of adolescent girls' closest same-sex friendship tends to increase over time from about age 14 to 17, whether or not the closest friend is the same person at both times (Way & Greene, 2006). In addition, a new type of relationship, those with romantic partners, takes on increasing importance during adolescence (Furman & Buhrmester, 1992).

As in childhood, family and peer relationships during adolescence are not independent of one another. Among adolescent girls in one study, those who reported more social support from family members also reported higher quality relationships with their closest friend than did those with less family support. Furthermore, initially low but increasing family support over time was associated with perceiving simultaneous increases in levels of support from friends (Way & Greene, 2006). Adolescents' selection of peer groups as well as extreme peer orientation have been also related to characteristics of the family environment, such as parental intrusiveness and positive family affect (Goldstein et al., 2005). Not all investigations have found such connections, however. For instance, Giordano and his colleagues (Giordano, Cernkovitch, Groat, Pugh, & Swinford, 1998) found that adolescents' reports of intimacy with their family members were not correlated with their reported intimacy within friendships. Similarly, among participants in the AddHealth study, perceived connectedness with parents was not related to perceived support from friends (Heinrich, Brookmeyer, Shrier, & Shahar, 2006).

*Pattern-centered examinations.* In general, pattern-centered descriptions of adolescents' social relations confirm the increasing focus on friends, but also clearly show that family members remain important. The social networks of adolescents are typically dominated by peers and friends to a greater extent than are those of children (e.g., Feiring & Lewis, 1991b; Levitt et al., 2005). Among adolescents, friends tend to be regarded as the top supporters, with parents also relatively high, and siblings and romantic partners increasingly common sources of support with age. Parents and siblings remain the most common sources of conflict during adolescence (Furman & Buhrmester,

1992). By classifying participants according to their focal figure (the individual who provides the greatest amount of support across a variety of domains), Takahashi (2005) reports that junior high and high school adolescents most commonly report a same-sex friend as the focal figure. Teachers appear to play an interesting role during these years, with one study finding the best outcomes among those 6<sup>th</sup>-12<sup>th</sup> graders who felt well-supported by a teacher and at least one other category of support providers (parents and/or friends), suggesting that a supportive teacher may be a necessary but not sufficient source of support for adolescents.

Adolescents' social relations, then, can be seen as shifting in both network composition and support. Adolescents social networks are increasingly dominated by friends in comparison to childhood social networks, and relationships with parents change substantially during this period.

### *Adulthood*

Adults' social relations tend to be characterized by interactions with a wide range of individuals. Romantic partners, spouses, and children increasingly become the focal point of many people's social networks as they transition into adult roles. Changes in social relations continue to occur over the course of adulthood. For instance, emerging adults, those 18 – 25 years of age who are traditionally defined as adults, but may not yet consider themselves, or be considered by others, as fully adult, are typically in the process of transitioning from adolescence to adulthood, and their social relations may reflect their in-between status (e.g., Arnett, 2004). Later, siblings and friends may take on increased significance in the lives of older adults. Research on adult relationships

frequently focuses on subjective evaluations of overall relationship quality or social support.

*Variable-centered examinations.* Adults' relationships with their own parents have been the focus of much study. Overall, closeness between parents and young adult children tends to be highest when the young adult children are either living at home or married/cohabitating, either more educated or currently enrolled in school, and not a parent. Conflict, on the other hand, is generally highest when the adult child is living at home, unmarried, not working full time, less educated and not enrolled in school, and is a parent him/herself (Aquilino, 1997). Among adults, friendships are frequently seen as important and positive (e.g., Carbery & Buhrmester, 1998). Among young adults, relationships with friends are indeed described in more positive terms than relationships with parents (O'Connor, 1995), but young adults' reliance on friends also differs based on their marital and parental status (Carbery & Buhrmester, 1998). Among older adults, on the other hand, relationships with children are described as equally or more positive and interactions with children as more intrinsically motivating, than those with friends (O'Connor, 1995).

Some research on adults' social relations has focused on the degree to which they exhibit stability or continuity over time. Among older adults, negative interactions have been shown to remain stable over a 6-year period (Krause & Rook, 2003). Aquilino (1997) also notes that changes in the quality of the parent-child relationship often correspond with structural changes associated with role transitions, particularly adult children leaving their parents' home and establishing their own families.

Like children and adolescents, connections have been found among the multiple relationships adults are involved in. Specifically, those who report more negativity in one relationship are likely to also report more negativity in their other relationships (Krause & Rook, 2003; Birditt, Jackey, & Antonucci, in press). Takahashi & Sakamoto (2000) found that in Japanese college students' reports of support received, the associations among family members and those among nonfamily supporters were higher than associations between family and nonfamily. On the other hand, Takahashi and her colleagues (Takahashi, Ohara, Antonucci, & Akiyama, 2002), using data from the first wave of the Social Relations and Health Study, found very low correlations between support scores for different relationships.

*Pattern-centered examinations.* Pattern-centered approaches among adults have shown that adults continue to maintain social ties with and receive support from both family and friends. By the time young adults are in college, romantic partners are the primary supporters of young men, while romantic partners, mothers, friends, and siblings are all important sources of support for young women (Furman & Buhrmester, 1992). College students in Japan report different functions for different relationship partners, noting that they tend to seek proximity most from their romantic partners and friends (Takahashi & Sakamoto, 2000). College students also report more warmth and less conflict with their same-gender friends than with either their siblings or their cross-gender friends (Sherman, Lansford, & Volling, 2006).

Among adults, a romantic partner or spouse most commonly serves as an individual's focal figure (Takahashi, 2005). Examining which network members American and Japanese adults report receiving the greatest amount of emotional support

from, Takahashi and her colleagues (Takahashi, et al., 2002) found that most Americans were classified as dual- or multiple-types, indicating that they feel supported by a variety of sources, rather than relying primarily on one individual. Moreover, they noted that most of these two-or-more-person support sources included at least one friend. No American participants were classified as “lone wolf” types, indicating that all adults in their American sample perceived support from at least one member of their social network. These authors also found positive correlations among multiple types of support (e.g., affective, instrumental) received from the same partner and negative correlations between support and conflict reported (Takahashi et al., 2002). Adults may tend to turn to the same individuals for a variety of types of support, but conflict with these partners may undermine at least the perception that support is received.

#### *Continuity Across Developmental Periods*

In addition to considering stability within childhood, adolescence, or adulthood, examining these constructs across developmental periods can be particularly informative. Parent-child relationships are commonly the focus of this type of study, presumably both because of their developmental importance and because they tend to be long-lasting. Aquilino (1997) finds some continuity in the parent-child relationships from adolescence (12-18) to young adulthood (18-24), with the strongest stability evident in emotional closeness and conflict. Moreover, some researchers have found connections between parent-child interactions and children’s later support of their parents. In one study, more positive parent-child interactions when the children were 13-25 was associated with mothers’ (but not fathers’) willingness to ask their children for help 20 years later (Schooler, Revell, & Caplan, 2007). In a second study, adults’ retrospective reports of the

quality of their relationships with their parents during adolescence predicted both parent-child relationship quality and adult children's sense of concern for their parents, which in turn predicted the adult children's likelihood of providing instrumental and emotional support to their parents (Whitbeck et al., 1994; Whitbeck et al., 1991). Continuity has also been found in friendships from childhood to adolescence (McGee, Williams, Howden-Chapman, Martin, & Kawachi, 2006) and from adolescence to adulthood (Giordano et al., 1998; McGee et al., 2006). Using the same data to be examined here, Antonucci, Fuller-Iglesias, & Birditt (2007) found that although network size during childhood was not predictive of network size in adulthood, the proportion of family in the child's network did predict the proportion of family in his/her network as an adult.

#### *Sources of variation in social relations*

Despite the broad patterns of social relations characteristic of each developmental period, individuals vary greatly from one another in the social relations they experience throughout the lifespan. Investigators have begun to examine the sources of these individual differences in social relations by comparing the social relations of individuals who differ on some other dimension. Common demographic characteristics examined have included gender and race. Structural characteristics of social relations, especially family structure, are also frequently used to predict the quality of social relations.

*Gender.* Gender differences in social relations have been found among children, adolescents and adults, and in both structural and qualitative aspects of social relations. For instance, children's social networks vary by gender in their composition and in the frequency with which children are in touch with particular network members. Although both boys and girls have more female than male adults in their social networks during



childhood, boys tend to have more contact with the male adults in their networks whereas girls have more contact with the female adults in theirs. By age 13, the gender composition of adults becomes more evenly divided between men and women for boys while remaining female-dominated for girls (Feiring & Lewis, 1991a; 1991b). During early adolescence, boys tend to exhibit more extreme thinking about peers and unsupervised socializing with peers than girls do (Goldstein et al., 2005). Using the same data to be examined here, Antonucci and Birditt (2005) showed that 8-12 year-old girls had larger social networks than boys did. At ages 9 & 13, girls have more friends than boys do (Feiring & Lewis, 1991b).

Social support and relationship quality vary between boys and girls as well. In a survey of children and adolescents from 3<sup>rd</sup> through 12<sup>th</sup> grade, Demaray & Malecki (2002) found that girls reported more overall social support than boys did. During middle school and high school, girls also reported more support from teachers, classmates and close friends specifically (Demaray & Malecki, 2002). Across childhood and adolescence, girls tend to report receiving more support from their same sex friends, mothers, and siblings than boys do, whereas boys report more support from their fathers and their romantic partners (Furman & Buhrmester, 1992). Despite reporting more support from their siblings, however, girls generally feel that they have less power within the sibling interaction (Furman & Buhrmester, 1992). Among college students, young men tend to rely most heavily on their romantic partners for support, whereas young women rely heavily on both their romantic partners and their mothers (Furman & Buhrmester, 1992). Overall, women from adolescence through adulthood are more likely to have their mother as their focal figure than are men (Takahashi, 2005).

The ways in which social relations change over time may also vary between adolescent boys and girls. During late adolescence, boys report a steeper increase in negative interactions with their parents than girls do, and European American boys report the greatest decrease of any group in positive identification with parents between ages 13 and 15 (Gutman & Eccles, 2007). Boys also report steeper increases in the quality of their closest same-sex friendship during adolescence than girls do (Way & Greene, 2006).

Some studies, however, have found no gender differences in the quality of social relations. Second graders warmth with mothers, siblings, and friends did not vary between boys and girls, nor did their conflict with friends or rivalry with siblings (Stocker, 1994). Boys and girls differ from one another on many, but not all aspects of social relations.

*Race/Ethnicity.* Differences among racial and ethnic groups in social relations have also been frequently examined with respect to networks, social support, and their implications for children, adolescents, and adults. Using data from the Social Relations and Health study, Antonucci & Birditt (2005) found that White and Black children's social networks differed in total size, frequency of contact with members, and the proportion of the network comprised of family. Others have found racial differences in the social support available to children from their social networks. For instance, White children reported less support from extended families than did Black or Hispanic children (Levitt et al., 1993). Patterns of both negative interactions and positive identification with parents during adolescence also differ between European Americans and African Americans. Among European Americans, negative interactions remain largely stable from age 13 to age 19, while positive identification declines slightly for girls and steeply

for boys. In contrast, African American adolescents' perceptions of negative interactions over the same period decline, and then increase, while their positive identification with their parents declines slightly (Gutman & Eccles, 2007). Similarly, another large study found that African American adolescents were more connected to their parents than other adolescents (Heinrich et al., 2006). African American adolescents, however, had less supportive friendships than other groups (Heinrich et al., 2006). Another study found that Asian American 16-year-olds had lower quality best friendships and general friendships than Black 16-year-olds (Way & Greene, 2006). European American adolescents also exhibit more extreme thinking about peers and more unsupervised socializing with peers than African Americans (Goldstein et al., 2005). On the other hand, Levitt and her colleagues (Levitt, Guacci-Franco, & Levitt, 1994) found no differences between different ethnic groups in the overall amount of support received by children.

*Family Structure.* In some cases, the structure of social relations, particularly family structure, has been investigated as a correlate of the quality and/or effects of relationships. For instance, in one study, the adolescent children of single mothers reported warmer and closer sibling relationships than did the children of married mothers (East & Khoo, 2005). Participants from intact families were also more likely to retrospectively report receiving sufficient support from their fathers as children (Finley & Schwartz, 2007). In addition, older sisters (ages 15-19) who were themselves mothers had less conflict with their younger siblings than those who were not mothers (East & Khoo, 2005). Birth order, on the other hand, was not related to second graders' relationships with mothers, siblings, or friends (Stocker, 1994).

The structure, composition, and quality of social relations vary greatly between individuals. In addition to the race, gender, and family structure differences described above, many other sources of potential variation exist, such as temperament, cognitive skill, socioeconomic status, and countless others. Moreover, these factors occur in concert with one another such that, for example, the social relations of Black girls and Black boys may differ in ways that are distinct from the differences in social relations between White girls and White boys. Overall, while some of the variation in social relations can be explained by demographics and family structure, much of it cannot.

#### *Implications of Social Relations throughout the Lifespan*

Describing the typical course of social relations throughout childhood, adolescence, and adulthood is an important endeavor in itself, as is understanding some of the sources of variation between individuals in these constructs. Such description alone, however, is only the first step in understanding the role that social relations play throughout individuals' lives. The logical next step both from a theoretical and a practical standpoint is to ask what implications these relationships have for individuals' well-being, both concurrently and at later phases of development. Within the literature examining such implications, investigators have employed both variable-centered and pattern-centered approaches. Both approaches have advantages, with the more traditional variable-centered investigations able to isolate the effects of specific aspects of social relations (e.g., warmth with mother), and pattern- (or person-) centered approaches able to capture a more complete picture of an individual's social experience.

### *Variable-Centered Approaches*

Some variable-centered approaches to examining the implications of social relations have focused on structural aspects such as the size or composition of the network, or on the presence or absence of a particular relationship. Others have focused on the quality or function of social relations, such as the total amount of social support received from others, or the positive or negative quality of a particular relationship.

*Implications of social network structure and composition.* Structural aspects of social relations have been shown to be associated both concurrently and longitudinally with a variety of constructs of interest to developmentalists. For instance, among girls, having a larger network has been associated with such factors as higher social competence (Feiring & Lewis, 1991a).

The composition of social networks may be particularly important with respect to implications. In retrospective reports, most adults listed at least one benefit to a sibling relationship, most commonly increased social competence, a stronger sense of self and improved parenting (Bedford, Volling, & Avioli, 2000). Because these reports were not limited to those with positive quality sibling relationships, simply having a sibling may be said to be beneficial at least in some way for most people. Results from the Social Relations and Health over the Life Course study have shown that children whose social networks are comprised of a higher proportion of family members report better health than their peers (Antonucci and Birditt, 2005) and exhibit fewer depressive symptoms as adults (Antonucci et al., 2005). Evidence suggests that both kin and nonkin adult networks may be important for the development of competence in school-aged children.

Specifically, having a grandparent in one's inner circle has been associated with better adjustment (Levitt, 2005).

The presence of friends in children's social networks has also been closely examined. Among 6- through 13-year-olds, the effects of having more same-gender, opposite-gender, and total friends in one's social network has been shown to correlate with competence in a variety of domains. The exact nature of the associations, however, differs between boys and girls. These same investigators also noted associations between competence and the frequency of contact not only with friends, but also with adults. Again, the nature of these associations differed between boys and girls. Thus, not only the number of people in the social network, but who those network members are, and how frequently one is in contact with them, is associated with children's concurrent competence in several domains (Feiring & Lewis, 1991a; 1991b).

Some longitudinal work has also examined structural aspects of relationships beyond the size, composition, and contact with the social network. For instance, whether one's parents are married to one another is a distinction that characterizes the way one's social interactions are structured, particularly for children, and may or may not influence the quality of a child's social relations. In one study using retrospective reports from young adults, Finley & Schwartz (2007) found that those from intact families were more likely to state that they received just the right amount of instrumental and expressive involvement from their fathers, while those whose parents were divorced frequently repeatedly wishing for more father involvement than they received.

In addition, discrete behaviors that set the context for the relationship but are not necessarily components of relationship quality can be considered situational factors under

the convoy model, and may have influences on both the relationship and its association with later outcomes. Mothers' monitoring of their adolescent's behavior falls into this category, and has been associated with later sexual risk-taking and drug/alcohol use by the adolescent (East & Khoo, 2005). Work using the sample to be examined here has also shown that mothers' stress levels are associated with children's well-being (Antonucci, Birditt, & Fuller, 2005).

Outside the family, structural aspects of social relations can also have effects on children's and adolescents' outcomes. For instance, peer acceptance or rejection is a marker of a child's status within the broader peer group, and forms a context within which social interactions take place and relationships are built, but it is separate from dyadic relationship quality with friends, and even from the number of friends a child includes in his/her social network. Peer rejection has been linked to a variety of negative outcomes in both the short and long-term, including school adjustment and dropout, psychological health, and delinquency (Bagwell, Schmidt, Newcomb, & Bukowski, 2001). Bagwell and her colleagues found that both peer rejection and friendship status (having a reciprocal friend or not) in 5<sup>th</sup> grade (approximately age 10) were associated with adjustment, school performance, aspiration level, and positive interactions with others at age 23 and 28. Having a friend was a stronger predictor of later positive interactions with others than was peer rejection, and also predicted lower depression in adulthood, but it was, counterintuitively, also associated with an increased likelihood of experiencing trouble with the law at age 28 (Bagwell et al., 2001). Among older adults, more frequent contact with friends was associated with greater life satisfaction (O'Connor, 1995). In some cases, however, the structure of social relations at one point

in time is not found to be associated with the outcomes of interest at a later point. For instance, 9-year-old children's social networks are not associated with self-reported competence in a variety of domains at age 13 (Feiring & Lewis, 1991b).

Overall, then, the extant research lends support to the notion that structural aspects of children's social experiences, including the existence of specific relationships, family structure, and peer acceptance, are associated with well-being and positive functioning indicators such as competence, mental health, and risk-taking behavior. Although it is impossible to confidently attribute causality from correlational research, the longitudinal nature of some of these associations does lend support to the possibility that the structure of social relations may actually be influencing other aspects of development.

*Implications of the quality of social relations.* Despite the importance of structural indicators like network size and composition, the quality of social relations have been empirically demonstrated in several studies (e.g., Ishii-Kuntz, 1990, O'Connor, 1995) to have an even more important impact on well-being. Both positive and negative relationship quality are frequently examined. Some investigations focus on support within specific relationships, whereas others aggregate all relationships of one type (e.g., "how much do you feel supported by your family members?") or even all relationships (e.g., "how often do you feel irritated by the people in your social network?").

Support from the social network is associated with school performance, achievement test scores, and behavior indirectly via self-concept among both 4<sup>th</sup> & 5<sup>th</sup> graders and 8<sup>th</sup> & 9<sup>th</sup> graders (Levitt et al., 1994). Total support is also directly related to achievement and loneliness among the older group (Levitt et al., 1994). The individual



relationships examined typically correspond with those identified as important in descriptions of children's and adults' social networks, with the most common focusing on parents, siblings, spouses, children, and friends, as age-appropriate. Low support overall has been linked with internalizing and externalizing problems, behavioral problems, lower self-concept, less sociability, and poorer social and adaptive skills (Demaray & Malecki, 2002; Jackson & Warren, 2000; Levitt et al 1993). Links have been found between more social support at one time and lower drug use, relationship, emotional, and other problems later on (Bagwell et al., 2001).

Relationships with parents have been studied extensively among children, adolescents, and adults. Self-reported warmth between 2<sup>nd</sup> graders and their mothers is negatively associated with loneliness and conduct problems (Stocker, 1994). Similarly, the quality of boys' relationships with their parents at age 10 predicted later problems with peer relationships, association with deviant peers, and antisocial behavior (Bank et al., 2004). Among adolescents, Gutman & Eccles (2007) found that when adolescents reported more negative interactions with their parents, they were more likely to be depressed, had lower self-esteem, and exhibited more delinquency than those who reported fewer negative interactions with their parents. When adolescents reported more positive identification with their parents, in contrast, they were less likely to be depressed (Gutman & Eccles, 2007). Connectedness with parents at one point in time has also been connected with both concurrent and later behavioral outcomes, such as risky sexual behavior, among adolescents (Heinrich et al., 2006). Adolescents' selection of peer groups as well as extreme peer orientation have also been related to characteristics of the family environment such as parental intrusiveness and positive family affect (Goldstein et

al., 2005). Relationships with parents remain important among adults as well. Adults reports of relationships with their family-of-origin, which included both parents and siblings, predicted their satisfaction in romantic relationships one year later, with a particularly strong effect for males' relationships with their mothers (Busby, Gardner, & Taniguchi, 2005). In some cases, specific dimensions of the parent-child relationship, such as the frequency of discussions of school dropout, have been associated with later outcomes, including early transition into adult roles (i.e., teen marriage and parenthood, school dropout; Howell & Frese, 1982).

The parent-child relationship has also been associated with educational outcomes. In one study, parents' expectations, parent-child discussion, parents' involvement in school activities, and parent-school academic contact when the child was in 8<sup>th</sup> grade were all associated with the child's college attendance (Sandefur, Meier, & Campbell, 2006). In another study, both mothers' and fathers' overall involvement (not necessarily academic involvement) with their children at age 7 was associated with educational attainment by the end of high school (Flouri & Buchanan, 2004). Some recent investigations have examined the pathways between such social characteristics and educational attainment. Results indicated that they frequently operate indirectly through the child's engagement in education. For instance, parental engagement (including monitoring and educational advice) influences their adolescent children's academic achievement through the adolescent's academic engagement (Plunkett, Behnke, & Choi, 2009). Similarly, Melby and her colleagues (2008) found that both supportive parenting and sibling relations were associated with educational attainment 13 years later through their influence on adolescents' academic engagement.

Sibling relationships have also been associated with concurrent and later well-being, particularly among children. The quality of sibling relationships has been associated with concurrent behavioral problems among 11- and 12-year-olds (Dunn, Slomkowski, Beardsall, & Rende, 1994). Children who report more warmth with their siblings also experience less loneliness, fewer conduct problems, and greater self-worth; whereas those who experience greater rivalry with siblings experience more loneliness, conduct problems, and depressive mood, and less self-worth (Stocker, 1994). The quality of boys' sibling relationships at age 10 is associated with later problems in peer relationships, association with deviant peers, and antisocial behavior (Bank et al., 2004). Low levels of positivity between siblings were also found to predict behavior problems (externalizing for older siblings and internalizing for younger ones) 2 years later. Interestingly, a child's own behavior toward his/her sibling has also been associated with later outcomes. Dunn and her colleagues (Dunn et al., 1994) have found that behavior toward a younger sibling during early childhood predicts externalizing behavior approximately 7 years later. This relationship was actually stronger for mother-reported than for observed behavior toward the sibling.

Sibling relationships during adolescence are also associated with later outcomes. High levels of warmth and closeness with a sibling predict subsequent decreases in drug and alcohol use, whereas power assertion by an older sibling predicts more subsequent high-risk behavior by his/her younger sibling (East & Khoo, 2005). Others have found that changes in the quality of the sibling relationship over time are associated with corresponding changes in the siblings' depressed mood (Richmond, Stocker, & Rienks,

2005). Among young adults, conflict with siblings (but not warmth) was associated with both loneliness and self-esteem (Sherman et al., 2006).

Rather than examining relationships with parents and with siblings separately, some studies have examined overall family climate. For instance, family intimacy has been found to be associated with both individual (self-esteem, psychological distress) and relational (family intimacy, relationship satisfaction, relationship violence) well-being 10 years later (Giordano et al., 1998). A more supportive family climate at age 9-11 is predictive of attachment to parents, attachment to peers, and personal strengths at age 15 (McGee et al., 2006). Bell & Bell (2005) found that a more positive family environment during adolescence predicted both marriage and well-being during middle age. One study found that support from close family was related to self-concept among White and Hispanic children (Levitt et al., 1993). Some have even found that adolescent family intimacy, but not friend intimacy, predicted early adult well-being (Giordano et al., 1998). Interestingly, both parents' marital hostility and the adolescent's hostility with friends predicted romantic hostility 3 years later, while parent-child hostility was only a marginal predictor (Stocker & Richmond, 2007). Throughout adulthood, satisfaction with family relationships is positively associated with well-being, especially among young adults (Ishii-Kuntz, 1990).

In some cases, specific aspects of family interaction may teach children social skills that can be transferred to relationships outside the family. For instance, the conflict strategies used by both mothers and older siblings when children were 2 ½ were associated with the children's ability to positively resolve conflicts with a friend at age 6. Interestingly, mothers' strategies were better predictors of children's later conflict skills

than were children's early conflict strategies, verbal fluency, or emotion understanding (Herrera & Dunn, 1997). Using a slightly different approach, Schermerhorn and colleagues (Schermerhorn, Cummings, DeCarlo, & Davies, 2007) assessed the impact of marital discord within the home, and found that it predicted Kindergarten-aged children's agentic behavior (e.g., active helping to diminish conflict) and behavioral dysregulation (e.g., aggression) about 1 year later, mediated through the children's emotional reactivity. Behavioral dysregulation, in turn, predicted not only internalizing and externalizing problems, but also even higher marital discord in the third year (Schermerhorn et al., 2007).

Outside the immediate family, the quality of friendships and relationships with extended family members has also been examined, and high-quality, supportive friendships shown to relate to better well-being (Cauce, 1986; van Aken & Asendorpf, 1997). For instance, Stocker (1994) found that 2<sup>nd</sup> graders who had warmer relationships with a friend were less lonely, had fewer conduct problems, less depressive mood, and higher self-worth than those with less warm relationships (Stocker, 1994). Parent- and teacher-reported attachment to peers during middle childhood has been associated with self-reported attachment to parents (as well as peers) in adolescence (McGee et al., 2006). Supportive friendships during adolescence continue to have important implications. Fourteen-year-olds who receive more friend support have better social self-concepts than those receiving less, and Black children who feel supported by their friends are more sociable than those who do not (Levitt et al., 1993). Others have more closely investigated the role of both extended family and friend support, noting that 10-year-old children who receive more support from their extended families are more sociable than

those who receive less, and girls who receive more such support have better self-concepts (Levitt et al., 1993). Satisfying friendships also predict well-being across adulthood (Ishii-Kuntz, 1990; O'Connor, 1995) and among older adults may be more influential than relationships with children (O'Connor, 1995). Adults high on well-being tend to have fewer, but more intimate relationships with close friends than do their counterparts with lower-well-being (McDonough & Munz, 1994).

*Variation in the implications of social relations.* Although the patterns described above have been found as overall trends in the implications of various aspects of social relations on well-being and behavior, these effects may not operate in the same way for all individuals. Some studies have tried to examine group differences in the implications of structural and qualitative aspects of social relations.

Many of these investigations have focused on gender differences in the implications of social relations, finding that these effects differ in interesting ways between boys and girls or men and women. Among children, the size, composition, and frequency of contact with members of the social network have different associations with competence in several domains for boys and for girls (Feiring & Lewis, 1991a; 1991b). Extended family support has been shown to predict the self-concepts of girls, but not boys (Levitt et al., 1993). On the other hand, when considering the predictive power of social relations over behavioral outcomes, at least one study has found no consistent gender differences in the longitudinal correlations between relationships with mothers or siblings and CBCL outcomes among children (Dunn et al., 1994), and other work has found that the association between adult friendships and well-being does not vary by gender (McDonough & Munz, 1994).

Among adolescents, gender differences in the implications of social relations remain. A study of risky sexual behavior by adolescents showed that mother-child communication and connectedness with parents was associated with less risky behavior 1 year later for girls, but not for boys (Heinrich et al., 2006). The family environment during adolescence also appears to predict midlife outcomes for both boys and girls, but is most correlated with marriage for men and with well-being for women (Bell & Bell, 2005). Some aspects of social relations may even have opposite effects on the well-being of male and female adolescents. Among European American adolescents, increases in negativity with parents were associated with increases in depression for girls and decreases in depression for boys (Gutman & Eccles, 2007). Adults' relationships also vary by gender, with women often more emotionally invested in relationships (e.g., Antonucci 2001; Antonucci, Akiyama, & Lansford, 1998). A recent examination of the adults in the current sample showed that women tend to perceive more negativity in their relationships with parents, spouses, and children than men do (Jackey, Birditt, & Antonucci, 2008).

In addition to gender differences, the implications of social relations may also vary among people with different ethnic backgrounds. For instance, mother's presence in the inner circle of the social network appears to be more salient for White and Hispanic than for Black children, and father's presence may be related to outcomes among Hispanic children only (Levitt, 2005). Similarly, support from close family members is associated with the self-concept of White and Hispanic, but not Black children, but support from friends is associated with sociability among Black children only (Levitt et al., 1993). When African American adolescents felt they were given more control over

decision-making by their parents, they were less depressed, but European Americans were more depressed under the same conditions (Gutman & Eccles, 2007). Thus, differences between racial/ethnic groups on social relations may be complex.

Although gender and race may be the most commonly examined sources of variation in the implications of social relations, there are certainly other relevant factors. For instance, family structure may affect the implications of relationship quality. In one study, retrospective reports of father support and involvement during childhood were positively correlated with young adult well-being only for those participants whose parents remained married (Finley & Schwartz, 2007).

Overall, then, variable-centered approaches have shown that specific aspects of social network structure, network composition, and social support have important implications for outcomes including well-being and education. Specific associations vary somewhat by developmental period, as well as personal characteristics such as gender and race.

### *Pattern-Centered Approaches*

A growing focus on pattern (or person-) centered approaches to developmental psychology more generally has been reflected in the study of social relations. Several studies have used clusters of individuals (some with adults and others with children) to examine profiles of relationships rather than using each aspect as a separate predictor of outcomes. Studies that take this approach aim to avoid the potential for masking individual differences that can occur when looking at the average influence of a single variable across individuals. Although fewer in number than examinations using variable-



centered approaches, examinations using pattern-centered approaches have also focused on both structural aspects of the social network and the quality of social relations.

*Implications of social network structure and composition.* Some work has examined the implications of particular patterns of social relations characterized by the individuals present or absent from the social network. For instance, Birditt and Antonucci (2007) found that well-being differed between those who had best friends present and those who did not. Moreover, the implications of relationship quality profiles varied between these groups as well.

*Implications of the quality of social relations.* Several approaches have been taken to assess the impact of multiple social relationships simultaneously. One of the most common pattern-centered strategies to examining social relations is to group individuals according to their support sources. For instance, individuals who fall into a “lone wolf” pattern of not receiving high levels of support from any social partners also tend to have poorer adjustment than either their family- or friend-supported counterparts, both in childhood and old age (Takahashi, Tamura, & Tokoro, 2007). Other interesting work with Japanese samples has shown that college students’ personal narratives and adjustment to college differed in systematic ways based on their classifications as friend-focused vs. family-focused type (Takahashi & Majima, 1994)

Despite the heavy reliance on close family for support identified in variable-centered examinations, close family alone may not be sufficient support for children. Some investigations have found that school-aged children who receive support from close family members only had less positive self-concept and were more lonely than those who also received support from either extended family or friends. Those receiving

support from more than just close family also had greater self-esteem two years later. Among those who started out with support from close family members only, those who were also supported by extended family 2 years later were less lonely than those who remained supported exclusively by close family. Those who added support by friends over the 2 year period had both higher self-esteem and less internalizing behavior than those who were consistently supported by close family only (Levitt et al., 2005). Middle and high school students who received support from their teachers plus at least one other source (parents and/or friends) showed the highest scores on constructs such as school attendance, hours spent studying, avoiding problem behavior, school satisfaction, school engagement, self-efficacy, and grades (Rosenfeld et al., 2000).

Takahashi (2005) has focused on individuals' affective relationship type, defined by who functions as their focal figure, fulfilling the greatest amount of support needs. Her work has shown that the affective relationship type has implications for the functions that other social partners fill, the individual's adjustment to new environments, and psychological adjustment and well-being (Takahashi, 2005).

Among adults, several relationship quality profiles have been identified. Yet, these profiles differ somewhat between married and unmarried individuals with and without best friends. For instance, among those married with a best friend, 5 patterns were identified based on the quality of relationships with spouses, family, and friends. Those individuals exhibiting each of the five patterns of relations differed on well-being indicators including life satisfaction, depressive symptoms, and self-esteem. In contrast, among married individuals without a best friend, 6 different patterns of social relations were evident, despite having fewer relationships to draw on. Well-being also differed

among individuals exhibiting these 6 patterns. In both cases, those exhibiting patterns of social relations characterized by high quality across relationships showed the greatest well-being (Birditt & Antonucci, 2007).

Interestingly, connections have been found in the opposite direction as well, with earlier well-being predicting later relationship patterns. In one study, children who were initially more lonely or whose loneliness increased over 2 years were less likely to have support networks that included both close and extended family at the end of the 2-year period. On the other hand, those with better initial self-concepts were more likely to report support from extended family and/or friends in addition to close family 2 years later (Levitt et al., 2005). Thus, connections between social support and well-being during childhood are likely bidirectional.

Another approach to examining patterns of social relations entails combining multiple characteristics of the same relationship into a descriptive pattern. For instance, among college students, those who have harmonious relationships with their same-gender friends, characterized by both high warmth and low conflict, were less lonely and had better self-esteem than those with either affect-intense (high warmth and high conflict) or low-involved (low warmth and low conflict) friendships (Sherman et al., 2006).

Among the first studies to examine patterns of social relations including both structural and functional aspects of such relationships, Fiori, Smith, & Antonucci (2007) created profiles of social relations among German older adults. They identified 6 clusters of individuals, each representing a particular profile of social relations based on both structural (network size, proximity, frequency of contact with family and with friends, and activities engaged in) and qualitative (proportion of network members that are

emotionally close, total instrumental support and total emotional support received from network members, and satisfaction with friendships and with family life) characteristics of social relations. The researchers found that membership in the clusters was associated with demographic factors (age, sex, education), as well as indicators of well-being (depressive symptoms, subjective well-being, and morbidity). The family-focused group had the lowest levels of depressive symptoms, but the group that was unmarried and spent a lot of time with supportive friends had the greatest subjective well-being. Interestingly, the group that was unmarried and spent a lot of time with unsupportive friends had the lowest levels of morbidity (Fiori et al., 2007), demonstrating that the implications of social support do not always follow intuitive patterns.

Some types of relationships have been found to function synergistically in the effects they may have on well-being. For instance, the quality of relationships with both parents and siblings not only each independently predict later peer relationship problems, deviant peer association, and antisocial behavior, but their combined effect can amplify the risk for antisocial behavior beyond the additive effects of each acting alone (Bank et al., 2004). On the positive side, supportive friendships have been shown to enhance the protective effect of increased parent-child connectedness on risky sexual behavior among adolescents (Heinrich et al., 2006), and sexual behavior is most influenced by peer norms if adolescents have not discussed sexual behavior with their parents (Whitaker & Miller, 2000). Similarly, those 2<sup>nd</sup> grade children who had low warmth with both mothers and friends had worse well-being in several domains than those who had high warmth in at least one of the two relationships (Stocker, 1994).

Not all investigations find that the quality of social relations is associated with

other constructs, however, and those that do find associations do not necessarily find them with all outcomes. For instance, although which groups of network members children receive support from is associated with self-concept and loneliness, it was not associated with externalizing problems (Levitt et al., 2005).

Overall, examination of multiple relationships simultaneously appears to be beneficial in predicting the implications of social relations among children, adolescents, and adults. By identifying profiles of social relations, investigators have begun to identify the ways in which an individual's social relations as a whole might impact behavior and well-being.

## Chapter II: The Present Study

### *Contributions of the Dissertation*

Although much work has been done on the topic of social relations, many questions remain unanswered. Moreover, there is a need for a more comprehensive picture of the correlates of children's social relations that can only be achieved by studying both the social network and social support as they develop and change over time. This dissertation study was designed to address this need. It also took advantage of longitudinal data that has recently become available to assess the implications of childhood social relations over a longer period of time than has typically been possible in previous studies.

Despite some overlap, the two major theoretical perspectives discussed above have tended to focus on different segments of the lifespan. Those studying the effects of early experiences necessarily focus on children, particularly young children, and may examine either concurrent or longitudinal associations with developmental outcomes. On the other hand, those theories promoting the effects of social support, particularly within a social networks perspective, most commonly focus on adults or adolescents, and typically examine concurrent or short-term effects. The convoy model proposes long-term effects throughout development, but most empirical examinations of this model have focused on adulthood, some on childhood, but few on the long-term effects across the transition from childhood into adulthood. This study was designed to contribute to our theoretical understanding of social relations and their implications by examining social

relations in middle childhood and assessing their implications for both adult social relations and developmental outcomes in early adulthood.

A second major contribution of this study is the use of both variable-centered and pattern-centered approaches to examine the developmental implications of social relations. Each approach has advantages over the other, yet most investigations make use of only one approach. Moreover, even among those studies that have examined patterns of social relations, very few have included both structural and qualitative aspects of social relations in establishing patterns. This dissertation was designed to identify patterns of social relations based on network structure, network composition, and social support. Moreover, the study used both variable- and pattern-centered approaches to examine the implications of social relations. This approach was intended to allow identification of the implications of children's social networks without obscuring the implications of either specific aspects of social relations or individual differences in patterns of relations. Use of the two approaches to complement one another was expected to contribute to a more nuanced understanding of the implications of childhood social relations than would have been possible with either approach alone.

### *Research Questions and Hypotheses*

This dissertation addressed four main research questions. The first question sought to identify patterns of social relations, and to address continuity and change in these patterns from childhood into adulthood. The remaining three questions sought to examine the implications of these patterns, as well as individual aspects of social relations, on three sets of outcomes. The particular segment(s) of the theoretical model addressed by each question are depicted in figures 2 through 5. Based on the preceding review of theoretical and empirical work on social relations, particularly among children, several hypotheses are presented regarding each research question.

1. What are the patterns of social relations evident among children and adults? To what extent is there continuity between childhood patterns of social relations and adult patterns of social relations? (Figure 2)

Descriptions of children's and adults' social relations using pattern-centered approaches were expected to add to the variable-centered descriptions presented in the introduction by identifying common patterns of social relations among children and common patterns among adults. Because little previous research has attempted to create social relations profiles among children or young adults based simultaneously on social support as well as network structure and composition, hypotheses regarding the specific nature of these profiles were somewhat speculative. Nevertheless, based on Levitt's work (Levitt et al., 2005), nearly all children were expected to be classified into patterns in which parents play an important role. Patterns were hypothesized to vary primarily in the extent to which extended family and friends are included in social networks and relied upon for social support. Profiles of social relations among children were hypothesized to



vary by age, with older children (11-12) more likely than younger children (8-10) to exhibit patterns that placed substantial emphasis on friendships, as these children approach adolescence.

Profiles of young adults' social relations were expected to show that most adults receive support from multiple sources, based on the work of Takahashi and colleagues (2002). A strong source of variation in profiles of young adults' social relations was expected to be the existence and importance of a romantic partner, as many of these individuals were expected to be in the process of making the normative transitions into adult family life. Based on the work of Furman & Buhrmester (1992), relationship profiles were expected to differ somewhat between young men and young women, with young men more likely to fit patterns that emphasize a romantic partner over family and friend relationships. Patterns were also expected to differ between the younger and older participants, with those who are older more likely to exhibit profiles focused on romantic partners and/or children.

Within patterns of social relations, some continuity was expected over time, consistent with prior work with this sample using variable-centered approaches (Antonucci et al., 2005). Moderate associations were hypothesized between profile membership during childhood and profile membership during adulthood, consistent with the convoy model, which proposes substantial stability in convoy membership over time (e.g., see Antonucci et al., 2004). The convoy model also allows for changes, particularly during major transitions and movement through the life cycle, however. Thus, reflective of the developmental transitions these participants have experienced over the 12 year period between waves, the extent of identifiable continuity between waves was not

expected to be high. Specific hypotheses were not proposed prior to identification of profiles. In general, children who exhibited profiles that place an especially strong emphasis on one type of relationship were hypothesized to be more likely than others to exhibit patterns that emphasize the same type of relationship during adulthood. Children who exhibited non-normative patterns of social relations during childhood (e.g., no or very little support from parents) were hypothesized to exhibit patterns of social relations during adulthood that were characterized by lower quality relationships. Moreover, the possibility of heterotypic continuity, defined by continuity in meaning, but different manifestations during different developmental periods (e.g., Rutter, 1992), was expected. Thus, while many children were expected to exhibit adult patterns of social relations similar to their childhood patterns, a substantial number of children are also expected to exhibit different patterns of social relations in childhood and adulthood, due to the substantial developmental changes that have occurred between waves.

2. Do patterns and/or individual aspects of social relations during childhood predict well-being during adulthood? (Figure 3)

Consistent with the convoy model and other theories emphasizing the importance of early relationships and/or continuity in relationships over time, social relations during childhood were expected to be associated with early adult well-being. For instance, based on prior research (Bagwell et al., 2001; Bedford et al., 2000), having a sibling in the social network and having a friend in the social network during middle childhood were each expected to be associated with better well-being during early adulthood. Similarly, based on previous research (Bank et al., 2004; Dunn et al., 1994; East & Khoo, 2005; Finley & Schwartz, 2007; Goldstein et al., 2005; Gutman & Eccles, 2007; Heinrich et al.,

2006; Richmond et al., 2005), more positive support received from parents during childhood was hypothesized to be associated with better well-being by early adulthood. More negative support from parents during childhood, on the other hand, was expected to be associated with greater levels of depressive symptoms during early adulthood. Similarly, more positive and less negative support from siblings during middle childhood may also be associated with lower depressive symptoms.

Patterns of social relations during childhood were also expected to be associated with well-being during adulthood. Based on previous work with children and adults (Fiori et al., 2007; Heinrich et al., 2006; Levitt et al., 2005), profiles characterized by positive support from multiple sources, particularly from sources both within and outside the immediate family were expected to be associated with better well-being during early adulthood, including higher self-efficacy and lower likelihood of experiencing depression. In addition, non-normative patterns of childhood social relations (e.g., no or low support from parents), were hypothesized to be associated with poorer well-being.

3. Do patterns and/or individual aspects of social relations during childhood predict concurrent orientation toward educational pursuits? (Figure 4)

Children's social relations were also hypothesized to be related to their educational orientation, operationalized as the extent to which children endorse education-related ideal selves. In particular, positive quality relationships with parents, especially parents who are more educated themselves, were expected to be associated with greater orientation toward education. Educational orientation per se has not been frequently studied, particularly with respect to social relations, but some related concepts provided a basis for proposing preliminary hypotheses. In an examination of adolescents'

hopes and expectations for their own educations, Ensminger and Slusarick (1992) found that these were related to mothers' hopes and expectations for the child, the extent to which adolescent girls confided in parents about their school work, and to boys' mothers' own education. Educational orientation was predicted, in turn, to be associated with subsequent educational attainment.

4. Do patterns and/or individual aspects of social relations during childhood predict educational attainment and/or attainment of adult status in young adulthood, controlling for age? (Figure 5)

Consistent with the convoy model and other theories emphasizing the importance of early relationships and/or continuity in relationships over time, social relations during childhood were expected to be associated with early adult educational attainment. For instance, based on previous research (Bank et al., 2004; Dunn et al., 1994; East & Khoo, 2005; Ensminger & Slusarick, 1992; Finley & Schwartz, 2007; Flouri & Buchanan, 2004; Goldstein et al., 2005; Gutman & Eccles, 2007; Heinrich et al., 2006; Richmond et al., 2005), more positive support received from parents during childhood was hypothesized to be associated with higher educational attainment by early adulthood. Similarly, more positive and less negative support from siblings during middle childhood was expected to be associated with higher educational attainment by early adulthood. Having one or more friends in one's social network during childhood was also predicted to be associated with later educational attainment, based on previously documented associations between childhood popularity with peers and later educational attainment (Dubow, Huesmann, Boxer, Pulkkinen & Kokko, 2006).

Based on previous work (Heinrich et al., 2006; Levitt et al., 2005), profiles characterized by positive support from multiple sources, particularly from sources both within and outside the immediate family were expected to be associated with greater educational attainment in early adulthood. In addition, non-normative patterns of childhood social relations (e.g., no or low support from parents), were hypothesized to be associated with lower educational attainment during early adulthood.

At wave 2 of this study, participants were 20-27 years of age, with the vast majority (94%) falling between 21 and 25. These participants thus fall into a demographic group that has received much attention in recent years: emerging adults. This label is typically applied to individuals who are in the process of adopting adult roles but may not yet consider themselves or be considered by others fully adult as yet (e.g., Arnett, 2000). Research indicates that subjective perceptions of having entered adulthood more often focus on personal characteristics such as taking responsibility for one's actions or exhibiting competence to make independent decisions than on demographic indicators or social roles such as attaining a specific age or being married (e.g., Horowitz & Bromnick, 2007; Nelson & Barry, 2005). Nevertheless, studies also indicate that entry into adult roles, and particularly the timing of this entry, may have important consequences for individuals' well-being. Although infrequently examined, the timing of entry into such roles may also be associated with prior social interactions. For instance, previous work has found that early transitioning into adult roles (i.e., teen marriage and parenthood, school dropout) is associated with some aspects of parent-child and peer relationships (e.g., Howell & Frese, 1982).

Although this study does not have data on perceptions of adulthood, it does have data on whether or not emerging adult participants have entered into a variety of adult roles, such as marriage, parenthood, living independently from parents, and workforce entry. Thus, this sample provides an interesting opportunity to examine whether childhood social relations are predictive of the extent to which emerging adults have entered into these adult roles. In this study, therefore, associations are predicted between social relations and adult roles. However, because the participants at wave 2 are in their early twenties, adult role status is no longer necessarily “early” for them. Moreover, patterns of adult roles among this group (e.g., married with children; full-time student living with friends) have yet to be established empirically. Therefore, the specific nature of associations between childhood social relations and subsequent adult role status was not predicted.

### *General Hypotheses*

Overall, by using both variable-centered and pattern-centered approaches to examine each aspect of social relations separately and simultaneously, it was anticipated that some aspects of childhood social relations have a stronger predictive power over early adulthood well-being than do other predictors. For instance, consistent with much past work (e.g., Ishii-Kuntz, 1990, O’Connor, 1995), social support is expected to be a stronger predictor of outcomes than is network structure. Also consistent with some past work (e.g., Giordano et al., 1998), childhood support from family members was predicted to be a stronger overall predictor of adult well-being and educational attainment than was support from friends. Due to the different functions each type of relationship serves in a child’s life (e.g., Bedford et al., 2000; Furman & Buhrmester, 1992; Herrera et al., 1997;

Reid et al., 1989; Schooler et al., 2007; Stocker, 1994), different types of relationships (e.g., parent, sibling, friend) were hypothesized to exert effects on different aspects of adulthood well-being and functioning (e.g., depression, life satisfaction, educational attainment).

In addition, consistent with the convoy model, personal factors including age, gender, and temperament are expected to influence children's social relations and their associations with later outcomes. For instance, consistent with the work of Dunn and her colleagues (1994), friendships and immediate family relationships were expected to be more influential among older (11-12) than younger (8-10) children, whereas extended family relations may have a stronger correspondence with later outcomes among initially younger children, consistent with Levitt's work (e.g., see Levitt et al., 1993). With respect to gender, the presence of a father in the social network may be more influential for boys than for girls, whereas support received from extended family members may have a greater impact on the self-concepts of girls than boys (Levitt et al., 1993).

#### *Emerging Adulthood as a Context*

Given the nature of the early twenties as a period characterized, for many, by a lack of stability in both social relations and occupation, an argument could be made that examining both continuity in social relations and the effects of childhood social relations on adult outcomes would be better accomplished during the late twenties or thirties, when many people are settled into more stable and long-lasting employment and family situations. It is likely to be the case that greater continuity in social relations from childhood, and possibly also stronger associations between childhood social relations and adult outcomes, would be found once participants were more stably settled into their

adult roles. However, as an important period for exploration, and potential turning point in individuals' lives, emerging adulthood is also a pivotal time at which to examine these issues. Childhood social relations may be associated with some aspects of functioning during emerging adulthood that can predict the success with which individuals are able to navigate this potentially stressful and confusing period of the lifespan. In addition, some aspects of social relations during earlier periods may relate to the extent to which certain individuals are more likely than others to experience a prolonged period of exploration between adolescence and adulthood. Finally, because the early twenties are a period during which many crucial life decisions are made (career, partner, personal values), a better understanding of the support available to young people as they navigate such decisions may be both theoretically and practically important. Moreover, examining the status of participants' social relations and entry into adult social and occupational roles at this point sets the stage for a potential additional follow-up later in adulthood, allowing a better examination of trajectories than would be possible with only the childhood and adulthood time points.



### **Chapter III: Methodology**

This dissertation made use of data collected as part of the Social Relations and Health over the Life Course Study (Antonucci, PI).

#### *Participants*

The Social Relations and Health over the Life Course study is a regionally representative sample of people from the greater Detroit metropolitan area (see Akiyama et al., 2003, for details). The targeted sample for this dissertation included those participants who were children (age 8 – 12) in the first wave of the study (1992). Participants were interviewed in their homes for approximately one hour using an interview designed specifically for the child sample. Mothers of participating children also participated in the study, and were interviewed in their homes for approximately one hour using the adult version of the interview; 205 mother-child pairs participated in Wave 1.

In the second wave, collected in 2005, 150 (73.2%) of those who were children in 1992 and 161 of their mothers (78.5%) were reinterviewed by telephone. Researchers have found that responses do not tend to vary between telephone and in-person survey methods (Herzog & Rodgers, 1988; Herzog, Rodgers, & Kulka, 1983). The child participants were 20-27 years of age (94% between 21 and 25) by wave 2, and therefore were interviewed using the standard adult version of the questionnaire at this time. Of the child non-respondents, 3 were deceased, 22 could not be located, 15 refused, and 15 were located but unable to participate for various reasons (e.g., incarcerated, incapacitated,

unavailable during study period). Of those wave 1 children who were alive at wave 2, 73.9% participated in the study. Of the mother non-respondents, 4 were deceased, 9 could not be located, 23 refused to participate, and 8 were located but unable to participate. Of those wave 1 mothers who were alive at wave 2, 80.1% participated in the study. Mothers were aged 24 to 59 at Wave 1 ( $M = 36.7, SD = 5.8$ ), and 37 to 72 at Wave 2 ( $M = 49.5, SD = 5.8$ ) and. Table 1 provides the demographic profiles of the samples at Wave 1 and 2.

### *Procedure*

Interviews were conducted by professional interviewers. Children completed diagrams of their social networks and answered questions regarding their close relationships, health, feelings about self and daily life. Adults (mothers at wave 1 and the mother and child sample at wave 2) completed diagrams of their social networks and answered questions regarding their family structure (including education and work status), health, close relationships, personality characteristics, feelings about self, emotional well-being, daily life (including daily hassles and life events), demographic information, values (at wave 2), and (for mothers at wave 1) their participating child.

### *Childhood (Wave 1) Measures.*

*Personal characteristics at wave 1.* At wave 1, mothers reported their child's date of birth, gender, current grade of school, and their own race (White, Black, Native American, Asian, Hispanic, and/or other). These variables were used to determine children's chronological **age**, **gender** 1 (*boys*) or 2 (*girls*), **grade** in school (2 – 8), and **race** 1 (*not White*) or 2 (*White*). Child's age was further categorized into **younger** 0 (8-10 years;  $n = 100$ ) and **older** 1 (11-12 years;  $n = 102$ ). Mothers reported on their 8-12-

year old child's **Type A characteristics** by answering interview questions from the Matthews Youth Test for Health (Matthews & Angulo, 1980). This measure contains two scales assessing the child's **competitiveness** and **impatience-aggression**. Descriptive statistics for children's personal characteristics can be found in Table 1.

*Situational characteristics at wave 1* To assess the extent of serious stressors in the child's life, each child participant was asked a series of question regarding **stressful life events** (e.g., illness, starting a new school, bullying). For each of 10 events, children indicated whether it had (1) or had not (0) occurred within the past year. The total number of events the child reported experiencing was used as an indicator of life stress. Children reported between 0 and 8 stressful life events within the past year (mean = 3.1, sd = 1.7).

Children's mothers' characteristics were also considered situational factors at wave 1. Mothers participated in the adult sample of the Social Relations study, and provided information about their own lives, including their year of birth, marital status, and highest level of education completed. Mothers' also reported on their employment status and their own social relations. Each of these maternal factors was treated as a component of the environment (situation) in which the child's social relations and well-being were situated. **Maternal age** was calculated from mothers' self-reported year of birth. Mothers were 24 to 59 years of age at wave 1 (mean = 36.7, sd = 5.8). **Mothers' education** was self-reported in years (mean = 12.9, sd = 1.9, range 7-17). Seventy-one percent of mothers (n = 146) reported being **married/partnered**. Mothers' reported on their current **employment status**. Approximately 52% of mothers (n = 107) were currently working, 34% (n = 70) were full-time homemakers, 10% (n = 20) were

unemployed or temporarily laid off, and the remaining 4% ( $n = 7$ ) were either retired, students, or involved in a work arrangement that did not fit any of these classifications.

Finally, mothers reported on the positive (5 items, e.g. “I feel that my mother supports me, that she is there when I need her”) and negative (2 items, e.g., “my child gets on my nerves) **qualities of their relationships** with a **child** (not necessarily the focal child), their **mother**, their **spouse**, and their **best friend**. Each item was rated on a 5-point scale from “agree” to “disagree”. A mean score was created for the positive items and a separate mean score for the negative items, scored such that higher scores indicated greater positive and negative quality, respectively. On average, mothers reported high levels of positivity within all relationships (means from 4.5,  $sd = 0.9$  for own mother to 4.9,  $sd = 0.2$  for best friend). Levels of negativity reported were lower (means from 1.9,  $sd = 1.1$  for best friend to 3.3,  $sd = 1.3$  for child).

*Social network structure at wave 1.* Participants completed diagrams of their social networks using the hierarchical mapping technique (Antonucci, 1986; see Figure 6). Children were asked to place the people who were important to them in the three concentric circles surrounding the representation of them (a circle with the word “you” in it). They were instructed to place those individuals who “you feel so close to that it’s hard to imagine life without them” in the innermost (first) circle, those who are “not quite that close, but who are still very important to you” in the middle (second) circle, and those “you haven’t already mentioned who are close enough and important enough in your life that they should also be placed in your diagram” in the outermost (third) circle.

For the first 10 individuals listed, children were then asked the person’s gender, the child’s relationship to him/her, the person’s age, how many years the child has known

him/her, whether the person lives within an hour's drive of the child, and how frequently the child is in contact with that person. Responses to these questions were used to create variables indicating the **total number** of individuals in the child's social network, the number of individuals in the **inner, middle, and outer** circles, and the **average age, time known, proximity, and contact** with network members. Descriptive information regarding the structure of children's social network can be found in table 2.

*Network composition at wave 1.* Variables were created to indicate whether the social network contained any (1=yes; 0=no) **immediate family** (including **mother, father, brother, and sister**), any **extended family** (including **grandmother, grandfather, aunt/uncle, cousin, niece/nephew, and great grandparent**), any **friends**, and any **others** (e.g., **neighbor, professional, godparent**), and if so, **how many**. Similar variables were created for each specific relationship type (e.g., mother, cousin). In addition, the **proportions of network members who are family, friend, adult, child, male, and female** were calculated by dividing the number of network members who fit each category by the total number of individuals in the network (e.g., number of family members/ total network size = proportion family). Descriptive information regarding the composition of children's social networks can be found in table 3.

*Social support at wave 1.* Children were also asked a series of questions regarding who fulfills specific social support functions (20 items; 18 positive, e.g., "if you had a great treasure, who would you want to show it to?"; "who do you like to play with most when you are playing outside (around the house)?", and 2 negative, e.g., "who gets on your nerves the most?"). Children were shown pictures depicting each situation. Responses to these questions were used to create variables indicating the **number of all**

**support functions, number of positive functions, and number of negative functions** filled by mother, father, sibling(s), friends and extended family. Indicators were also created for which relationship fulfills the **most total, positive, and negative functions**. The **number of supporters** was assessed by counting the total number of different relationships types reported to fill at least one function. Children reported between 1 and 7 different relationship types (e.g., mother, father, sibling) fulfilling at least one support function, with the vast majority (98.5%) reporting at least 2 support providers. On average, children reported receiving support from 3.8 different relationship types (sd = 1.2). See descriptive information regarding children's social support in table 4.

*Well-Being at wave 1.* Mothers were asked whether their participating child had any **Chronic illnesses**. Responses were coded as yes (1) or no (0). Mothers of 34 children (16.6%) reported chronic illnesses in their children, with the most common being respiratory problems (18 children) and allergies (20 children). Child participants also reported on their own health, both generally and relative to others. **Self-rated health** was evaluated by the question "How would you rate your health right now? Would you say it is excellent, fairly good, average, not very good, or poor?", and responses were coded such that higher scores corresponded to better health. On average, children rated their own health highly, with a mean of 4.2 (just over "fairly good") on the 1-5 scale (sd = 0.7). No child rated his/her health as "poor". Perceived **health relative to others** was assessed using the question "Compared to most children your age, would you say that your health is much better, better, about the same, worse or much worse?". Responses were again coded so that higher scores corresponded to better health relative to others. Children on average rated their health a 3.5 (halfway between "about the same" and

“better” than others) ( $sd = 0.8$ , range = 1-5). The composite **physical health** was computed as the mean of the standardized scores on these three variables ( $m = 0.0$ ,  $sd = 0.6$ , range -1.4 – 1.8).

Children’s **depressive symptoms** were assessed using the Children’s Depression Inventory (CDI; Kovacs, 1985). On each of 19 items, children were asked to indicate which of 3 statements best applied to them (e.g., I am sad once in a while/ I am sad a lot / I am sad all the time). Statements were coded such that higher scores indicated greater depression, and the mean score across all 19 items was calculated to create an overall depressive symptoms score. On average, children reported low levels of depression, with a mean of only 1.22 ( $sd = 0.18$ ) on the 1-3 scale. The lowest depressive symptoms score was 1, and the highest 2.05.

**Self-efficacy** was assessed using 21 items adapted from Connell’s (1985) measure of children’s perceptions of control. Children were asked to what extent they agreed with statements such as “when I make plans, I am certain I can make them work”. Responses were on a 5-point scale from “strongly agree” to “strongly disagree” and were coded such that higher scores indicated greater feelings of self-efficacy. Mean scores were calculated across items to create the child’s self-efficacy score. These scores ranged from 2.4 to 4.8 on the 1-5 scale (mean = 3.8,  $sd = 0.5$ ). **Self-esteem** was calculated in a similar fashion, using 10 items from the Rosenberg self-esteem scale (1965), such as “In general, I am satisfied with myself”. This assessment utilized a 4-point scale, with the additional option of choosing “I don’t know”. Self-esteem scores, on average, were around 3.4 on the 1-4 scale ( $sd = 0.4$ ). The lowest self-esteem score was 2.1, and the highest 4.0. The

composite **feelings about self** was computed as the mean of the standardized scores on these two variables ( $m = 0.0$ ,  $sd = 0.9$ , range  $-2.4 - 1.8$ ).

*Educational orientation at wave 1. Intellectual/Educational Orientation* was examined using the child's responses to the Ideal Self measure. Children were given a list of 20 items (e.g., "I'd like to be a child who is good at sports") and asked to circle which items described their feelings. Each response was recorded as yes (1) or no (0). After all items had been responded to as yes/no, children were asked "Out of all the things you have circled, which are the three you would most like to be? To assess educational orientation, three items from this measure will be examined in detail: "I'd like to be a smart child" "...a child who is good at schoolwork" and "... a child who thinks deeply". Although 98% ( $n=201$ ), 97% ( $n = 199$ ), and 82 % ( $n=169$ ) of children endorsed these items, respectively, only 29% ( $n = 59$ ), 26% ( $n = 54$ ), and 2.4% ( $n = 5$ ) included them in their top 3, respectively. Nearly half ( $n = 102$ ) of children included at least one of these items in their top 3 choices, but only 8% ( $n = 16$ ) included 2, and none included all 3. Educational orientation was operationalized as the number of these three items the child endorsed (endorsement) and the number he or she included in the top three items (priority).

#### Early Adulthood (Wave 2) Measures

*Situational characteristics at wave 2.* At wave 2, the **stressful life events** measure was similar to that used in wave 1, but contained substantially more items (43). The total number of events participants reported experiencing over the past year was used as an indicator of life stress. Young Adults reported between 0 and 23 stressful life events within the past year (mean = 7.0,  $sd = 4.4$ ). They also reported on a scale from 0 (not at



all) to 3 (very) how stressful each reported event was for them. The average participant reported that only 1.1 (sd = 2.9) life events had caused them stress in the past year. The greatest number of reported events causing stress was 18. On average, each life event experienced was between “not very” and “somewhat” stressful ( $m = 1.8$ ,  $sd = 0.7$ ).

Participants also reported their **family income** (own plus spouse’s). The median income was approximately \$25,000 (53.1% of participants reported incomes in the \$20,000 to \$24,999 category or below).

*Social network structure at wave 2.* Again at wave 2, participants completed diagrams of their social networks using the hierarchical mapping technique (Antonucci, 1986; see figure 6), and were asked follow-up questions regarding the first 10 network members. As in wave 1, the **total number** of individuals in the child’s social network, the number of individuals in the **inner**, **middle**, and **outer** circles, and the **average age**, **time known**, **proximity**, and **contact** with network members were calculated based on these responses. Descriptive information regarding the structure of young adults’ social network can be found in table 5.

*Network composition at wave 2.* The composition of participants’ social networks was also assessed in essentially the same manner at wave 2 as at wave 1. At wave 2, the types of relationships were expanded to include **spouse/partner**, **children**, and **in-laws**. Spouse and children became part of the immediate family category, while in-laws (parents and siblings) were added to the extended family category. Descriptive information regarding the composition of young adults’ social networks can be found in table 6. Note that because fewer participants included grandparents, aunts, uncles, or cousins in their social networks, and to make up for the addition of additional variables

reflecting romantic partners and children, the inclusion of any extended family was used in place of the three individual variables at wave 2.

*Social support (relationship quality) at wave 2.* Relationship quality was assessed differently for adults and for children in this study. Young adults' relationship quality at wave 2 was assessed in a similar manner as their mothers' relationship quality was assessed during wave 1. That is, they responded to a series of questions regarding the quality of their relationship with their spouse/partner, child, mother, father, sibling, and friend. Most of these items (e.g., "when my mother is having a hard time, I want to help her", "I feel that my spouse believes in me"), were answered on a 5-point scale from "agree" to "disagree". These items were composited to create scales of **positive relationship quality** (5 items), and **negative relationship quality** (2 items). Descriptive information regarding relationship quality can be found in table 7.

*Well-Being at wave 2.* Both physical and psychological well-being were again examined at wave 2. Respondents indicated whether they had any **chronic illnesses**. Responses were coded as yes (1) or no (0). Thirty-three respondents (22.0%) reported chronic illnesses, with the most common being allergies (17 respondents), asthma (14 respondents), and headaches/migraines (11 respondents). Participants also rated their **own physical health**, both generally and **relative to others**, in the same way as during wave 1. On average, young adults rated their own health highly, with a mean of 4.0 (just over "fairly good") on the 1-5 scale (sd = 0.8). No respondent rated his/her health as "poor". Participants on average rated their health relative to others a 3.5 (halfway between "about the same" and "better" than others) (sd = 0.8, range = 1-5). Finally, participants indicated the level of difficulty they experienced performing a variety of everyday tasks due to health or physical problems (**functional limitations**). First,

respondents were asked whether they experienced any such limitations. For those 14 participants (9.3%) who answered affirmatively, follow-up questions addressed the specific tasks. For each task (e.g., dress without help), participants indicated whether it was “not at all difficult” (0), “a little difficult” (1), “somewhat difficult” (2), or “very difficult/cannot do” (3). Participants could also indicate that they “don’t do this activity” (treated as missing). On average, those 14 participants had at least a small amount of difficulty with 1.7 of the 11 items (range 0 to 8). The average level of difficulty expressed on the 0-3 scale was 0.2 (sd = 0.4). The composite **physical health** was computed as the mean of the standardized scores on these four variables (m = -0.0, sd = 0.4, range -0.9 – 3.0).

Young adults’ depression was assessed using the CIDI, a diagnostic tool for identifying **clinical depression**, and the CES-D, a tool that quantifies **depressive symptoms**. The CIDI includes a structured series of questions based on the DSM criteria for clinical depression. Using this method, 27 participants (18%) were identified as ever having met the clinical criteria for depression by the CIDI. Sixteen of these (10.7% of the sample) had met this criterion within the past year. The CES-D consists of 20 statements (e.g. “I felt lonely”). Respondents indicate on a scale from 1 (rarely/none of the time) to 4 (most/all of the time) how often they had felt that way over the past week. On average, participants reported a depressive symptoms score of 10.8 (sd = 10.8; scores of 16 and over are considered clinically significant). The composite **depression** was computed as the mean of the standardized scores on these two variables (CES-D and lifetime diagnosis with depression; m = -0.0, sd = 0.8, range -0.8 – 3.0).

Participants reported their own **life satisfaction** on a scale from 1 (completely dissatisfied) to 7 (completely satisfied). On average, participants were fairly satisfied with their lives ( $m = 5.3$ ,  $sd = 1.3$ ). No one reported being “completely dissatisfied” with their life. They also reported on the extent to which they felt they had “**gotten the important things I want in life**” thus far (7-point scale from strongly agree to strongly disagree), and their **overall happiness** as very happy, pretty happy, or not too happy. Participants’ reports comprised the entire range of the scale for both items. On average, people felt they had gotten the important things they wanted somewhat more than not ( $m = 4.9$ ,  $sd = 1.5$ ), and were “pretty happy” ( $m = 2.0$ ,  $sd = 0.5$ ). The composite **subjective well-being** was computed as the mean of the standardized scores on these three variables ( $m = 0.0$ ,  $sd = 0.8$ , range  $-2.4 - 1.5$ ).

**Self-efficacy** was assessed at wave 2 using 24 items from the self-efficacy scale developed by Sherer et al. (1982). Respondents were asked to what extent they agreed with statements such as “when I make plans, I am certain I can make them work”. Responses were on a 5-point scale from “strongly agree” to “strongly disagree” and were coded such that higher scores indicated greater feelings of self-efficacy. Mean scores were calculated across items to create the child’s self-efficacy score. These scores ranged from 1.9 to 4.8 on the 1-5 scale (mean = 3.9,  $sd = 0.6$ ). **Self-esteem** was assessed using the same 10 items as at wave 1 on a 5-point scale from “strongly agree” to “strongly disagree”, coded such that higher scores indicated greater self-esteem. Young adults’ self-esteem scores, on average, were around 4.4 on the 1-5 scale ( $sd = 0.6$ ). The lowest self-esteem score was 1.6, and the highest 5.0. The composite **feelings about self** was

computed as the mean of the standardized scores on these two variables ( $m = 0.0$   $sd = 0.9$ , range  $-4.0 - 1.3$ )

*Educational attainment at wave 2.* Young adults' **educational attainment** at wave 2 was assessed with the question "What is the highest grade of school or year of college you have completed?". Participants had completed 9-17 years of schooling ( $m = 13.5$ ,  $sd = 2.0$ ). Responses were classified into less than high school (fewer than 12 years;  $n = 16$ ; 10.7%), high school (12 years  $n = 46$ ; 30.7%), some college (13-15 years;  $n = 54$ ; 36.0%), 4 years of college (16 years;  $n = 26$ ; 17.3%), and more than 4 years (more than 16 years;  $n = 8$ ; 5.3%). Because the former child participants were only 20-27 years of age at wave 2, they may not yet have completed their education. Therefore, current **student status** was created from participants responses regarding their current employment. Thirty-seven participants (24.7%) reported being current students at wave 2.

*Adult roles at wave 2* participants' entry into several adult roles at wave 2 were examined based on young adults' self-reported **marital and parental status**, **occupational status**, and **living situation** at wave 2. The majority of respondents ( $n = 111$ ; 74.0%) had never been married and were not currently living with a partner. Nineteen (12.5%) were currently married, another 19 (12.5%) were living with a partner, and one participant (0.7%) was separated. One third of participants had one or more children at wave 2 ( $n = 50$ ; 33.3%). Of those with children, a slight majority ( $n = 27$ ; 54%) had only one, while just over a third ( $n = 17$ ; 34.0%) had 2, 10% ( $n = 5$ ) had 3, and one participant (2.0%) had 4 children. Just under half of young adult participants ( $n = 71$ ; 47.3%) reported working full-time at wave 2. Another 26.7% ( $n = 40$ ) reported working

part-time, and 24.7% (n = 37) reported being students. Other employment situations reported by participants included full-time homemaker (n = 9; 6.0%), unemployed (n = 13; 8.7%), temporarily laid off (n = 6; 4.0%), maternal leave (n = 1; 0.7%), permanently disabled (n = 4; 2.7%) or other arrangements (n = 2; 1.3%). Participants could report as many employment statuses as applicable (e.g., they could be working and students).

## **Results**

The statistical analyses conducted to assess the research questions were divided into 3 sections. The results of each set of analyses will be presented in turn.

First, preliminary analyses were conducted to provide a demographic description of the sample at each wave, and to examine predictors of attrition between waves.

Next, analyses addressing research question 1 identified patterns of social relations among children and adults and assessed the continuity of these patterns from childhood into adulthood.

The third set of analyses addressed research questions 2, 3 and 4 by assessing the implications of childhood social relations on three sets of outcomes, using both pattern-centered and variable-centered approaches.

Specific analysis strategies used within each approach and the results of these analyses are detailed below by research question.

A listing and brief description of the variables used in these analyses can be found in table 8.



## **Chapter IV: Social Relations Over Time**

### *Preliminary Analyses*

Preliminary analysis were conducted to describe the sample's demographic makeup, assess which characteristics are associated with attrition from wave 1 to wave 2 and identify any demographic differences in the variables of interest.

#### *Demographic makeup of the sample*

The demographic makeup of the sample at each wave was examined by calculating descriptive statistics (mean, standard deviation, minimum and maximum for continuous variables; percentage of children endorsing each response for categorical variables) on the personal characteristics of participants. Results of these analyses are presented in table 1.

#### *Attrition between waves*

Factors associated with attrition between waves were examined by estimating a series of logistic regression models using participation in wave 2 as the dependent variable (1 = participated; 0 = did not participate). In order to retain sufficient power to detect significant effects in a sample of approximately 150, each set of wave 1 variables (personal and situational characteristics, network structure, network composition, social support, and well-being; see table 8 for more detail) constituted the independent variables in a separate regression model. Results of each logistic regression are presented in table 9.

As shown in table 9, results of the logistic regression analyses indicated that some characteristics of interest at wave 1 were associated with attrition between waves.

Females, White children, those who had known their network members for less time, and those who had at least one friend in their social networks were more likely than others to participate at wave 2. Therefore, gender and race will be included in all subsequent analyses. Results regarding the effects of time known network members, and network includes friends will be interpreted with caution.

#### *Demographic differences in variables of interest*

Demographic differences in variables of interest were examined using a series of multiple regression models. Each network structure, network composition, social support, and well-being variable (see table 8 for detailed list) was used as the dependent variable in a linear (for continuous variables) or logistic (for dichotomous variables) regression model. Independent variables in the first step included the personal characteristics listed in table 8, and the second step included the situational characteristics listed in table 8. Associations with situational characteristics are discussed only when the situational block is significant. Results are presented in tables 10 through 14.

As shown in table 10, at wave 1, girls had larger networks and larger inner circles than boys did. As might be expected, older children had known their wave 1 networks longer than had younger children. White children had larger networks but less contact with them than children of other races. Children rated as more impatient-aggressive by mothers had older networks that they had known longer than other children. Children with older mothers had older social networks, on average, than children with younger

mothers. Each of these characteristics will thus be controlled in subsequent analyses involving network structure.

As shown in table 11, personal and situational factors were associated with the composition of children's social networks. Girls' networks consisted of a higher proportion of females and of adults than did boys'. White children included more friends in their social networks than did children of other races. White children's networks were also comprised of lower proportions of females and adults than were those of other children. Children rated as impatient-aggressive included a higher proportion of adults in their networks than did children rated as less impatient-aggressive. Children whose mothers were older included less extended family in their networks, and those whose mothers were employed included less immediate family. In addition to gender and race, impatient-aggressiveness, maternal age and maternal employment will therefore be controlled in all subsequent analyses involving network composition.

As shown in table 12, results indicated some demographic differences in the amount of social support children reported from various sources. Girls reported less positive support from fathers than boys did. White children reported more positive support from friends and less positive support from mothers and extended family than did children of other races. Children whose mothers were married or living with a partner reported more positive support functions filled by their fathers than did children whose mothers were not married or partnered. Children whose mothers have more positive relationships and those whose mothers have more negative relationships report less positive support from siblings. As shown in table 13, girls also reported less negative support from fathers than boys did. White children reported more negative support from

siblings and less negative support from extended family than did children of other races. In addition to gender and race, therefore, mothers' marital status and relationship quality will be included in subsequent analyses involving social support.

As shown in table 14, results also indicated personal and situational differences in well-being and educational orientation during wave 1. Mothers were more likely to report that girls had chronic illnesses than to report that boys did. White children reported lower educational priority than did children of other races. Children rated as more competitive reported lower self-efficacy and those rated as more impatient-aggressive reported fewer depressive symptoms and greater self-efficacy. Children who reported more stressful life events had more depressive symptoms and lower self-esteem than other children. In addition to race and gender, therefore, competitiveness, impatient-aggressiveness, stressful life events and maternal age will be included as a control in subsequent analyses involving children's well-being. Mothers' relationship quality will be included as controls in subsequent analyses involving children's educational orientation.

*Research Question 1 (Identifying patterns and assessing continuity):*

Research question 1, regarding the identification of patterns of social relations during childhood and adulthood, and their continuity over time, was assessed using a series of cluster analyses, followed by multinomial logistic regression.

*Patterns of social relations during childhood.*

Patterns of social relations during childhood were examined using a series of cluster analyses. The two-step cluster analysis procedure in SPSS was used to conduct these analyses. This procedure identifies the optimal number of clusters for a given set of data based on the Bayesian information criterion (BIC), making it a more statistically

grounded procedure than the more traditional hierarchical or K-means methods of cluster analysis. In addition, two-step cluster analysis can accommodate both continuous and categorical data simultaneously, and provides estimates of the significance of each variable to the overall cluster solution (Norusis, 2008). Two step cluster analysis was therefore deemed an appropriate tool for identifying patterns of social relations among children in this sample.

*Structure patterns.* As a first step, three separate two-step cluster analyses were conducted, examining the structure of children's social networks, the composition of children's social networks, and the sources from whom children report receiving social support, respectively. First, a two-step cluster analyses was conducted to investigate patterns of network structure. Variables included in the analysis were network size, inner circle size, average age of network members, average time known network members, the proportion of the network living within one hour of the respondent (proximity), and the average frequency of contact with network members. Results indicated that a 4-cluster solution (BIC = 784.4) was the best fit to the data. Cluster centroids on the variables included in the analysis are presented in table 15. Examination of the importance of each attribute revealed that each variable was important in distinguishing at least one of the three clusters from the overall mean. Differences in each network structure variable among the four clusters were examined. Clusters were then labeled according to their distinguishing characteristics relative to the other clusters. These labels are not intended to fully capture the complexities of each cluster's social relations pattern, but rather as a shorthand way of referring to each cluster by its primary defining characteristic. Members of cluster 1 were characterized by having a relatively young network, whom

they had known for a relatively brief period, on average, and with whom they shared frequent contact and high geographic proximity. Cluster 1 was therefore labeled as the “young network” pattern of social network structure. Members of cluster 2, labeled the “dense network” pattern, were distinguished by their small networks, including small inner circles, which consisted of relatively older members, on average, whom they had known for long periods of time and who lived in close geographic proximity. Members of cluster 3, labeled the “sparse network” pattern were characterized by a small inner circle, low geographic proximity to network members, and low frequency of contact with network members. Members of cluster 4, labeled the “large network” pattern were distinguished by their large networks, including large inner circles. Thus, in summary, one pattern (“large networks”) was identified primarily by its size. Among the remaining three patterns, one (“young”) was identified by the inclusion of relatively young, new network members, and the remaining two (“dense” and “sparse”) were distinguished from one another based on proximity of and contact with the network.

*Composition patterns.* Next, patterns of network composition were examined. The two-step cluster analyses included the proportion of the network that was female, the proportion that was adults, the number of immediate family members included, the number of extended family members included, the number of friends included, and whether the network included each of the following: mother, father, sibling, grandparent, aunt/uncle, cousin, and friend. Results of the two-step clustering process showed that a 4-cluster solution (BIC = 1930.4) was the best fit to the data. Cluster centroids on the variables included in the analysis are presented in table 16. Examination of the importance of each attribute revealed that each of the variables except proportion female

was important in distinguishing at least one of the four clusters from the overall mean. Differences in each network structure variable among the four clusters were examined, and the four clusters labeled according to their distinguishing characteristics. Members of cluster one were labeled as exhibiting the “immediate family and friend” pattern, based on their low number of extended family, inclusion of at least one and generally a high number of friends, and low likelihood of including an aunt or uncle in the network. Members of this cluster also exhibited a low proportion of adults, and an average number of immediate family members. Members of cluster 2 were labeled as the “immediate family” pattern of network composition based on the low number of extended family and complete lack of friends in their networks. These children all included a father in their networks, but none included an aunt or uncle. Their networks were comprised of a high proportion of adults. Members of cluster 3 were labeled as exhibiting the “low family” pattern based on the low numbers of both immediate and extended family they included in their networks, along with their lower-than-average likelihood of including a mother, father, sibling, or grandparent. Finally, children in cluster 4 were labeled as exhibiting the “mostly family” pattern of network composition, based on the high numbers of immediate and extended family, and low numbers of friends in their networks, as well as their high likelihood to include a father, grandparent, aunt or uncle, and cousin. Thus, in summary, with respect to composition, the small number of immediate family included identified one (“low family”) cluster as unique. The remaining three clusters, all of which included between 3 and 4 immediate family members on average, were distinguished based on the extent to which they also included extended family and friends.

Multinomial logistic regressions were conducted to examine associations between clusters based on network structure and those based on network composition. As shown in table 17, there was a significant association between the two sets of patterns. Children whose network structure was identified as exhibiting the “young” pattern were more likely than those exhibiting other structure patterns to exhibit the “family and friend” or “immediate family” pattern of network composition and less likely to exhibit the “low family” pattern (relative to the “mostly family” pattern). Those exhibiting the “dense” pattern of network structure were more likely than others to exhibit the “immediate family” pattern of network composition, and less likely to exhibit the “low family” pattern.

*Support Patterns.* Finally, patterns of sources of social support among children were examined. The two-step cluster analyses included the number of positive (of 18) and negative (of 2) support functions filled by each of the following: mother, father, sibling, friend, and extended family. Results of the two-step clustering process indicated that a 2-cluster solution (BIC = 1427.2) was the best fit to the data. Cluster centroids on the variables included in the analysis are presented in table 18. Examination of the importance of each of the 10 attributes revealed that each of the variables except positive support from mother, positive support from father, and positive support from extended family was important in distinguishing at least one of the two clusters from the overall mean. Differences in each network structure variable between the clusters were examined. Children in cluster one, labeled “friend-supported”, exhibited a pattern of social support characterized by low negative support from mother, high negative support from both father and extended family, low positive and negative support from siblings,



and high positive and negative support from friends. In contrast, children in cluster two, labeled “little friend support” exhibited a pattern of social support characterized by high negative support from mother and from siblings, no negative support from father or extended family, and low positive and negative support from friends. Thus, overall, the extent of support from friends and the predominant source of negativity were the distinguishing features of these patterns.

Multinomial logistic regressions were conducted to examine associations between clusters based on network structure and those based on network support. As shown in table 19, there was no significant association between the two sets of patterns.

Multinomial logistic regressions were also conducted to examine associations between clusters based on network composition and those based on network support. As shown in table 20, there was a significant association between the two sets of patterns. Children whose network composition fits the “immediate family” pattern were less likely than children exhibiting other patterns to exhibit the “friend supported” pattern of social support.

*Structure, composition, and support patterns.* After examining these three separate cluster analyses, a final two-step cluster analysis was conducted including children’s network structure, network composition, and social support simultaneously. Some variables used in the separate clusters were not used in the overall cluster due either to a lack of importance in the individual cluster solution and/or redundancy with another variable used (e.g., network age was eliminated as a structural characteristic because it was deemed redundant with the composition characteristic proportion of adults). Thus, network structure characteristics included in the cluster analysis included:

total network size, time known network, proximity of network, and frequency of contact with network. Network composition characteristics included the proportion of the network that is female, the proportion of the network that is adult, the number of immediate family members included, the number of extended family members included, the number of friends included, and whether the network included at least one of each of the following relationship types: mother, father, sibling, grandparent, aunt/uncle, cousin, and friend. Social support characteristics included the number of positive and negative (separately) support functions filled by each of the following: mother, father, sibling, friend, and extended family.

The two-step cluster program in SPSS identified the three-cluster solution (BIC = 4401.3) as the best fit to the data. Cluster centroids on the variables included in the analysis are presented in table 21. Examination of the importance of each attribute revealed that the majority of variables were significant in distinguishing at least one of the three clusters from the overall mean. Those that were not significant in this respect included the proportion of females in the network, whether the network included any friends, the amount of positive and negative support reported from mother, negative support from father, positive support from sibling, and positive and negative from friend. Examination of the differences in each of the other variables among the three clusters allowed labeling of the clusters according to their distinguishing characteristics.

Cluster 1 was labeled as the “low family presence and support” pattern based on its small number of both immediate and extended family members, lower than average likelihood of including mothers, fathers, siblings, and grandparents, and low levels of both positive support received from fathers and negative support received from siblings.

Members of this cluster also reported the smallest social networks, had known their network members for the briefest amount of time, on average, and had networks comprised of a smaller proportion of adults than those of other children.

Cluster 2 was labeled as the “immediate-family centered” pattern. The children in this cluster tended to have small, geographically proximal networks with whom they had frequent contact. Their networks included more immediate family members than average, but fewer extended family members, and all of these children included a father in their social network, whereas few included a grandparent, aunt or uncle, and none included a cousin. They tended to report little support (either positive or negative) from extended family members.

Cluster 3 was labeled “extended family included”. Children exhibiting this pattern of social relations had large social networks that they had known, on average for a long time, but with whom they had relatively infrequent contact, compared to other groups. Their networks consisted of a large proportion of adults, large numbers of both immediate and extended family, and small numbers of friends. All of these children included a mother in their social network, and more than average included a father, grandparent, an aunt or uncle, and a cousin.

Examination of these clusters reveals that whereas all four of the network structure variables, and ten of the twelve (83.3%) composition variables distinguished among the clusters, only four of the ten (40.0%) support variables did so, despite the fact that seven out of ten (70.0%) distinguished among clusters when the solution included social support only. This may be an indication that among children, the structure and composition of one’s social network is a more important determinant of one’s pattern of

social relations – that is, similarity with others on social relations – than are the sources from whom one receives the types of social support inquired about here. This possibility will be discussed further in the discussion section. Alternatively, it may reflect properties of the measures used to examine social support, in that only one source could be named for each support function. This may have resulted in less sensitive indicators of social support from each partner than would be required to identify clear patterns. In the interest of parsimony, therefore, the cluster analysis was repeated using only network structure and composition variables.

*Structure and composition patterns.* Using only structure and composition variables, the two-step cluster program in SPSS identified the four-cluster solution (BIC = 2612.6) as the best fit to the data. Means for each cluster on the variables included in the analysis are presented in table 22. Examination of the importance of each attribute revealed that all variables with the exception of the proportion of females in the network were significant in distinguishing at least one of the clusters from the overall mean. Examination of the differences in each of the other variables among the three clusters allowed labeling of the clusters according to their distinguishing characteristics.

Cluster 1 was labeled as the “Diverse networks” pattern. Children in this cluster had known their network members for a slightly shorter time than average, but lived in close proximity to a greater proportion of network members, and had more frequent contact with them. They had a lower than average proportion of adults in their networks, as well as fewer extended family members. On the other hand, they had more immediate family members and friends in their networks than average. All of these children included both a mother and a father in their networks, and they were more likely than average to

include a sibling and a friend. They were less likely than average, however, to include a cousin, and none included an aunt or uncle in their social networks.

Cluster 2 was labeled as the “friend networks” pattern. Children in this cluster had smaller than average networks whom they had known for shorter than average periods of time. Their networks consisted of a low proportion of adults and included fewer immediate and extended family members than average. This cluster was the least likely to include parents in their social networks, with under half including a mother and fewer than 10% including a father. They were also less likely than other children to include a sibling or a grandparent, but were more likely to include a friend.

Cluster 3 was labeled the “small family networks” cluster. These children’s networks were, on average quite small, but had been known for a long time and were in frequent contact. The networks consisted of a large proportion of adults, and included fewer extended family members than average, and no friends. All of these children included a mother in their networks, but fewer than average included a sibling, grandparent, aunt or uncle, or cousin.

Cluster 4 was labeled the “large family networks” pattern. Children exhibiting this pattern had large social networks whom they had known, on average, for a long time, but with whom they had less frequent contact than the children in other clusters. Their networks consisted of a larger than average proportion of adults, and more extended family than children in any other clusters, but fewer friends than average. All of the children included a mother in their social networks, and more than average included a grandparent, aunt or uncle, and cousin.

In summary, the least common of the structure and composition patterns (“friend networks”) is unique in its inclusion of few immediate family members. Like the composition-only clusters, the remaining three patterns of structure and composition, all of which include at least two immediate family members, on average, vary primarily in the extent to which they also include extended family and friends. Yet, these patterns are also importantly distinguished from one another by their overall size, proximity and contact frequency. The pattern including many extended family but few friends (“large family networks”) is characterized by the largest networks, but also by the least frequent contact. The pattern including many friends but few extended family members (“diverse networks”) is characterized by the most geographically proximal networks and by frequent contact. The pattern including few extended family and no friends (“small family networks”) is characterized by particularly small networks, but also by frequent contact.

*Support differences by pattern.* To validate the clusters identified, and because the original intent was to identify patterns of social relations including network structure, composition, and social support, a series of ANOVAs was conducted to examine whether the structure and composition clusters identified varied in terms of the sources from whom children reported receiving social support. Results are presented in table 23. Differences between clusters were identified in both positive and negative support from mother. Post-hoc tests showed that children exhibiting the small family network pattern reported that their mothers filled more positive support functions than did children exhibiting the friend network pattern, and more negative support functions than did children exhibiting any of the other three patterns of social networks. Differences

between clusters were also found in the positive support children reported from friends. Post-hoc tests showed that children in the friend network pattern reported that their friends filled more of their positive support functions than did children exhibiting the small family network or large family network patterns. ANOVAs also revealed differences by cluster membership in positive support from extended family and the number of support providers that children reported, but post-hoc tests did not reveal significant differences between individual clusters on these support variables. A graphical representation of the proportion of positive support provided by each source to children in each network pattern is presented in figure 7.

*Demographic differences in childhood patterns of social relations.* To determine whether personal and situational factors were associated with patterns of social relations, a series of ANOVAs was conducted to examine differences in personal and situational characteristics based on cluster membership. These analyses revealed that there were no significant differences among clusters on child's gender, age, grade in school, competitiveness, impatience-aggression, stressful life events, or mother's age, education, employment, or relationship quality. Differences among clusters were identified, however, on child's race and mother's marital status. Children exhibiting the diverse networks pattern were more likely to be white ( $F = 3.45, p < .05$ ) and more likely to have mothers who were married ( $F = 3.79, p < .05$ ) than were children exhibiting the small family network pattern.

*Developmental differences in patterns of childhood social relations.* Because the children in the sample ranged from eight years of age to twelve years of age, analyses were conducted to examine whether children toward the younger end of this range

exhibited different patterns of social relations than those at the older end. Two-step cluster analyses identical to those described above were conducted separately among 8-10-year old children (n=102) and among 11-12-year old children (n=102).

Among the younger children, a three-cluster solution was identified as the best fit (BIC = 1428.4). Clusters were distinguished from one another based on all of the variables used in the analysis except for proximity, frequency of contact, proportion of females, including aunt or uncle, and including cousin. See table 24 for complete descriptions of each cluster on the variables of interest. The first cluster was characterized as the “peer dominant networks” pattern (n=42). The second cluster was identified as the “extended-family dominant” pattern of social relations (n=23). The third cluster was identified as the “family-only” pattern (n=35). The patterns identified among younger children, therefore, were, different from those identified among children as a whole.

Among older children, a four-cluster solution was identified as the best fit (BIC = 1381.6). All of the variables used in the analysis except including father and including sibling were significant in distinguishing between clusters. The first cluster was characterized as the “extended family-dominant” pattern (n=37). The second cluster was identified as the “family-only” pattern of social relations (n=30). The third cluster was distinguished by the lack of parents in their social network. These networks were also very small. They tended to be male- and peer-dominant (n=6). It was labeled the “no parents” pattern. The fourth and final cluster was identified as the “peer-dominant” pattern (n=29).

Three of the four patterns identified among older children were labeled similarly to clusters identified among younger children, though patterns were not identical between



older and younger participants. First, the small cluster of children without parents in their networks was unique to older children. The three remaining clusters among older children were distinguished primarily based on inclusion of either extended family or friends (but not high numbers of both), as were the patterns of younger children. Nevertheless, older children in the “peer-dominant” pattern also included mothers, whereas younger children exhibiting this pattern were less likely than other young children to include their mothers in their networks. In addition, among older children, children in the “extended-family dominant” pattern included considerably more extended family than the remaining three, whereas younger children exhibiting this patterns did not include significantly more extended family than the average, despite including more extended family than immediate family or friends. Both older and younger children included a pattern that was devoid of friends in the social network, but among older children, this pattern was also characterized by small networks, a high proportion of adults, and few extended family members. These patterns were specifically unlikely to include an aunt or uncle. Among the younger children, in contrast, the cluster without friends actually had the largest networks (though not significantly larger than average), and was characterized by the inclusion of many immediate family members, specifically including a father and a sibling.

*Patterns of social relations during adulthood (wave 2).*

After identifying patterns of social relations among children, a similar set of analyses were conducted to identify patterns of social relations among these same individuals as young adults. Because cluster analyses of wave 1 social relations were best able to identify clear, consistent patterns based on network structure and

composition, wave 2 cluster analyses were based on these sets of characteristics. Network structure characteristics included in the cluster analysis were: whether the participant was married or living with a partner or not, whether the participant had children or not, total network size, proximity of network, and frequency of contact with network. Network composition characteristics included the proportion of the network that is female, the proportion of the network that is adult, the number of immediate family members included, the number of extended family members included, the number of friends included, and whether the network included at least one of each of the following relationship types: mother, father, sibling, any extended family, and friend. The two-step cluster program in SPSS identified a three-cluster solution ( $BIC = 2019.5$ ) as the best fit to the data. Means for each cluster on the variables included in the analysis are presented in table 25. Examination of the importance of each attribute revealed that most of the variables included were important in distinguishing at least one of the clusters from the overall mean. Those that did not distinguish among the clusters included the proximity of the network, the proportion of females in the network, the number of immediate family in the network, whether the network includes a mother, and whether the network included a sibling. Examination of the differences in each of the other variables among the three clusters allowed labeling of the clusters according to their distinguishing characteristics.

The first cluster was identified as the “family networks” pattern of early adult social relations. These participants were characterized by smaller networks that they had known for longer than the overall average. They were also distinguished from the other clusters by a smaller proportion of adults and fewer friends in their networks. They were

less likely than those in other clusters to include a father or a friend, and more likely than those in other clusters to be married or living with a partner, and to have children.

The second cluster identified was labeled as the “small, diverse networks” pattern. These young adults were distinguished by their smaller networks that they had known for shorter periods of time than average. They also had a high proportion of adults in their networks, and their networks included more friends than average, but no extended family. All participants in this cluster included at least one friend in their networks, and they were more likely than average to include a father. They were less likely than average to be married or living with a partner, or to have children.

The third and final cluster identified was labeled as the “large, diverse networks” pattern of social relations. These young adults were characterized by their large social networks, but low frequency of contact with members. They had a high proportion of adults in their networks and more than average extended family and friends. These participants were more likely than average to include at least one friend in their networks and all included at least one extended family member, yet none of these adults had their own children.

In summary, among young adults, one pattern of social relations (“family networks”) was uniquely characterized by the high likelihood of being in a cohabiting relationship and especially by the high likelihood of having children. Participants exhibiting this pattern were also particularly unlikely to include friends. The remaining two patterns (“small diverse networks” and “large diverse networks”) distinguished primarily based on their overall size and whether they included extended family.

Again, to examine whether these clusters varied in the support they received from network members, ANOVAs were conducted examining differences in positive and negative relationship quality with mother, father, sibling, friend, and romantic partner by cluster membership. Results, presented in table 26 indicated that the clusters varied only in positive and negative relationship quality with fathers. Post-hoc analyses revealed that those exhibiting the large network pattern had more positive relationships with their fathers than other participants, and those exhibiting the small network pattern had more negative relationships with their fathers than those exhibiting the family pattern.

*Demographic differences in adulthood patterns of social relations.* To determine whether personal and situational factors were associated with patterns of social relations at wave 2, a series of ANOVAs similar to that used at wave 1 was conducted to examine differences in personal and situational characteristics based on cluster membership. These analyses revealed that there were no significant differences among clusters on the young adult participant's gender, age, stressful life events, or current family income. Race differences among clusters were identified. Participants exhibiting the large network pattern were more likely to be white than were those exhibiting the family pattern ( $F = 6.48, p < .01$ ).

*Developmental differences in patterns of early adult social relations.* Because differences were found between younger and older children's patterns of social relations at wave 1, cluster analyses were again conducted separately between the younger and older groups of participants at wave 2. Among the younger group ( $n=76$ ; age 8-10 at wave 1; mean age at wave 2 = 22.1), the two-step cluster analysis revealed that a 2-cluster solution ( $BIC = 1092.2$ ) was the best fit to the data. See table 27 for complete

description of each cluster on the variables of interest. The clusters were distinguished based on the whether the participant had children, the average time known network members, the proportion of adults in the network, the number of friends in the network, and whether the network included any friends. One cluster (n=48) was characterized by including friends, but not having their own children. The other cluster (n=28), in contrast, was characterized by not having friends, and being more likely than average to have their own children.

Among the older participants (n = 72; age 11-12 at wave 1, mean age = 24.6 at wave 2), a two cluster solution was also deemed the best fit to the data (BIC = 1072.5). As with the younger group, the clusters were distinguished based on the whether the participant had children, the average time known network members, the proportion of adults in the network, the number of friends in the network, and whether the network included any friends. One cluster (n=44) was characterized by including friends, but being less likely than average to have their own children. The other cluster (n=27) was characterized by being unlikely to include friends, and being more likely than average to have their own children. Thus, among young adults, older and younger participants appeared to exhibit similar patterns of social relations

*Family structure differences in patterns of early adult social relations.* Among young adults, those who have formed their own families by living with a spouse or romantic partner and/or having their own children are likely to exhibit different patterns of social relations from those who remain single and childless. Indeed, in the initial cluster analyses of wave 2 social relations, young adults' networks were differentiated in large part based on their marital and parental status. In order to examine these different

patterns, cluster analyses were conducted separately between those participants who were married or living with a partner and/or have children and those who did not.

Among those who were married or living with a partner and/or had their own children (n=64), a two-cluster solution was the best fit to the data (BIC = 1001.4). See table 28 for complete description of each cluster on the variables of interest. Clusters differed based on the proportion of adults in the network, the number of immediate family in the network, inclusion of a father in the network, and the participant's marital and parental statuses. The larger cluster (n=42) was characterized by a greater than average proportion of adults and a high likelihood of including a father in the network. The likelihood of being married or living with a partner and of having children did not distinguish this cluster from the overall average of those in this group. In contrast, the smaller cluster (n=22) was characterized by a lower proportion of adults, fewer immediate family members, and the lack of inclusion of a father in the network. These participants all had their own children, and were less likely than average (among this group) to be married or living with a partner.

Among those young adults who were single and without children (n=85), a three-cluster solution was determined to be the best fit to the data (BIC = 986.2). See table 28 for complete description of each cluster on the variables of interest. Clusters differed based on the size of the network, the amount of time network members were known, the proximity of the network and frequency of contact with network members, the number of extended family and of friends in the network, and whether the network includes any extended family or friends. The first cluster was characterized by small networks whom they had known for a long time and with whom they were geographically closer and had

more frequent contact than average. These networks included no friends. The second cluster was distinguished by large networks with whom participants had relatively little contact. These networks included more extended family than average, and all participants included at least one extended family member in their networks. They were also more likely than average to include at least one friend. The third cluster was characterized by small networks that participants had known for relatively brief periods of time. These networks all included at least one friend, included more friends than average, but did not include any extended family members.

Thus, among those participants who have started their own nuclear families, patterns of social relations are primarily distinguished based upon their immediate families, including how many members are in their social networks, whether they include their father in their social network, and whether they have their own children. In contrast, among single childless young adults, patterns of social relations are based primarily on the inclusion of friends and extended family.

*Continuity between childhood and adulthood patterns of social relations.*

To assess the continuity in patterns of social relations between childhood and adulthood, a series of multinomial logistic regressions was conducted using wave 2 cluster membership as the outcome and wave 1 cluster membership as the predictor. Separate models were run using patterns within the full sample, within the older group only, and within the younger group only. Models were also run separately including wave 1 cluster membership as the only predictor, and including all personal and situational characteristics associated with the cluster membership in the relevant patterns (full, younger, or older) at time 1 or time 2. When considering the clusters of all

participants together (not separated by age; see table 29), and when considering the older group of participants (see table 30), cluster membership at wave 1 did not significantly predict cluster membership at wave 2, either with or without controlling for associated demographic factors. When considering patterns among younger participants only, however, there was a significant association between cluster membership at wave 1 and cluster membership at wave 2 (see table 31), when controlling for demographic factors associated with membership in these clusters, specifically, gender, race, age at wave 1, grade in school at wave 1, mother's marital status at wave 1 and mother's negative relationship quality at wave 1. Examination of the individual parameters revealed that compared with those in the "family only" pattern, children in the "peer dominant" pattern at wave 1 were slightly less likely, and those in the "extended family-dominant" pattern at wave 1 were slightly more likely to exhibit the pattern characterized by including friends, but not having their own children at wave 2, though neither individual parameter was statistically significant.



## **Chapter V: Implications of Childhood Social Relations**

### *Research Question 2 (Implications for Well-Being):*

Research question 2 was designed to assess the implications of childhood social relations for adult well-being. This question was addressed first using a traditional variable-centered approach, and second using a pattern-centered approach.

#### *Variable-centered analyses*

Research question 2 was first addressed using a variable-centered approach. Multiple regression analyses were conducted to examine whether childhood social relations are significant predictors of early adult well-being. Dependent variables included several indicators of well-being at wave 2. Independent variables included relevant control variables and characteristics of social relations at wave 1. Control variables for each analysis included those personal and situational characteristics that were associated with attrition, with the dependent variable, or with the block of independent variables (network structure, network composition, and social support). Each of six composite variables representing different aspects of well-being constituted the dependent variable in a separate analysis. Independent variables were entered in blocks, and associations between each predictor and the dependent variable were examined for linearity.

The first step entered in each analysis included the wave 1 variable corresponding to the wave 2 variable being predicted (where available), gender and race, and any additional personal and/or situational characteristic found during preliminary analyses to

be associated with the dependent variable. The next step in each analysis included childhood social relations characteristics and any additional personal or situational variables associated with them. In order to retain adequate power to detect significant effects among a sample of approximately 150 participants, it was essential to avoid including too many independent variables simultaneously. Toward this end, rather than adding all of the social relations characteristics (and associated controls) simultaneously, each group of characteristics (network structure, network composition, and social support) and their associated controls was tested in turn. For instance, after testing for the effects of network structure (and personal/situational characteristics associated with network structure), these variables were removed and the network composition variables (and their associated controls) added in their place. (See table 32 for an illustration of one set of models, and table 8 for a list of variables and description of each).

Once each set of social network variables had been independently examined as predictors, a final model was constructed for each dependent variable. Each final model consisted of the corresponding wave 1 variable (if available), gender race, any personal or situational characteristics associated with the outcome, any personal or situational characteristics associated with social relations that were significant ( $p < .05$ ) or nearly significant ( $p < .10$ ) predictors of the outcome in a prior model, and any wave 1 social relations variables that showed significant or nearly significant associations with the dependent variable in the prior models.

*Physical health.* The first series of models examined associations between wave 1 social relations and wave 2 physical health. As shown in table 33, the only personal or situational factor included in all models due to its association with the outcome was wave

2 stressful life events. Personal and situational factors included in one or more models due to their association with predictors included impatient-aggressiveness, mother's age, stressful life events at wave 1, mother's marital status at wave 1, mother's employment status at wave 1, and mother's average positive and negative relationship quality at wave 1. Of these, only mother's employment status was a significant predictor of wave 2 physical health in a preliminary model and was therefore included in the final model. Of the six wave 1 network structure variables tested in model 2a, two were nearly significant predictors of later physical health. Inner circle size and time known network at wave 1 were both negatively associated with physical health at wave 2. Of the twelve network composition variables examined in model 2b, none were significant or nearly significant predictors of wave 2 physical health. Of the ten social support variables examined in model 2c, one was a significant predictor of physical health. Child's positive support from sibling was negatively associated with early adult self-reported physical health.

The final model (shown in table 34) thus included child's wave 1 physical health, gender and race, mother's employment at wave 1, stressful life events at wave 2, child's inner circle size, time known network members, and number of positive support functions filled by a sibling. As shown in table 34, after controlling for childhood physical health, female participants tended to have lower physical health than males. Children whose mothers were working at wave 1 tended to have better physical health 12 years later than those whose mothers were not working. Participants experiencing more stressful life events at wave 2 tended to have worse concurrent physical health. Controlling for these personal and situational influences on physical health, children with larger inner circles and those who had known their networks longer at wave 1 tended to report worse

physical health at wave 2. A nonlinear relationship was detected between positive support from a sibling at wave 1 and physical health at wave 2. This association is depicted graphically in figure 8. There appears to be a slightly negative association between positive support from siblings and physical health at low to moderate values of sibling support, but higher physical health evident among those reporting the highest levels of positive support from their siblings.

As an alternative means of assessing the role of social support, the ten individual variables indicating how many of the 18 positive and 2 negative support functions each relationship type was reported to fill were replaced with variables indicating which relationship filled the most total support functions (i.e., the focal figure, following Takahashi, 2005) and the number of different relationships that filled at least one function (number of supporters). Four separate dichotomous variables were created indicating whether the focal figure was mother (yes/no), father (yes/no), sibling (yes/no) and friend (yes/no). Due to the inherent interdependence among these variables, each was entered in a separate model along with the number of supporters and the interaction between the focal figure and number of supporters. As above in model 2c, as a first step, these social support variables were entered in models with only wave 1 physical health and the relevant control variables. As shown in Table 33 (models 2d through 2g), results indicated a significant positive effect of mother as focal figure on physical health 12 years later and a significant or nearly significant interaction between father as focal figure and number of supporters and between sibling as focal figure and number of supporters. Final models were re-estimated substituting these variables (in three separate models) for the social support variables in the initial final model for physical health (positive support

from sibling and its quadratic and cubic terms). As shown in table 35, substituting these social support indicators for the original support indicators did not substantially alter the nature of associations between the personal, situational, or network variables included in the final model for physical health. Examination of the effects of this set of social support variables revealed that when controlling for these other influences on physical health, children whose focal figure was their mother reported better physical health than other children. After removing 4 multivariate outliers, results also indicated an interaction between sibling as focal figure and number of supporters. Follow-up analyses of this interaction (shown in table 36) revealed that among those whose focal figure is not a sibling, there is no significant association between the number of supporters and later physical health, but among those whose focal figure is a sibling, reporting a greater number of relationships filling support functions was associated with better physical health 12 years later. Results must be interpreted with caution, however, due to the small number of participants with a sibling as their focal figure (n=7).

*Depression.* The second series of models examined associations between wave 1 social relations and wave 2 depression. As shown in Table 37, personal and situational factors included in all models due to their association with the outcome included stressful life events at wave 2 and mother's employment at wave 1. Personal and situational factors included in one or more models due to their association with predictors included impatient-aggressiveness, mother's age, stressful life events at wave 1, mother's marital status at wave 1, and mother's average positive and negative relationship quality at wave 1. Of these, only child's impatient-aggressiveness was a significant predictor of wave 2 depression in a preliminary model and was therefore included in the final model. Of the

six wave 1 network structure variables tested in model 2a, none were significant predictors of later depression. Of the twelve network composition variables examined in model 2b, three were significant or nearly significant predictors of wave 2 depression. The proportion of adults in the child's network and the number of friends in the network were both negatively associated with later depression, whereas including a mother in the network was positively associated with later depression. Of the ten social support variables examined in model 2c, two were significant or nearly significant predictors of depression. Child's positive support from sibling and positive support from extended family were both positively associated with early adult depression. The final model (shown in table 34) thus included child's wave 1 depression, gender and race, stressful life events at wave 2, mother's employment at wave 1, child's impatient-aggressiveness, the proportion of adults, number of friends, inclusion of a mother in the network, and number of positive support functions filled by a sibling and by extended family. As shown in table 34, after controlling for childhood depression, children whose mothers were currently working at wave 1 tended to report less depression 12 years later than those whose mothers were not working. Participants experiencing more stressful life events at wave 2 tended to report more depression. Controlling for these personal and situational influences on wave 2 depression, children with a lower proportion of adults in their networks and those whose siblings or extended family filled more support functions tended to report more depression 12 years later than children whose siblings and extended family filled fewer functions.

As an alternative means of assessing the role of social support in predicting later depression, the ten individual variables indicating how many of the 18 positive and 2

negative support functions each relationship type was reported to fill were replaced with variables indicating which relationship filled the most total support functions (i.e., the focal figure, following Takahashi, 2005) and the number of different relationships that filled at least one function (number of providers), as described above with respect to physical health. As a first step, the four dichotomous focal variables, the number of support providers, and the interaction between number of supporters and each dichotomous focal figure variable were entered in four separate models with wave 1 depression and the relevant control variables (table 37, models 2d through 2g). Results indicated a significant or nearly significant interaction between father as focal figure and number of supporters and between sibling as focal figure and number of supporters, and nearly significant main effects of number of supporters in models including mother and friend as focal figure. Final models were re-estimated substituting these variables (in three separate models) for the social support variables in the initial final model for wave 2 depression (positive support from sibling and extended family). As shown in table 35, substituting these social support indicators for the original support indicators altered the nature of some associations between the personal and situational variables included in the final model and wave 2 depression. Whereas childhood depression was a significant predictor of adult depression in the prior models, with the revised social support predictors included, the association is not significant. On the other hand, whereas impatient-aggressiveness was not a significant predictor of later depression in the prior models, in some of the focal figure models, there was a significant nonlinear association between child impatient-aggressiveness and adult depression. Examination of the effects of this set of social support variables revealed that when controlling for personal,

situational, and network composition influences on depression, there were no significant main effects of focal figure or number of supporters, nor any significant interaction between the two, on wave 2 depression.

*Subjective well-being.* The third series of models examined associations between wave 1 social relations and wave 2 subjective well-being. As shown in table 38, the personal and situational factors included in all models due to their association with the outcome included child's impatient-aggressiveness, and wave 2 stressful life events and household income. Personal and situational factors included in one or more models due to their association with predictors included mother's age, stressful life events at wave 1, mother's marital status at wave 1, mother's employment at wave 1, and mother's average positive and negative relationship quality at wave 1. Of these, none were significant in preliminary models and therefore were not included in the final model. Of the six wave 1 network structure variables tested in model 2a, only average age of network members was a significant (positive) predictor of wave 2 subjective well-being. Of the twelve network composition variables examined in model 2b, none were significant or nearly significant predictors of wave 2 subjective well-being. Of the ten social support variables examined in model 2c, five were significant or nearly significant predictors of later subjective well-being. Child's positive support from mother, father, sibling, and friend were all negatively associated with subjective well-being in early adulthood. Negative support from mother was positively associated with later subjective well-being. Because subjective well-being was not measured among children at wave 1, the final model (shown in table 34) thus included gender and race, stressful life events and household income at wave 2, the average age of network members at wave 1, positive support from



mother, father, sibling and friend at wave 1, and negative support from mother at wave 1. As shown in table 34, White children tend to report greater subjective well-being 12 years later than do children of other races, and participants with fewer stressful life events and greater household income at wave 2 tend to report greater concurrent subjective well-being. Controlling for these personal and situational influences on wave 2 subjective well-being, children whose mother, siblings, or friends filled more support functions all tended to report lower subjective well-being 12 years later than children whose mother, siblings, and friends, respectively, filled fewer functions.

Again, as an alternative means of assessing the role of social support in predicting later subjective well-being, the ten individual positive and negative support variables were replaced with focal figure and number of supporters variables, as described above with respect to physical health and depression. First, the four dichotomous focal variables, the number of support providers, and the interaction between number of supporters and each dichotomous focal figure variable were entered in four separate models with the relevant personal and situational controls (see table 38, models 2d through 2g). Results indicated a significant or nearly significant interaction between father as focal figure and number of supporters and between friend as focal figure and number of supporters. Final models (see table 35) were re-estimated substituting these variables (in two separate models) for the social support variables in the initial final model for wave 2 subjective well-being (positive support from mother, father, sibling and friends and negative support from mother). As shown in table 35, substituting these social support indicators for the original support indicators did not alter the nature of associations between the personal, situational or network variables included in the final

model and wave 2 subjective well-being. Examination of the effects of this set of social support variables revealed that when controlling for personal, situational, and network composition influences on subjective well-being, there were significant interactions between number of supporters and both father and friend as focal figure. Follow-up analyses to investigate these interactions (shown in table 36) revealed no significant association between number of supporters and subjective well-being, regardless of whether or not a father was the focal figure. However, the small number of participants reporting that a father was their focal figure may have diminished the ability to detect significant associations among this group. Similarly, no significant association was detected between number of supporters and later subjective well-being regardless of whether a friend was the focal figure. There was, however, a nearly significant positive association when focal figure is not a friend, and a negative, but nonsignificant association when focal figure is a friend.

*Feelings About Self.* The fourth series of models examined associations between wave 1 social relations and wave 2 feelings about self. The only personal and situational factor included in all models due to its association with the outcome was wave 2 stressful life events. As shown in table 39, personal and situational factors included in one or more models due to their association with predictors included child's impatient-aggressiveness, mother's age, stressful life events at wave 1, mother's marital status at wave 1, mother's employment at wave 1, and mother's average positive and negative relationship quality at wave 1. Of these, none were significant in preliminary models and therefore included in the final model. Of the six wave 1 network structure variables tested in model 2a, only inner circle size was a significant or nearly significant (negative)

predictor of wave 2 feelings about self. Of the twelve network composition variables examined in model 2b, none were significant or nearly significant predictors of wave 2 feelings about self. Of the ten social support variables examined in model 2c, none were significant or nearly significant predictors of wave 2 feelings about self. The final model predicting wave 2 feelings about self thus included wave 1 feelings about self, gender and race, stressful life events at wave 2, and inner circle size at wave 1. As shown in table 34, children with more positive feelings about themselves at wave 1 also tended to report more positive feelings about themselves at wave 2. Controlling for these two indicators of previous feelings about oneself, White children tend to report less positive feelings about themselves 12 years later than did children of other races. Participants reporting more stressful life events at wave 2 tended to report less positive concurrent feelings about themselves. Controlling for these personal and situational influences, social relations at wave 1 were not associated with feelings about the self at wave 2.

Similar to the previous outcomes, as an alternative means of assessing the role of social support in predicting later feelings about self, the ten individual positive and negative support variables were replaced with focal figure and number of support variables. First, the four dichotomous focal variables, the number of support providers, and the interaction between number of supporters and each dichotomous focal figure variable were entered in four separate models (shown in table 39, models 2d through 2g) with the relevant personal and situational controls. Results indicated significant interactions between number of supporters and both father and sibling as focal figure. Final models were re-estimated adding these variables to the initial final model for wave 2 feelings about self. As shown in table 35, adding these social support indicators did not

alter the nature of the associations between the personal, situational or network variables included in the final model and wave 2 feelings about self. Examination of the effects of this set of social support variables revealed that when controlling for personal, situational, and network structure influences on feelings about self, there were significant interactions between number of supporters and both father and friend as focal figure. Follow-up analyses (shown in table 36) to investigate these interactions revealed no significant association between number of supporters and feelings about self, regardless of whether or not a father was the focal figure. However, there was a nearly significant positive association when father is not the focal figure and a nonsignificant but negative association when father is the focal figure. It should be noted that the small number of participants ( $n = 12$ ) reporting that a father was their focal figure may have diminished the ability to detect significant associations among this group. Similarly, no significant association was detected between number of supporters and later feelings about self regardless of whether a sibling was the focal figure, but there was a nearly significant positive association when focal figure is a sibling. It should be noted that the small number of participants reporting that a sibling was their focal figure ( $n = 8$ ) may have diminished the ability to detect significant associations among this group.

#### *Pattern-Centered Analyses*

In addition to the variable-centered analyses just described, research question 2 was also examined using a pattern-centered approach. Specifically, the implications of the patterns of wave 1 social relations identified in question 1 on wave 2 well-being was assessed using a series of ANCOVAs. Dependent variables included early adult (wave 2) well-being, specifically depression, subjective well-being, feelings about self, and overall

mental health. Each well-being indicator was assessed using a separate series of ANCOVAs.

In the first step of each series, the only independent variable included was membership in clusters of childhood (wave 1) social relations. The clusters used as predictors were those that included all children (not separated by age) and were based on network structure and composition. As shown in table 40, these analyses revealed that when examined on its own, cluster membership in wave 1 network clusters did not predict any of the wave 2 well-being composites.

Next, the ANCOVA models were re-estimated including relevant control variables. Similar to the strategy used in the variable-centered analyses, control variables included those associated with attrition, with wave 1 cluster membership, and with the wave 2 well-being variable being predicted. As shown in table 40, these analyses again revealed no significant main effects of cluster membership. Several significant interactions between cluster membership and the personal and situational characteristics examined were revealed, however, as shown in table 40.

First, the interaction between wave 1 network cluster membership and gender was significant in predicting wave 2 depression. Follow-up analyses revealed that among female participants, cluster membership was not significantly associated with later depression. For males, however, there was a nearly significant ( $p < .10$ ) effect of cluster membership on later depression, and boys in the “diverse network” and “friend network” both reported significantly more depression at wave 2 than did boys in the “large family” cluster.

Second, the interaction between wave 1 network cluster membership and stressful life events at wave 2 was a significant predictor of both subjective well-being and feelings about self. Overall, as shown by the main effects of stressful events in table 40, participants who reported more stressful life events reported less subjective well-being and less positive feelings about themselves than did participants reporting fewer stressful life events. Examination of the interaction revealed, however, that this association was significant only among participants belonging to specific wave 1 social relations clusters. With respect to subjective well-being, only those participants classified into the “diverse network” and “large family” network clusters at wave 1 showed the negative association between life events and subjective well-being. With respect to feelings about self, those participants classified into the “diverse network”, “large family” and “small family” network clusters at wave 1 showed the negative association between life events and feelings about self. For members of the “friend network” cluster, stressful life events were associated with neither subjective well-being nor feelings about the self.

*Research Question 3 (Implications for Childhood Educational Orientation):*

Research question 3 sought to assess the implications of childhood social relations for children’s orientation toward educational pursuits. Like question 2, this question will be addressed first using a traditional variable-centered approach, and second using a pattern-centered approach.

*Variable-centered analyses*

Research question 3 was first addressed using a variable-centered approach similar to that used to address research question 2. Multiple regression analyses were conducted to examine whether childhood social relations were significantly associated

with children's orientation toward educational pursuits. Dependent variables included the number of education-related items ("I would like to be..." "a smart child", "a child who is good at schoolwork", "a child who thinks deeply") that children endorsed on the ideal self scale and the number of the three items that they prioritized as one of their top three ideal self items. Independent variables included relevant control variables and characteristics of social relations at wave 1. As in question 2, control variables for each analysis included those personal and situational characteristics that were associated with attrition, with the dependent variable, or with the block of independent variables (network structure, network composition, and social support). Each of the two indicators of educational orientation (endorsement and prioritization of educational items) constituted the dependent variable in a separate analysis. Independent variables were entered in blocks, and associations between each predictor and the dependent variable were examined for linearity.

The first step entered in each analysis included the gender and race, and additional personal and/or situational variables found during preliminary analyses to be associated with the dependent variable. The next step in each analysis included childhood social relations characteristics and any additional personal or situational variables associated with them. As in question 2, in order to retain adequate power, each group of social relations characteristics (network structure, network composition, and social support) and their associated controls was tested in turn. Once each set of social network variables had been independently examined, a final model was constructed for each dependent variable consisting of gender race, any personal or situational characteristics associated with the outcome, any personal or situational characteristics associated with social relations that

were significant ( $p < .05$ ) or nearly significant ( $p < .10$ ) predictors of the outcome in a prior model, and any wave 1 social relations variables that showed significant or nearly significant associations with the dependent variable in the prior models.

*Endorsement.* The first series of models examined associations between wave 1 social relations and the number of educational items (of 3) the child endorsed. As shown in table 41, the only personal and situational factor included in all models due to its association with the outcome was mother's employment (at wave 1). Personal and situational factors included in one or more models due to their association with predictors included impatient-aggressiveness, mother's age, stressful life events at wave 1, mother's marital status at wave 1 and mother's average positive and negative relationship quality at wave 1. Of these, none were significantly associated with the outcome in preliminary models and therefore included in the final model. Of the six wave 1 network structure variables tested in model 2a, one was a significant predictor of endorsement of education-related ideal self items. Having a larger proportion of network members within an hour's drive (proximity) was positively associated with endorsement of education-related idea self items. Of the twelve network composition variables examined in model 2b, two were significant or nearly significant predictors of endorsement of educational items. The number of immediate family members in the child's network was positively associated with the number of educational items endorsed. Inclusion of a father in the network was negatively associated with the number of educational items endorsed. Of the ten social support variables examined in model 2c, none were significant predictors of endorsement of educational items. As shown in table 42, the final model therefore included gender, race, mother's employment, network proximity, number of immediate family, and



inclusion of father in the network. Results indicated that on average girls endorsed fewer educational ideal self items than boys did and that children whose mothers were currently working endorsed fewer education-related items than did those whose mothers were not working. In addition, those who included a father in their social networks endorsed fewer educational items than those who did not.

As an alternative means of assessing the role of social support, as in question 2, the ten individual social support variables were replaced with the focal figure and number of supporters variables. These social support variables were first entered in models with only the relevant control variables. Results indicated no significant effects of focal figure, number of supporters, or the interaction between the two on endorsement of educational items. Therefore, the final model was not altered.

*Priority.* The second series of models examined associations between wave 1 social relations and the number of educational items (of 3) the child prioritized among their top three ideal self items. As shown in table 43, the only personal and situational factor included in all models due to its association with the outcome was mother's average negative relationships. Personal and situational factors included in one or more models due to their association with predictors included impatient-aggressiveness, mother's age, stressful life events at wave 1, mother's marital status at wave 1, mother's employment at wave 1, and mother's average positive relationship quality at wave 1. Of these, only wave 1 stressful life events was significantly associated with the outcome in preliminary models and therefore included in the final model. Of the six wave 1 network structure variables tested in model 2a, none were significant or nearly significant predictors of the prioritization of education-related ideal self items. Of the twelve

network composition variables examined in model 2b, one was a significant predictor of prioritization of educational items. The inclusion of a cousin in the network was positively associated with the number of educational items prioritized. Of the ten social support variables examined in model 2c, none were significant predictors of endorsement of educational items. As shown in table 42, the final model therefore included gender, race, child's stressful life events, mother's negative relationships and inclusion of cousin in the network. Results indicated that on average White children prioritized fewer educational ideal self items than other children and that children reporting more life events and those whose mothers had more negative relationships prioritized fewer education-related items than did their peers. In addition, those who included a cousin in their social networks prioritized more educational items than those who did not.

As an alternative means of assessing the role of social support, as in question 2, the ten individual social support variables were replaced with the focal figure and number of supporters variables. These social support variables were first entered in models with only the relevant control variables. Results indicated no significant effects of focal figure, number of supporters, or the interaction between the two on endorsement of educational items. Therefore, the final model was not altered.

#### *Pattern-Centered Analyses*

In addition to the variable-centered analyses just described, research question 3 was also examined using a pattern-centered approach. Specifically, the implications of the patterns of wave 1 social relations identified in question 1 on children's orientation toward educational pursuits was assessed using a series of ANCOVAs. Dependent variables included the number of education-relevant items (out of three) that the child

endorsed and the number that he/she prioritized within the top 3 ideal self items. Each was assessed using a separate series of ANCOVAs.

In the first step of each series, the only independent variable included was membership in clusters of childhood (wave 1) social relations. The clusters used as predictors were those that included all children (not separated by age) and were based on network structure and composition. As shown in table 44, these analyses revealed that when examined on its own, cluster membership in wave 1 network clusters did not predict either indicator of educational orientation at wave 1.

Next, the ANCOVA models were re-estimated including relevant control variables. Similar to the strategy used in the variable-centered analyses, control variables included those associated with attrition, with wave 1 cluster membership, and with the wave 2 well-being variable being predicted. As shown in table 44, these analyses again revealed no significant main effects of cluster membership. In addition, there were no significant interactions between cluster membership and any of the control variables.

*Research Question 4 (Implications for Adult Status Attainment in Early Adulthood):*

Research question 4 was designed to assess the implications of childhood social relations for early adult educational attainment and entry into adult roles. This question was addressed first using a traditional variable-centered approach, and second using a pattern-centered approach.

*Variable-Centered Analyses*

Research question 4 was first addressed using a variable-centered approach similar to that used to address research questions 2 and 3. This approach consisted of a series of multiple linear regression analyses and multinomial logistic regression analyses.

*Educational attainment.* Multiple linear regression analyses were conducted to examine whether childhood social relations were significant predictors of early adults' educational attainment. The dependent variable was the number of years of education the participant had obtained by wave 2. Independent variables included relevant control variables and characteristics of social relations at wave 1. Control variables included participant age at wave 2, child's educational orientation, those personal and situational characteristics that were associated with attrition (gender and race), with the dependent variable (child impatient-aggressiveness, mother's education, mother's marital status at wave 1, and stressful life events at wave 2), or with the block of independent variables (mother's age, stressful life events at wave 1, mother's employment, mother's negative relationships). Independent variables were entered in blocks, and associations between each predictor and the dependent variable were examined for linearity.

The first step entered included control variables participant age, gender, race, educational orientation, impatient-aggressiveness, mother's education, mother's marital status at wave 1, and stressful life events at wave 2. The next step entered included childhood social relations characteristics and the personal or situational variables associated with them. As in questions 2 and 3, in order to retain adequate power, each group of characteristics (network structure, network composition, and social support) and their associated controls was tested in turn.

As shown in table 45, personal and situational factors included in one or more models due to their association with predictors included mother's age, stressful life events at wave 1, mother's employment status at wave 1, and mother's average positive and negative relationship quality at wave 1. Of these, both mother's average positive and

negative relationship quality were significant or nearly significant predictors of educational attainment in a preliminary model and was therefore included in the final model. Of the six wave 1 network structure variables tested in model 2a, two were significant predictors of later educational attainment. The proximity of the network was positively associated with later educational attainment and the frequency of contact with network members was negatively associated with later educational attainment. Of the twelve network composition variables examined in model 2b, none were significant or nearly significant predictors of wave 2 educational attainment. Of the ten social support variables examined in model 2c, none were significant predictors of educational attainment. The final model (shown in table 46) thus included child's gender and race, impatient-aggressiveness, stressful life events at wave 2, mother's education, mother's marital status, mother's average positive and negative relationship quality, the proximity of the network and frequency of contact with the network at wave 1. As shown in table 46, children whose mothers are more educated have attained more years of education themselves by wave 2, as have children whose mothers are married or living with a partner, and those whose mothers report less negative relationships. There was a nonlinear relationship between stressful life events at wave 2 and educational attainment at wave 2 such that those with both the lowest and highest levels of life stress report the fewest years of education. Controlling for these personal and situational influences on education, children with more proximal social networks at wave 1 tended to have attained more years of education by 12 years later than those with less proximal networks.

As an alternative means of assessing the role of social support, the ten individual support variables were replaced with the focal figure and number of supporters variables

as in questions 2 and 3. These variables were first entered in models with only the relevant control variables. Results (shown in table 45, models 2d through 2g) indicated a significant negative effect of father as focal figure on wave 2 educational attainment and a nearly significant interaction between sibling as focal figure and number of supporters. Final models (shown in table 47) were re-estimated with the addition of these variables (in two separate models). Adding these social support indicators altered the nature of associations between certain personal and situational variables included in the final model and education. Although mother's positive relationship quality was not a significant predictor of educational attainment in the initial final model, it was a significant negative predictor of educational attainment in the model including sibling as focal figure. Examination of the effects of the revised set of social support variables revealed that when controlling for other influences on educational attainment, children whose focal figure was their father reported lower educational attainment than their peers. Results also indicated a negative main effect of sibling as focal figure.

*Occupational status.* The variables indicating entry into adult roles (occupational status, marital/parental status, and living arrangement) were categorical. Therefore, multinomial logistic regressions were conducted to investigate the associations of social relations with these outcomes. Similar to the multiple linear regressions, independent variables included relevant control variables and characteristics of social relations at wave 1. Control variables included participant age at wave 2, child's educational orientation, and those personal and situational characteristics that were associated with attrition, with the dependent variable, or with the block of social relations characteristics. As in the linear regressions, independent variables were entered in blocks, and each

outcome was assessed in a separate series of models. The first series of multinomial logistic regression models examined associations between wave 1 social relations and wave 2 occupational status (student, working full time, working part time, or neither working nor student). As shown in table 48, personal and situational factors included in all model due to their association with attrition or the outcome included child's grade in school at wave 1, wave 1 and 2 stressful life events, and mother's average negative relationship quality. Participant's age at wave 2 and educational orientation at wave 1 were also included in preliminary models. Personal and situational variables included in one or more preliminary models due to their association with the social relations variables included child impatient-aggressiveness, mother's age, mother's marital status, mother's employment, and mother's average positive relationship quality at wave 1. The analysis indicated that the model fit of one or more models would be substantially reduced by eliminating mother's employment and mother's positive relationship quality. These controls were therefore included in the final model. Of the six wave 1 network structure variables tested in model 2a, analysis indicated that the model fit of this model would be substantially reduced by eliminating network proximity and frequency of contact. Of the twelve network composition variables examined in model 2b, analysis indicated that the model fit of this model would be substantially reduced by eliminating proportion of females in the network and the inclusion of a father in the network. Of the ten social support variables examined in model 2c, analysis indicated that the model fit of this model would be substantially reduced by eliminating positive support from father, friend, and extended family. The final model thus included the participant's age at wave 2, gender, race, grade in school, stressful life events at wave 1 and wave 2, mother's

employment at wave 1, mother's average positive and negative relationship quality, the proximity of network members, frequency of contact with the network, proportion of females in the network, inclusion of a father in the network, and positive support from father, friend, and extended family. As shown in table 46, the fit of the final model was significantly reduced by eliminating wave 1 and 2 stressful life events, mother's employment at wave 1, and mother's average negative relationship quality. Because none of the wave 1 social relations variables were deemed integral in predicting occupational status, individual parameter estimates will not be reported.

As an alternative means of assessing the role of social support, the ten individual social support variables were replaced with the focal figure and number of supporters variables (see table 48, models 2d through 2g). With the controls included, results indicated that elimination of the interaction term between number of supporters and friend as focal figure would result in poorer fit of the model predicting occupational category. Therefore, the final model was re-estimated including these terms. As shown in table 49, the fit of the final model was significantly reduced by eliminating wave 1 and 2 stressful life events, and mother's average negative relationship quality, proximity of the network, frequency of contact with the networks, the number of friends in the network, and the interaction between the number of supporters and friend as focal figure, indicating that each of these predictors was significantly associated with later occupational status. Examination of the relevant parameters (shown in table 49) revealed that those with more proximal networks were more likely to be students and to be working full time than others (relative to being neither working nor in school). Those reporting more frequent contact with their networks at wave 1 were less likely to be



students, working full time, or working part time at wave 2 than those with more frequent contact. Children with more friends in their networks were more likely to be students 12 years later than those with fewer friends, and the effect of the number of supporters on working full time varied by whether or not the child's focal figure was a friend. Among those whose focal figure was a friend at wave 1, the number of supporters they reported at wave 1 was not associated with the likelihood that they would be working full-time at wave 2. However, among those whose focal figure was not a friend, reporting more supporters at wave 1 was associated with a greater likelihood of working full-time at wave 2.

*Marital and parental status.* The next series of models examined associations between wave 1 social relations and wave 2 marital and parental status (married/partnered with children, single with children, married/partnered with no children, single with no children). As shown in table 50, personal and situational factors included in all models due to their association with attrition or the outcome included child's grade in school at wave 1, child's competitiveness, mother's education, and mother's marital status at wave 1. Personal and situational factors included in one or more preliminary models due to their association with predictors included impatient-aggressiveness, mother's age, wave 2 stressful life events, mother's employment at wave 1 and mother's average positive and negative relationship quality at wave 1. The analysis indicated that the model fit of one or more models would be substantially reduced by eliminating mother's employment and mother's positive and negative relationship quality at wave 1. These controls were therefore included in the final model. Of the six wave 1 network structure variables tested in model 2a, analysis indicated that the fit of this model

would be substantially reduced only by eliminating inner circle size. Of the twelve network composition variables examined in model 2b, analysis indicated that the model fit of this model would be significantly or nearly significantly reduced by eliminating proportion females in the network, proportion of adults in the network, the number of immediate family in the network, the number of extended family in the network, and the inclusion of an aunt or uncle in the network. Of the ten social support variables examined in model 2c, analysis indicated that the model fit of this model would be significantly or nearly significantly reduced by eliminating positive support from sibling and extended family, and negative support from mother, father, friend, and extended family. The final model (shown in table 46) thus included the participant's gender and race, age at wave 2, grade in school, competitiveness at wave 1, mother's education, marital status, employment, and average positive and negative relationship quality at wave 1, inner circle size, proportion of females in the network, proportion of adults in the network, number of immediate family and number of extended family members in the network, inclusion of an aunt or uncle in the network, positive support from sibling and extended family, and negative support from mother, father, friend, and extended family. As shown in table 46, the fit of the final model was significantly reduced by eliminating the participant's race, age at wave 2, grade in school and competitiveness at wave 1, mother's marital status, positive and negative relationship quality at wave 1, inner circle size, number of extended family members included, positive support from sibling, and negative support from mother, father, and friend. Examination of the parameter estimates associated with the social relations predictors (reported in table 51) showed that children with larger inner circles were less likely than their peers to be married with children 12

years later (relative to single with no children) and that children with more extended family members in their network were less likely to be single with children. Children reporting more positive support functions filled by their mothers were more likely than others to be single with children 12 years later and less likely to be married or partnered without children. Children reporting more negative support from fathers were less likely than others to be married or partnered with children, as were those reporting more positive support functions filled by a sibling. Those reporting more negative support from friend were both less likely to be married or partnered with children and more likely than others to be single with children.

As an alternative means of assessing the role of social support, the ten individual social support variables were replaced with the focal figure and number of supporters variables. With the controls included, results indicated that elimination of the interaction term between number of supporters and father as focal figure would result in poorer fit of the model predicting marital & parental status. Therefore, the final model was re-estimated including these terms. As shown in table 52, the fit of the final model was significantly reduced by eliminating the participant's race, age at wave 2, competitiveness at wave 1, mother's marital status, positive and negative relationship quality at wave 1, inner circle size, number of immediate and number of extended family members included, inclusion of an aunt or uncle, and the interaction between father as focal figure and number of supporters. Follow-up examination of the interaction between focal figure and number of supporters (shown in table 52) did not detect substantial differences in the effect of number of supporters on later marital and parental status by whether or not the father was the focal figure. The small number of participants whose

father was a focal figure, combined with the categorical nature of the outcome variable, may have made associations particularly difficult to detect.

*Living arrangement.* The third series of multinomial logistic regression models examined associations between wave 1 social relations and wave 2 living arrangement (alone, with partner, with parent(s), or other arrangement). As shown in table 53, the only personal or situational factor included in all models due to its association with the outcome was mother's education. Personal and situational factors included in one or more preliminary models due to their association with predictors included impatient-aggressiveness, mother's age, wave 1 stressful life events, mother's marital status and employment at wave 1 and mother's average positive and negative relationship quality at wave 1. The analysis indicated that the model fit of one or more models would be nearly significantly reduced by eliminating mother's negative relationship quality at wave 1. This variable was therefore included in the final model. Of the six wave 1 network structure variables tested in model 2a, analysis indicated that the model fit of this model would not be substantially reduced by eliminating any of them. Of the twelve network composition variables examined in model 2b, analysis indicated that the model fit of this model would be significantly or nearly significantly reduced by eliminating the inclusion of a mother, a sibling, and an aunt or uncle in the network. Of the ten social support variables examined in model 2c, analysis indicated that the model fit of this model would not be significantly or nearly significantly reduced by eliminating any of them. The final model thus included the participant's gender and race, age at wave 2, grade in school, mother's average negative relationship quality at wave 1, and the inclusion of a mother, sibling, and an aunt or uncle in the network. As shown in table 46, the fit of the final

model was significantly reduced by eliminating the participant's age at wave 2 and grade in school at wave 1 only. Because none of the social relations variables were identified as integral predictors of wave 2 living arrangement, parameter estimates were not examined for this model.

As an alternative means of assessing the role of social support, the ten individual social support variables were replaced with the focal figure and number of supporters variables. With the controls included, results indicated that elimination of the interaction term between number of supporters and mother, father, and friend as focal figure would each result in poorer fit of the model predicting living arrangement. Therefore, the final model was re-estimated including these terms. As shown in table 54, the fit of the final model was significantly reduced by eliminating the participant's gender, age at wave 2, grade in school at wave the inclusion of a mother and of an aunt or uncle in the networks, and each of the interactions between number of supporters and mother, father, and friend father as focal figure. Follow-up examination of these interactions (shown in table 54) revealed that among those whose focal figure was not their mother, and among those whose focal figure was their father, having more supporters during childhood was associated with a lower likelihood of living with their parents at the time of the early adult assessment. Among children whose focal figure was a friend, having more supporters during childhood was associated with a lower likelihood of living with a romantic partner 12 years later.

#### *Pattern-Centered Analyses*

In addition to the variable-centered analyses just described, research question 4 was also examined using a pattern-centered approach. The implications of the patterns of

wave 1 social relations identified in question 1 on wave 2 educational attainment was assessed using a series of ANCOVAs, and the implications of the patterns of wave 1 social relations on wave 2 adult roles were assessed using a series of multinomial logistic regressions.

In the first step of the ANCOVAs predicting educational attainment the only independent variable included was membership in clusters of childhood (wave 1) social relations. The clusters used as predictors were those that included all children (not separated by age) and were based on network structure and composition. As shown in table 55, these analyses revealed that when examined on its own (model 1), cluster membership in wave 1 network clusters did not significantly predict educational attainment.

Next, the ANCOVA models were re-estimated including relevant control variables. Similar to the strategy used in the variable-centered analyses, control variables included those associated with attrition, with wave 1 cluster membership, and with educational attainment. As shown in table 55, these analyses again revealed no significant main effects of cluster membership. There was a significant interaction between cluster membership and race, however. Follow-up analyses revealed that among white children, cluster membership was not associated with educational attainment at wave 2 ( $F = 1.60$ ,  $p > .10$ ), but that among nonwhite children, cluster membership at wave 1 was associated with educational attainment at wave 2 ( $F = 5.19$ ,  $p < .001$ ). Post-hoc tests revealed that nonwhite children exhibiting the “diverse network” pattern at wave 1 had, on average, attained more education than their peers 12 years later. Finally, the ANCOVA model was re-estimated including each of the two indicators (in separate models) of child’s

educational orientation and the interaction between educational orientation and cluster membership. As shown in table 55, neither cluster membership, educational orientation, nor the interaction between them were significantly associated with later educational attainment.

In order to investigate the associations of patterns of social relations at wave 1 with the categorical indicators of entry into adult roles at wave 2, a series of multinomial logistic regression models was conducted. Similar to the ANCOVA conducted to assess the implications of patterns on educational attainment, the first model examining each outcome included cluster membership at wave 1 as the only predictor, whereas the second model also included appropriate control variables.

Examination of the models predicting occupational status revealed that removing the term for wave 1 cluster membership did not significantly reduce the fit of the either the model including this term only or the model including control variables (age at wave 2, gender, race, grade in school at wave 1, stressful life events at wave 1 and wave 2, mother's marital status at wave 1 and mother's average negative relationship quality at wave 1). Inclusion of the interaction terms between cluster membership at wave 1 and each of these control variables revealed no significant interactions.

Similarly, examination of the models predicting marital/parental status also indicated no significant associations with wave 1 cluster membership, either when entered alone or with controls (age at wave 2, gender, race, grade in school at wave 1, competitiveness at wave 1, mother's education and mother's marital status at wave 1). However, when the interaction terms between cluster membership and each of these control variables was included, results indicated that removal of the interaction term

between cluster membership and mother's marital status would result in a significantly poorer model fit. This interaction was explored by estimating the model separately for children whose mothers were married or partnered and those whose mothers were not married or partnered. However, there was not a significant association between cluster membership at wave 1 and marital/parental status at wave 2 among either group.

Examination of the models predicting living arrangement at wave 2 also indicated no significant associations with wave 1 cluster membership, either when entered alone or with controls (age at wave 2, gender, race, and grade in school at wave 1). However, when the interaction terms between cluster membership and each of these control variables was included, results indicated that removal of the interaction term between cluster membership and participant race would result in a significantly poorer model fit. This interaction was explored by estimating the model separately for White and Nonwhite children. Among White children, those in the "diverse network" cluster at wave 1 were more likely to live alone, with a partner, or with their parents (relative to other arrangements) 12 years later than were other children. Among nonwhite children, however, patterns of social relations at wave 1 were not associated with living arrangement 12 years later.

### *Summary of Results*

The results presented here described the patterns of social relations evident among 8-12 year old children and among the same participants as young adults. Patterns were identified based on the structure and composition of social networks, and were associated with some aspects of social support. There was little continuity in patterns of social relations over the 12 years between waves. Patterns of social relations had little predictive



power over later well-being or adult roles among the sample as a whole, but were associated with depression among boys and with educational attainment among nonwhite children. Childhood patterns of social relations also moderated the effects of later stressful life events on subjective well-being and feelings about the self. When examined individually, several aspects of childhood social relations were associated with later well-being and adult social roles. Smaller inner circles, newer social networks, a higher proportion of adults, and reporting that one's mother provides the most support were all predictive of later well-being, controlling for earlier well-being as well as a variety of personal and situational characteristics. Having a more proximal social network also predicted higher levels of educational attainment 12 years later, controlling for personal and situational characteristics. Reporting that one's father provided the most social support was associated with attaining less education by early adulthood. Inner circle size, proximity of and frequency of contact with the network, the proportion of females, number of extended family, and inclusion of a mother in the network during middle childhood were all associated with the attainment of various adult roles 12 years later.

## Chapter VI: Discussion

### *Patterns of Social Relations during Childhood*

A primary objective of this dissertation was to examine patterns of social relations among eight to twelve year old children. As described in greater detail above, groups of children were identified as exhibiting distinct patterns of social relations. The patterns identified varied somewhat by the aspects of social relations included and the age of the children. Those detected as most meaningful for the current investigation included four patterns of social relations labeled as “diverse networks”, “friend networks”, “small family networks” and “large family networks”. Results were consistent with some hypotheses and inconsistent with others.

*Patterns of structure, composition, and support.* As expected, the patterns of social relations identified differed by the configuration of social relations characteristics examined. Patterns of networks structure only indicated that a major distinguishing factor was the size of the networks, with one pattern characterized by networks more than twice as large as those in any other pattern. Among the remaining three networks, one was identified as smaller than average (though only by a difference of approximately 2 network members), and was also quite dense, consisting mostly of network members who lived in close proximity to the child and who had been known for a long time. The two average-sized network patterns were distinguished from one another most drastically by proximity and frequency of contact. Patterns of networks composition (only) were distinguished by the numbers of immediate family, extended family, and friends

included, as well as by the inclusion of specific types of relationships, and the proportion of adults vs. children in the network.

With respect to patterns of social support, only two distinct patterns were identified, and they were distinguished primarily with respect to the degree of support received from friends, and the primary source(s) of negative support. Although others have identified “patterns” of social support based on the notion that each individual has a “focal figure” who provides the majority of his/her support (e.g., Takahashi, 2005), in this investigation examining all sources of support simultaneously did not indicate patterns based on a single type of relationship providing the majority of support for a given individual. On average, children exhibiting both support patterns reported substantial positive support from mothers, fathers, *and* friends, and for children exhibiting one of the two patterns, from a sibling as well. In addition, there did not appear to be a “lone wolf” pattern (e.g., as reported among Japanese adults in Takahashi, et al., 2007) of participants reporting little support from anyone, though this may have been due to the support questions, which were posed as “*Who* would you want to...?”, which may have suggested to children that they needed to name someone, even if in fact, they would not be likely to ask anyone for that particular type of support.

With respect to patterns including network structure, network composition, and social support indicators, network structure and composition indicators exerted the most influence on differentiation among patterns. This may be an indication that among children, the structure and composition of social networks is more relevant in determination of a pattern of social relations – that is, in overall similarity or dissimilarity with others – than is social support. Note that this does not necessarily imply that social

support or its implications are unimportant in children's lives, only that clearer patterns emerge based upon network structure and composition alone than when including social support. It may be the case that among children, the structure and composition of the social network are more closely tied to one another – and therefore forms a more coherent pattern, than do structure and composition with sources of social support.

To some degree the extent to which different types of individuals are included in the social network may be linked to the structure of the social network (the inclusion of more immediate family is not necessarily, but likely tied to greater contact frequency, whereas the inclusion of many friends is likely tied to a lower amount of time known). These differences may not translate as readily into differences in social support, however. In particular, because of the way in which social support was operationalized here, with each support function being reportedly filled by only one individual, differences in the number of functions filled by different relationship types may be less related to network structure and composition. For instance, among children reporting many extended family members in their networks, some may report turning to these individuals for fulfillment of many support functions, whereas others may report turning first to immediate family members, and still others to friends. Similarly, among children who do not include any friends in their social networks, some may, in fact, not have any friends, and therefore report that friends fill no or extremely few support functions, whereas other may have friends who meet their support needs. Children may not choose to include these friends in the first 10 members of their social networks (all that could be incorporated in the composition variables) for a variety of reasons. For instance, they may have had more than 10 family members whom they included before the friends. Alternatively, they may

view the friends as providing some support (e.g., companionship), but not sufficiently important in their lives to warrant inclusion in the social network. Thus, social support as assessed here may not be as consistently related to network structure and composition as structure and composition are to each other. Indeed, when social support was examined together with network structure and composition, most indicators of support did not distinguish among patterns. The final set of patterns, which will be discussed in depth below, as well as examined for its implications, therefore consisted of social network structure and composition only.

The group of patterns identified as most meaningful for the current investigation included four main patterns of childhood social relations, based on network structure and composition. Nearly all children included some immediate family in their networks, and patterns were identified primarily based on the extent to which children also included extended family and friends. Children exhibiting the “small family” pattern included primarily immediate family, whereas children exhibiting the “large family” pattern also included primarily family, but both immediate and extended. In contrast, children exhibiting the “friend” pattern included more friends than either type of family. Children exhibiting the “diverse” pattern included both family (more immediate than extended) and friends. The sources of social support that children reported differed based on their patterns of social relations, lending credence to the notion that the patterns identified reflected meaningful ways of classifying children’s social relations.

*Large family networks.* The most common pattern of social relations, exhibited by approximately 36% of the sample, was the large family networks pattern, characterized primarily by large social networks comprised of many immediate and extended family

members, but few, if any, friends. The prototypical child exhibiting this pattern may be a ten-year-old whose network includes his mother, father, older sister, three grandparents, aunt, uncle, one friend, and four others, such as a babysitter, two neighbors, and a teacher. Table 56 includes a detailed description of this hypothetical social network. Note that this hypothetical network was created for illustrative purposes, but that this is certainly not the only network configuration that could be exhibited by children classified into the “large network” pattern. Children with networks such as this one tend to report that their friends fill fewer than average positive support functions. These children, it appears, in addition to having a great deal of family in their social networks also turn primarily to family members or others in their social environments, rather than to their friends, for needed social support.

*Diverse networks.* The second most common pattern of childhood social relations, exhibited by approximately 30% of the sample, was the diverse network pattern. This pattern was characterized primarily by inclusion of both immediate family members and friends, and by a low proportion of adults. The prototypical child exhibiting this pattern may be a ten-year-old whose network includes her mother, father, older sister, and younger brother, two grandparents, two friends, and one other person, such as a teacher. For a more detailed description of a hypothetical network characterizing this pattern, see table 57. Networks fitting the diverse pattern are most commonly reported by White children whose mothers are married or partnered. This may be reflective, in part, of the tendency of Blacks to have more extended family involved in daily life (e.g., Levitt et al., 1993).

*Small family networks.* Approximately 21% of the participants exhibited the small family network pattern of social relations, which was characterized by small networks that did not include friends and were primarily comprised of adults. A prototypical child exhibiting this pattern may be a ten-year-old whose social network includes his mother, father, older brother, and one grandparent. See table 58 for a more detailed description of this hypothetical social network. Children with social networks fitting the small family pattern tend to report that their mothers fill more positive and negative support functions than average, and that friends fill fewer. In addition to reporting that their social networks are comprised primarily of immediate family, these children turn predominately to immediate family for both positive and negative support. Children who report networks like this one are also more likely to be nonwhite and have unmarried mothers. Although the race difference contrasts with typical findings that nonwhite children are more likely to be highly involved with their extended families than White children, these children's networks may be restricted by limitations imposed by the demands of single motherhood or the time constraints involved in shuttling between mothers' and fathers' residences (although only 56% of mothers of children in this group were married or partnered, 70% of children included a father in their social networks).

*Friend networks.* The smallest group of participants, approximately 13% exhibited the friend network pattern of social relations. This pattern was characterized primarily by the inclusion of friends, but few immediate or extended family members, and a low proportion of adults in the network. A prototypical child exhibiting this pattern may be a ten-year old whose social network includes her mother, younger brother, cousin, and two friends. This hypothetical social network is described in greater detail in

table 59. Children with social networks that fit the friend network pattern typically report that fewer than average of their positive social support functions are filled by their mothers, and more by their friends. This is consistent with the makeup of the networks themselves, and adds to the portrait of these school-aged children as truly friend-focused. Not only do they include more children than adults in their networks, they also turn more frequently to their friends for positive social support (on average, 40% of support functions filled by friends, and 30% by mothers).

*Children's control over social relations.* Although children were asked to report on their own social networks, and therefore reported the individuals who were subjectively most important to them, it should be noted that these choices may be constrained to a greater or lesser degree by their life circumstances and the choices of their parents. For instance, a child could not be classified into the "large family networks" pattern of social relations if he or she either had no extended family, or if his/her parent chose not to facilitate contact between the child and the extended family. Similarly, a child's social network may not include friends by the child's own choice, but may also not include friends because parents have not allowed the child the opportunity to develop friendships that are sufficiently close to warrant inclusion in the social network. Others (Cochran, Lerner, Riley, Gunnarsson & Henderson, 1990) have found that parents' and their children's social networks are closely related. Detailed interviews with parents in that investigation also revealed sharp distinctions by social class in the extent to which parents permitted and encouraged their children to socialize within their neighborhoods. Many low-income parents discouraged their young children from socializing with neighborhood children, either due to safety concerns or because they



feared the neighbors would have a negative influence on the child (Cochran et al., 1990). Thus, children living in these circumstances may have fewer opportunities to develop close friendships. Therefore, these patterns of social relations are best viewed as the child's subjective perceptions of his/her social relations *as they are*, and do not necessarily reflect the social relations pattern that the child *would most like* to have.

*Examination of hypotheses.* Several hypotheses were proposed regarding the identification of patterns of social relations among children. Some of these hypotheses were supported, whereas others were not. Consistent with hypotheses and with prior work (e.g., Levitt et al., 2005), children's parents, and particularly their mothers, were included in most patterns of social relations. Indeed, in three out of the four patterns, one hundred percent of children included their mother in their social network. In the remaining (and smallest) pattern (friend-focused), however, only around half of children did so, making the inclusion or exclusion of a mother specifically a clear point of differentiation in the patterns of social relations exhibited by school-aged children. The inclusion of a father is somewhat more variable, perhaps because overall, while 93% of children included mothers, only 77% included fathers. All children in the diverse networks pattern included a father, and only 7% in the friend-focused patterns (also the pattern least likely to include mothers) did so. However, the inclusion or lack of a father was not a defining feature of the small- or large-family networks. In both of these patterns, the majority of children (70% and 88%, respectively) included a father. Thus, whereas for mothers, it appears that 100% inclusion of mothers in the social network is the standard and less than 100% inclusion is a differentiating feature, among fathers, the standard may be *majority* inclusion of fathers with either 100% inclusion or low inclusion

a distinguishing feature. Overall, consistent with the hypothesis, most identified patterns of social relations included children's parents.

Also consistent with hypotheses and Levitt's work with children (e.g., Levitt et al, 2005), the three patterns with a high likelihood of including parents (comprising 77% of the overall sample) were differentiated primarily on the extent to which they also included extended family members and friends. The small family pattern can best be described as including immediate family only, the large family pattern as immediate and extended family, and the diverse network pattern as immediate family, friends, and some extended family.

Consistent with hypothesized age differences, only among older children was there a pattern of social relations which completely excluded parents. Although for both younger (8-10) and older (11-12) children in this sample, the norm is clearly the inclusion of parents, it is telling that a small subgroup of older children only (n=6) included neither parent in their social networks. These children may be experiencing the yearnings for autonomy associated with adolescence somewhat earlier than their peers, and consequently asserting that their parents are not among the important people in their lives. It is also possible that there is a disturbance of some sort in these six children's relationships with their parents that prevents the children from wanting to include their parents in their social networks. Yet, notably, these children do report, on average, that both mothers and fathers fulfill some social support functions. Thus, they have not disengaged from the parent-child relationship completely.

Also consistent with hypothesized age differences, both the peer-dominant and extended-family-dominant patterns of social relations among older children included a

higher number of friends than the corresponding patterns among younger children. Interestingly, however, a greater proportion of the younger (42%) than the older (28%) children were identified as exhibiting the peer-dominant pattern. Therefore, the hypothesis that the networks of older children would be more friend-focused than those of younger children was only partially supported. Interestingly, older children identified as having peer-dominant networks all included a mother in their social networks, whereas among younger children, the peer-dominant pattern was the only one in which some children (19%) did not include a mother. Conversely, younger children exhibiting a family-only pattern of social relations had the largest networks among younger children, whereas older children exhibiting a family-only pattern of social relations had substantially smaller networks than their peers. Thus, it may be the case that the meaning of having vs. lacking friends in the social network changes with age during this 8-12-year-old period. Perhaps as children age, they become more adept at incorporating friends into their social networks without necessarily reducing the number of family members.

Inconsistent with hypothesized gender differences in patterns of social relations, there were no differences between clusters in gender composition. However, social relations were not clustered separately by gender, so it is possible that boys' or girls' social relations would not have fit the same group of patterns identified among the whole sample. In addition, gender differences in patterns may have been evident if social support variables had been included in the final cluster solution.

#### *Patterns of Social Relations during Adulthood*

Patterns of social relations were also identified at wave 2, when the participants were young adults. At this point, just under half (46%) of the participants were identified

as exhibiting a “family network” pattern of social relations, characterized by the inclusion of few friends, combined with a relatively high likelihood of being married and/or having their own children. The remaining two patterns were both characterized by diverse social networks, including both family and friends, but were distinguished by their overall size and inclusion of extended family, with 31% of participants reporting larger networks that included extended family, and 23% reporting smaller networks without extended family. Those exhibiting the large diverse network pattern reported, on average, the most positive relationship quality with their fathers. Those in the small diverse pattern reported the most, and those in the family pattern the least, negativity with their fathers. Social support from mothers, siblings, friends, and romantic partners did not differ, on average, by pattern of social networks. In addition, those exhibiting the large network pattern were more likely to be White, whereas those exhibiting the family pattern were more likely to be nonwhite.

At wave 2, the 20-27 year-old “young adult” participants in this study might more appropriately be referred to as “emerging adults”. Emerging adulthood as a period of life between adolescence and full adulthood, approximately ages 18-25, has received considerable attention in recent years (e.g., Arnett, 2004). However, not all developmentalists agree that this period should be considered distinct from “young adulthood” more broadly, in part due to questions over whether it applies to all 18-25 year-olds or predominately the middle class. Regardless of whether they are referred to as “young adults” or “emerging adults”, the fact remains that participants in this study were, for the most part, in their early twenties (94% were between 21 and 25), and may therefore have differed in important ways from “young adults” in their late twenties and

thirties. Through extensive interviews with emerging adults, Arnett (2004) has found that the period is characterized (for most) by a high degree of exploration and a low degree of stability with respect to both careers and interpersonal relationships. Thus, the meaning of participants' patterns of social relations at wave 2 may best be interpreted within a consideration of this unique period of the lifespan. The strong distinctions in patterns based on participants' marital and parental status is somewhat consistent with work on emerging adulthood. Arnett (2004) found that although most emerging adults define adulthood in terms of responsibility, independence, and decision-making, rather than on social markers such as marriage and parenthood, many of those who become parents during this age period do view this event as the most important in their personal transition into adulthood. In addition, most individuals at this age view marriage as a desirable goal, but only after they have finished their own personal explorations in the realms of love and work. Therefore, those who are married by wave 2 may feel that they had already completed such explorations and moved onto "full" adulthood before marrying. Thus, although the current data do not permit conclusions about the extent to which participants considered themselves "adult" as opposed to "emerging adult", it may be that those who were married or had children were exhibiting more "adult" patterns of social relations than those who were single and did not have children.

*Examination of hypotheses.* Consistent with hypotheses, most patterns of social networks exhibited at wave 2, when participants were young adults, included a variety of members. Among adults, none of the identified network patterns consisted, on average, of exclusively family or exclusively friends. One distinct group of young adult participants was characterized as family-focused, incorporating primarily immediate

family members, and with many participants having started their own nuclear families, but even among this group, nearly a third of participants also included at least one friend in their networks, and over 70% include some extended family. The remaining two patterns identified among adults were both classified as “diverse”, and both included family as well as friends.

Inconsistent with hypotheses, there were no age differences among adults, either in classification into one of the three main patterns identified, or when examining patterns separately by age group. Both younger and older adults, when examined separately, exhibited two primary patterns of social networks: friends with no children, and children with no friends, although the specific makeup of each pattern did vary somewhat between older and younger participants. Overall, however, and as might be expected from a developmental standpoint, age within the range of 20-27 appears to play a less important role in identifying patterns of social relations than does age within the range of 8-12.

Instead, among the adults, it appears that having started one’s own nuclear family with a spouse/partner and/or children is more influential over social network patterns than age. This is generally consistent with the work of Fiori et al among older adults (2007), which also showed a strong influence of marital status on adult patterns of social relations. Among the overall sample, patterns were identified in large part based on this criteria, and when patterns were examined separately among those who had a spouse/partner, and/or children and those who were single and childless, the resulting patterns did differ from one another. Among those who had established their own nuclear families, patterns varied primarily in whether or not they included a father in the social network, and whether the participant had children. Among single, childless early

adults, in contrast, inclusion of a father was not a distinguishing factor between patterns of social relations. Instead, patterns varied in the extent to which friends and extended family were included, as well as overall size, longevity, proximity, and contact frequency. Thus, during early adulthood, it appears that the formation of one's own nuclear family through marriage, cohabitation, or parenthood is more influential on patterns of social relations than is chronological age.

*Continuity over Time in Patterns of Social Relations.*

Inconsistent with the hypotheses of this study, there was no evidence of continuity over time in patterns of social relations, at least with respect to the overall sample. The pattern of social relations exhibited by an 8-12-year old did not predict which pattern he/she was likely to exhibit 12 years later as a young adult. There may be several reasons for this. Although moderate continuity was hypothesized based on the convoy model of Social Relations' premise that convoys move with the individual throughout the lifespan, the long period of time in between waves, encompassed, for most participants, two major developmental transition (childhood to adolescence and adolescence to adulthood). These transitions may have introduced sufficient potential for discontinuity in social relations that among the sample as a whole, discontinuity was prevalent. In addition, at wave 2, the participants may be experiencing a developmental disturbance associated with emerging adulthood. That is, within a framework of long-term continuity across the life course, emerging adulthood may be a time for experimentation and exploration within the realm of social relations, as it is thought to be in the realms of love and work (e.g., Arnett, 2004). Alternatively, it could be the case that the patterns of social relations identified

were not sufficiently precise, or the sample not sufficiently large, to detect continuity over time among the sample as a whole.

Examining the younger group of participants only, on the other hand, some continuity over time in patterns of social relations was detected. Eight- to ten-year-olds who exhibited a peer-dominant pattern of social relations were more likely to exhibit a pattern of including no friends, but possibly their own children 12 years later. In contrast, those exhibiting an extended-family-dominant pattern were more likely to exhibit the opposite (friends, no children) pattern in early adulthood. It is notable that those exhibiting the pattern of social relations most dominated by friends in childhood are likely to exhibit a pattern *absent* of friends during adulthood.

This may be an example of heterotypic continuity, whereby the nature of these participants' social networks has changed over time, but the underlying meaning has not. Heterotypic continuity may in fact be more expected than homotypic continuity (consistency in the specific nature of social relations) when considering the normative developmental differences in social relations suggested by a variety of theories (e.g., Erikson, 1966; Grotevant & Cooper, 1998; Gutman & Eccles, 2007). Specifically, it could be argued that among 8-10-year olds living in the United States in 1992, a pattern of social networks characterized by the inclusion of more friends than immediate family, and specifically, by a lower than average likelihood of including a mother is, to some extent, non-normative. Similarly, it could be argued that at age 22 (on average), having one's own children, but no friends in the social network is also somewhat non-normative for American young adults in 2005. Thus it may be that these participants are



characterized at both waves by somewhat age-inappropriate social relations, although the form that this takes varies with the developmental period.

Importantly, the definition of ‘normative’ or ‘age-appropriate’ social relations is culturally specific. The meaning of any given pattern of social relations may vary drastically from one cultural context to another, and patterns identified here as ‘non-normative’ may in fact be ‘normative’ in a different context. The implications of any given pattern of social relations likely vary depending on whether it is seen as appropriate or inappropriate in one’s own culture.

Similarly, these participants may have experienced continuously difficult or strained relations with their immediate family members over time, which may have led them to look to friends to fill their social networks during childhood, and to a romantic partner or children as they enter adulthood. Alternatively, having a peer-focused network during middle childhood may set up the conditions that later lead to early parenthood and the subsequent loss of contact with friends. Connections have been identified between extreme peer orientation during adolescence and outcomes such as problem behavior and lower school performance (e.g., Fuligni, Eccles, Barber, & Clements, 2001; Goldstein et al., 2005). In contrast, the inclusion of many extended family members in the network during middle childhood may allow children to develop the necessary social skills to form stable friendships later in life. During adulthood, the lack of a school context with readily available age-mates may make friends close enough to be included in the social network more difficult to come by. Thus, reporting close friends at this age may require greater social skills than during earlier periods.

*Contributions and limitations of this question.* The current study adds to the growing body of work taking a pattern-centered approach to development, and to social relations specifically. It was unfortunate that in the current investigation, clear and consistent patterns were not identified when both network characteristics and social support were examined simultaneously, as such patterns would have provided the most novel addition to the social relations literature. Although it would be wise to investigate such patterns again using a larger sample before concluding that they cannot be identified, it is noteworthy that the structure and composition of social networks tend to form more cohesive patterns than do structure, composition, and support together. If future studies are able to replicate this finding, then the lack of clearly identifiable patterns encompassing structure, composition, and support, will be in itself an important contribution to our understanding of the nature of social relations among school-aged children. Relatedly, because the sample is relatively small, particularly at wave 2 ( $n = 150$ ), further dividing participants into subgroups (younger/older, married/not married) before identifying social network patterns through cluster analysis may have resulted in groups too small for confident attribution of patterns. For example, some of the patterns detected may exist only within the small sample studied here, and not in the larger population. Conversely, some social network patterns within the population may not have been detected due to the small subsamples available for analysis.

This study also contributes to the developmental literature on social relations by illustrating some age differences between the younger, 8-10-year-old, children in this sample and the older, 11-12-year old children in the patterns of social relations that they exhibit. As discussed above, although the patterns among the two groups were similar,

there were subtle differences in patterns of inclusion of both parents and peers in children's social networks, suggesting that developmental changes in social relations are occurring within the 8-12-year old age range as children near or begin to enter adolescence. In the future, it would be beneficial to conduct a longitudinal study among children in this age range with more compressed data collection points in order to identify individual developmental trajectories within this preadolescent period. This would allow exploration of the ways in which the developmental shifts suggested by the current data may vary in both nature and timing between individuals.

Finally, a unique contribution of this study is its longitudinal nature spanning the transition from childhood into adulthood, and consequently, the ability to examine continuity in social relations across this transition. The findings indicating that little continuity exists, at least when examining the sample as a whole, is illuminating in that it indicates the possibility of substantive change in social relations over this long transition. This is reassuring in the sense that children who may be unhappy with the state of their social networks during middle childhood are not necessarily doomed to experience the same pattern of unfulfilling social relations as adults. Conversely, children who are satisfied with their childhood social relations are not guaranteed that the nature of their social networks will not change over time. Of course, the definition of desirable or fulfilling social relations may change over time as well, and the current data were not able to address continuity in children's overall satisfaction with their social networks. Thus, a promising direction for future research would be to examine such satisfaction, and more generally, to address to a greater degree the significance that children attach to their own social relations. It would be illuminating to note whether such meaning-making

exhibits greater continuity over the long term than does the specific nature of the social network itself. In addition, the lack of continuity in social relations over time may be due, in part, to the nature of emerging adulthood as a unique phase of the lifespan, characterized by exploration and instability (Arnett, 2004). It would therefore be useful to follow these individuals past the emerging adulthood period to examine whether greater continuity between child and adult social relations is evident once participants have settled into their longer-term adult roles.

*Research question 1 summary and conclusions.* Identifiable patterns exist in children's social network structure and composition, and are associated in predictable ways with some aspects of social support. Nearly all children include immediate family members in their social networks, and variation in patterns is based primarily on the extent to which they also include extended family and/or friends. Among young adults the primary source of variation in social networks is whether or not they have formed their own nuclear family. Considerable opportunity for change in social networks patterns exists between middle childhood and early adulthood.

*Childhood Social Relation: Long-term Implications for Well-Being.*

*Variable-Centered Implications.* Some aspects of children's social relations appeared to have long-term implications for their well-being. The structure and composition of children's networks, as well as the sources of social support they report, each had some implications for later well-being outcomes.

The structure of children's social networks was associated with their later physical health. Children with larger inner circles and with more longstanding networks had worse physical health 12 years than those with smaller inner circles and newer

networks, respectively. Both of these findings were initially surprising. However, there are several possible explanations. For instance, large inner circles among children may be detrimental for physical health by burdening children with a sense of responsibility toward many network members. Another likely process explaining this counterintuitive association is that large inner circles may be indicative of a large number of individuals sharing material resources with the child. In other words, these children's inner circles may be large because they have many siblings, or because extended family members may reside in their households. With a larger number of individuals thus sharing concrete resources, such as space, money, and food, physical health may suffer. For instance, a child's doctor and dental visits may be less frequent if parent's have only a limited pool of money and time with which to provide them, and many children or other family members amongst whom to divide these resources. Future research might investigate this explanation by examining whether the association between inner circle size and physical health varies by socioeconomic status. Alternatively, a large inner circle may be indicative of difficulty in distinguishing between close, intimate relationships and less close social ties. The inner circle is intended to represent individuals who are "so close, it is difficult to imagine your life without them". It may be that conceptualizing more than a select few individuals as fitting this criterion is indicative of either poor social cognition or asymmetrical social relationships. Networks characterized by a long average time known may be indicative of difficulty adding new members to the social network. In other words, it may not be the presence of longstanding social ties, but the absence of new ones that is detrimental. Both exceptionally large inner circles and stagnant networks may result in stress for the participant, which may in turn result in decreased physical and

health over time. Alternatively, asymmetrical or stagnant relationship may be less likely to provide needed support for health-promoting behaviors, thus increasing the risk for poorer overall health.

One aspect of the composition of children's social networks is also associated with well-being. Children who reported that their social networks were comprised of a higher proportion of adults were less depressed 12 years later than other children. Having a social network that is comprised predominately of adults may allow the child sufficient sources for help and guidance during childhood, which may translate into better mental health 12 years later. Conversely, a low proportion of adults may indicate that the child does not have a sufficient number of adults in his/her social circle to provide the types of interaction that peers alone cannot. Peers at this age may be ill-equipped to provide the emotional and instrumental support necessary for optimal decision-making and mental health going forward into adulthood. Moreover, having a high proportion of adults in the network typically indicates having more close adults than just one's parents. Much literature has noted the beneficial effect of nonparental adult mentors for well-being (e.g., DuBois & Silverthorn, 2005; Rhodes & DuBois, 2008; Zand et al., 2009). It may be that a high proportion of adults in the social network, for many children, reflects inclusion of one or more mentors of this type, whether an extended family member, such as an aunt or uncle, or a nonfamilial adult, such as a teacher, coach, family friend, or other mentor.

Children's social support was also associated with later well-being. When examined individually, positive support from mothers, siblings, friends, and extended family members were all associated with lower well-being 12 years later. This counterintuitive set of findings, when taken together, was interpreted to indicate that

receiving too high a proportion of positive social support from any one source was detrimental to well-being. Such a high preponderance of support from one source was interpreted to indicate a lack of a variety of sources to whom the child could turn for positive support. This could be reflective of either a child-driven or an other-driven process. For instance, the child may actively or passively (due to difficulty establishing supportive ties with others) choose to turn predominately to one network member for support. Alternatively, the network member may actively attempt to become the child's exclusive supporter (i.e., "smothering" the child). Either case may be detrimental for well-being. For instance, while positive support from mother may be a positive influence on a child, receiving positive support *exclusively* (or nearly exclusively) from one's mother is likely maladaptive and may lead to lower subjective well-being by early adulthood.

When examined in terms of who fulfilled the most social functions for the children, in combination with the number of different sources of support reported, social support was again influential over later well-being. Children whose focal figure was their mother reported better physical health 12 years later, regardless of the number of other support providers they reported, whereas the effects of reporting a father, sibling, or friend as one's focal figure varied as a function of the total number of social supporters. Children for whom a sibling fulfills the most social support functions report better well-being when they have more sources of social support than when they have fewer supporters. This is consistent with the interpretation posed above that positive support from mothers or other sources per se is not detrimental, unless it is excessive or precludes other types of support. Relying primarily on the mother for support during middle

childhood may be indicative of a positive attachment relationship with the mother that follows the child into adulthood and protects against depression. Having a sibling as a focal figure was a fairly rare occurrence in this sample. Only 8 children reported that a sibling filled more support functions than any other type of relationship. Conclusions are therefore drawn cautiously, but it appears that reporting such a pattern may be detrimental if the child does not have a sufficient number of other supporters to whom he or she can turn. Similar to the hypotheses presented earlier regarding the reason for the negative associations between positive support from nearly any source and later well-being, while having positive support from one's sibling may be beneficial, receiving support exclusively or nearly exclusively from a sibling may instead be detrimental. This may be the case for siblings especially because siblings are typically close in age to the respondent, and are familial ties. Thus, unlike parents, siblings may be unable to provide the sophisticated levels of instrumental or emotional support that the child may need, and unlike friends, turning to a sibling for support is not indicative of an ability to form and maintain strong voluntary social ties. Thus, those children who have few supporters aside from their sibling(s) may be particularly vulnerable.

The primary focus of the investigation was on the *sources* of social support. The *types* of support examined included aid, affect, and affirmation, consistent with the convoy model (Kahn & Antonucci, 1980). It should be noted that the support examined here was primarily *received* (rather than given), *perceived* (rather than actual), *available* (not necessarily enacted), and *objectively described* (rather than subjectively evaluated). As noted by House & Kahn (1985), among others, the implications of social support identified may have been different if different aspects of support had been the focus.



Overall, it appears that to best promote well-being over the long term, childhood social networks would be characterized by small inner circles, inclusion of newer members as well as more longstanding ones, and a high proportion of adults. Additionally, it appears that having one's mother as the focal figure is the optimal support configuration for long-term well-being. Of course, these predictions are based on averages across children, and for any one child, there may be a variety of reasons for which a different configuration of social relations may be more desirable. In addition, these findings demonstrate that social support, despite its failure to form coherent patterns with network structure and composition, clearly has important implications for well-being when considered simultaneously with these factors.

*Pattern-centered implications.* Overall, children exhibiting the four patterns of social relations identified differed little in their later well-being. Boys, but not girls, who exhibited the diverse or friend network patterns were more depressed 12 years later than boys exhibiting the large family network pattern. Among boys, then, exhibiting a pattern of social relations characterized by a large network with many extended family members may be protective against later depression. Yet, when examined using the variable-centered approach, there was no association between the number of extended family members and any aspect of later well-being. Together, these findings may indicate that having a great deal of extended family in one's social network is not particularly influential on its own, but may be beneficial, at least for boys, when it is combined with having a large network that also includes immediate family.

The pattern of social networks exhibited during middle childhood also appeared to influence the extent to which participants' later well-being was tied to the stressful life

events they reported. For those exhibiting the diverse or large family patterns, the association frequently found in other work (e.g., Cohen & Wills, 1985; Murry et al., 2008) between more stressful life events and poorer well-being was replicated here (with respect to both subjective well-being and feelings about the self). Interestingly, however, among those exhibiting the friend pattern, there was no association between stressful events and later well-being. Among those exhibiting the final, small family network pattern, stressful life events were associated with poorer feelings about the self, but not with lower subjective well-being. These differences are not explained by differences in the number of wave 2 stressful life events between children exhibiting different patterns of social relations at wave 1, nor by wave 2 patterns of social relations. It appears that while exerting little direct influence over later well-being, patterns of social support may be influential in the ways in which they prepare children to react to environmental stress later in life. Neither stress levels nor well-being differ substantially between groups; rather, it is the association between stress and well-being that differs. The friend pattern among children, characterized by reporting as many friends as family members and a high proportion of children in the social network, can be conceptualized as somewhat non-normative, or at the least, unconventional, among school-aged children. Thus, it is noteworthy that these patterns are associated with exhibiting unconventional reactions to stress later in life. It may be that some underlying characteristic of these children is influencing both their social relations and their reactions to stress.

It may also be the case that children who, during their middle childhood years, have small social networks, particularly small networks comprised of a high proportion of peers, may have developed ways of coping with stressful events that do not impact

their subjective well-being or self-concept. Interestingly, for physical health and depression, two arguably more objective indicators of well-being (though both were also self-reported), the main effect of stressful life events was not qualified by an interaction with childhood social network pattern. Thus, it does not appear to be the case that participants who report having a “friend” or “small family” social network during childhood are entirely unaffected by the stressful events in their lives. Instead, it appears that despite any influence of stressful life events on their physical health or depression, these participants may somehow insulate themselves from letting these factors influence the way they feel about themselves or their lives. This may be reflective of having had less than optimal social relations during childhood in that these participants have developed a potentially self-protective strategy of not allowing outside influences as large an effect over their subjective appraisals of themselves and their lives.

*Examination of hypotheses.* The hypothesis that presence of friends and siblings would lead to better mental health was not supported. The inclusion of siblings, number of immediate family members, and inclusion of friends were not included in the final model for any of the well-being outcomes examined. The number of friends in the social network was included in one final model, but was not a significant predictor of subsequent depression, though it did show a nearly significant negative association. The inclusion of these relationship types in the network may be a different phenomenon than simply having a sibling or having a friend, and it may be the latter that has been shown in past work (e.g., Bagwell et al., 2001; Bedford et al., 2000) to correspond with well-being. It may also be the case that concurrent inclusion of sibling or friend is more influential for well-being than inclusion of these relationship types 12 years earlier. Perhaps children

who do not have friends in their social networks at age 8-12 may go on to develop friendships later on, and therefore see little lasting impact on their well-being. It should also be noted that those who had no friends in their social networks at wave 1 were less likely to participate in wave 2 of the study than were those who had at least one friend. This selective attrition may also have contributed to the lack of significant findings regarding the inclusion of a friend in the social networks in that those who had no friends during childhood and were functioning poorly by adulthood may not have been included in the analysis.

The hypothesis that positive support from parents would be associated with better well-being was partially supported. As discussed above, all associations between the individual support indicators and well-being were negative, possibly as an indication that an overabundance of support from any one source may be detrimental. Nevertheless, results did show that having a mother as one's focal figure was associated with more positive outcomes. For fathers, the results were complicated by an interaction with number of supporters such that the effects of father support itself were unclear.

The hypotheses that negative support from parents and siblings would be associated with later depression were not supported. This may reflect a measurement issue in that only two negative support functions were asked about, and only one individual could be nominated to fill each. Thus, it is entirely possible for either parents or siblings to be reported as filling no negative functions, even though the relationship is, in fact, moderate to high in negativity. Moreover, the negativity items that were used operationalized negative support as getting on one's nerves and making demands, rather than more serious forms of negativity such as conflict and hostility. Therefore, high

negative support as used here from parents and/or siblings is somewhat normative, with siblings reported as the most common source of negativity, followed by parents. The type of negativity examined here, therefore, may not be as detrimental to well-being as the negativity that has been assessed in prior studies. Such mild negativity may even be beneficial in some cases, such as moderately demanding parents inspiring the children to higher standards of behavior and achievement. Others have actually proposed beneficial effects of mild sibling conflict (e.g., Herrera & Dunn, 1997), though here we detected no significant associations in either direction.

The hypothesis that patterns of social relations characterized by support from multiple sources would be positive, especially for self-efficacy and depression, was minimally supported. Overall, there were few associations between social relations patterns and well-being, and patterns were unable to incorporate support sources. However, among boys, being in the large family cluster, which was characterized by having a large network including many extended family members, as well as immediate family and possibly also friends, was associated with better long-term outcomes. It cannot be determined from this finding whether the variety of network members in this pattern actually translated into more overall social support, but more network members do provide at least more *potential* support sources, whether or not support is actually provided or available. When the number of supporters reported was examined directly in the variable-centered analyses, the effects of the number of supporters a child reported varied by who the focal figure was. For children whose focal figure was a sibling, there was some evidence that having more supporters was associated with better well-being, but among other groups, associations could not be detected.

The hypothesis that non-normative patterns of social relations would be associated with poorer well-being was also minimally supported. As described above, there were limited associations, overall, between social relations pattern and well-being. However, among boys, the friend-focused pattern, which as noted above, can be argued is somewhat non-normative among children, is associated with lower well-being than the large family pattern. However, it must be noted that in the same analysis the diverse pattern, which does not appear to be non-normative in any way, is also associated with lower well-being.

*Contributions of limitations of question 2.* The current study adds to the literature on children's social relations by considering the influence of network structure, network composition, and social support simultaneously. This approach allows an assessment of the relative influence of each of these. In terms of later well-being, considering all of the analyses together, social support is a more consistent predictor of later well-being than is either network structure or network composition. When the social support individual scales are substituted with the focal figure indicators, social support loses some of its dominance in predicting later well-being outcomes, but remains a consistent predictor.

To follow up on the findings regarding the lack of significant associations between including siblings and friends in the social network and later well-being, future studies should examine the distinction between *having* each of these types of relationship and *including* those individuals in the social network. Such an investigation could begin to determine not only what factors may account for children who have siblings or friends not including these individuals in their social networks, but also whether the presence of a sibling or friend is associated with well-being to a greater extent than is the inclusion of

this relationship in the social network. If so, a detailed investigation focused on these relationships specifically, may be able to identify some potential reasons for why this may be the case.

In addition, although the associations identified here between childhood social relations and later well-being are intriguing and important, the processes by which they may occur are at this point speculative. Future investigations should attempt to more clearly delineate the processes by which these associations occur. Such an investigation would require more closely spaced waves of data collection, combined with more in-depth assessments of children's well-being, and the meaning they may make of their social relations.

*Research Question 2 summary and conclusions.* Children's social relations during middle childhood appear to have long-lasting implications for their well-being.

*Childhood Social Relations: Associations with Educational Orientation.*

Overall, few associations were evident between children's social relations and their orientation toward educational pursuits. Children who included a cousin in their social networks prioritized more education-related items as components of their ideal selves, but children whose networks included their father endorsed fewer education-related items. The inclusion of a cousin in the social network is likely indicative of a close extended family with at least sufficient contact for a bond to form between the child and his/her cousin. Such family connections may allow the child to feel that education is within his reach, and thus prioritize it. Alternatively, older cousins may serve as role models for younger cousins, who in turn view education as a higher priority. It is unclear why the inclusion of a father in the social network would be associated with lower

educational orientation. Among both those with a father in their networks and those without one, the means for educational endorsement were quite high, and differed little ( $m = 2.77$  out of 3,  $sd = 0.49$  for those with a father;  $m = 2.80$  out of 3,  $sd = 0.42$  for those without a father). Perhaps for those *without* a father in their networks, there is an even stronger tendency than among those with one to view education as a means for personal advancement and thus to endorse education-related ideal self items. No associations were noted between educational orientation and children's network structure, social support, or social network pattern.

*Examination of hypotheses.* The hypothesis that children's social relations would be associated with their orientation toward educational pursuits was only minimally supported. Specific hypotheses included that positive relationship quality with parents would be associated with greater orientation toward education. This hypothesis was not supported, and in fact, the inclusion of a father in the social network was associated with lower orientation toward education. In addition, the hypothesis that educational orientation would be associated with subsequent educational attainment was not supported. It may be the case that the items used here did not actually tap into orientation toward educational pursuits. These items were taken from the ideal self scale and did not show a high degree of variability between children. To assess the value that a child actually places on education, questions more specifically tailored to this construct may be needed.

*Contributions and limitations of question 3.* Orientation toward educational pursuits has not frequently been studied among children, particularly in combination with social relations. Thus, this examination in itself is a contribution to the literature. The



measure used here to examine these associations was not originally designed to assess orientation toward education. Future research should investigate this association using a more tailored measure to assess whether associations between social relations and educational attainment are truly absent. For instance, a measure of school engagement may be more appropriate for identifying associations with social relations and with later educational attainment.

*Research question 3 summary and conclusions.* There appears to be little association between children's social relations and their orientation toward educational pursuits.

*Childhood Social Relations: Long-term Implications for Education and Adult Roles.*

Children's social relations were somewhat associated with their later educational attainment. Children with more proximal networks had attained more education, and those whose focal figure was a father or a sibling has attained less 12 years later than their counterparts with less proximal networks and other focal figures, respectively. Having a proximal social network during childhood may provide a sense of stability to the child, which in turn may increase his/her willingness to reach beyond the comfort zone and pursue higher education. Interestingly, this effect of proximity of the social network is independent of frequency of contact with network members and sources of social support, both of which were included in the model. The finding may, however, be reflective of differences in the overall level of social support the child has, which was not able to be examined here. For instance, two children may both report that they would primarily turn to their mothers to fulfill the majority of social support functions. However, a child whose social network was more proximal may have a variety of

alternate support sources to turn to should the mother be unavailable, whereas a child whose social network is less proximal may have fewer readily available alternative supporters. The availability of these alternative supporters, even if infrequently needed or used, may provide the child with a sense of safety and confidence, which may in turn lead him or her to succeed academically and pursue additional education.

The finding that having a father or sibling as one's focal figure was associated with lower educational attainment 12 years later is intriguing. With respect to siblings, this association may reflect a pattern of low availability of age-appropriate support that leads to difficulty succeeding at educational pursuits. Relying primarily on a sibling, who is not an adult, and thus may not be able to appropriately meet the child's needs, but is also not a friend, and thus not indicative of the child's ability to create his/her own support network, may indicate a lack of supportive adults in the child's life, difficulty in relationships in general, or both. In addition, both fathers and sibling as focal figures are relatively rare, with only 13% of the sample exhibiting either pattern (5% sibling, 8% father). Mothers and friends as focal figures are more normative during this period (49% and 35%, respectively), at least based on the measures used here. It appears that most children turn primarily either toward the family for support, receiving most from their mothers, or outside the family, receiving most from friends. It appears that those who turn toward the family, but do not find the majority of support from their mother, are less likely to attain high levels of education later. A closer examination would be required to assess why these children reported the focal figures that they did. For instance, were their mothers so involved in fulfilling their support needs that they simply neglected to mention mothers when asked these questions, or was it the case that these mothers are

viewed as unavailable as supporters for some reason? Disentangling these possibilities through more extensive interviews regarding children's subjective appraisals of their networks and support will be required to more thoroughly understand the processes underlying these associations.

Children's social relations were also associated with their entry into adult roles 12 years later. Network structure, network composition, and social support all showed associations with aspects of adult social role attainment.

Children with larger inner circles are less likely to be married with children, and marginally more likely to be unmarried with children 12 years later, relative to being single and childless. As noted above with respect to well-being, it appears that having a large inner circle is associated with less optimal outcomes. Among early adults in their 20's, being a single parent is unlikely to be a desired situation, nor is it typically seen as a positive outcome from a developmental perspective (e.g., Gest, Mahoney & Cairns, 1999). As discussed above, those who have especially large inner circles during childhood may have relationship difficulties that impair their ability to distinguish between close, intimate relationships and other social ties. Either because of these difficulties or as an attempt to replicate the feeling of having a large number of extremely close others, respondents with especially large inner circles during childhood may be more likely to become parents at an early age and not necessarily within the context of a stable romantic partnership. This may occur either through intentional attempts at early parenthood per se or through poorly planned sexual intimacy (i.e., without appropriate contraceptive measures). Previous research has cited low popularity with peers, among other factors, as a risk factor for early parenthood (Gest et al., 1999).

At the other end of the spectrum, those with especially small inner circles during childhood may be more likely to marry or form a cohabiting romantic relationship and begin their own families early as they do draw clear distinctions between close, intimate others, and more distal social ties. Therefore, when they identify a romantic partner who becomes a member of their small inner circle, they may be more likely to act on this realization by committing to that person and beginning a family.

In addition, children whose networks are more proximal were more likely to be students or working full-time 12 years later than those whose networks were less proximal. This corresponds with the finding reported above that children with more proximal networks had attained more education than others by wave 2 and may be explained by similar hypothesized processes. Namely, having a proximal network may build a sense of comfort and stability during childhood that has long-term implications for the child's ability to achieve success in the academic and work domains.

Interestingly, frequency of contact with network members had the opposite effect on occupational status. Those who reported more contact with their network members during middle childhood were more likely to be neither working nor a student 12 years later than any of the other three statuses (student, working part time, working full time). On average, all children reported relatively high (between weekly and daily) contact with network members. Therefore, those who reported even greater average contact frequency with their network members (i.e., daily contact with nearly all network members) may have been disproportionately invested in social contact, to the exclusion of other pursuits (such as studying) that would set them on trajectories toward academic and occupational success.

The composition of children's social networks was also associated with their entry into adult roles 12 years later. Children whose networks were comprised of a higher proportion of females were more likely than their peers to be students 12 years later. Because participant gender was also included in the model, this finding cannot be attributed solely to girls' tendency to pursue more education than boys. Combined with the finding that inclusion of a father in the network was associated with lower educational orientation during childhood, this finding is particularly intriguing. It may be the case that women promote and encourage education among the children in their lives to a higher degree than do men.

The numbers of both immediate and extended family in the network were associated with the family constellation of participants 12 years later. Those whose social networks included more immediate family were more likely to be married with children 12 years later, whereas those whose networks included more extended family were less likely to be unmarried with children. Similarly, those who included at least one aunt or uncle in their social networks were more likely to be married with children and less likely to be living with their parents. Thus, it appears that having many family members in one's social network early in life is somewhat protective against early single parenthood and promotive of the formation of one's own family. On average, those with many family members in their childhood social networks who are parents by their early twenties are parenting in the context of a married or cohabiting romantic relationship. It is also interesting that specifically, *immediate* family is associated with being married with children. Children with large immediate families, whom they are close enough with to include in their social networks, may seek to repeat these patterns in their own families

by marrying or cohabiting and having children relatively early in adulthood. On the other hand, those with many extended family members may not necessarily marry and have children early, but are able to avoid becoming parents outside the context of a stable partnership. Perhaps the influence of a stable and involved family leads children to conceptualize the nature of parenting differently, and to intentionally postpone their own parenthood until they are in stable relationships.

Children who included more friends in their social networks were more likely to be students 12 years later than those who included fewer friends. The inclusion of a number of friends in the social network during childhood likely indicates strong social skills, reflected in the ability to make and maintain friendships at this age, which may translate into an ability to build the social capital necessary to pursue schooling beyond high school. In addition, close friends may encourage one another to complete educational goals, or may serve as models of positive educational behavior. Alternatively, having many friends in the social network during childhood may reflect an orientation toward being surrounded by peers, which may be accomplished in adulthood by remaining in school rather than entering the workforce. It should also be noted that those who reported no friends in their social networks during wave 1 were less likely to participate in wave 2 of the study, which may have influenced the association between the number of friends and occupational status by early adulthood.

Children's social support was also associated with their adult role entry by their early twenties. Children reporting more negative support from their mothers were more likely to be single parents 12 years later, and less likely to be married without children. Those with more negative support from fathers were less likely to be married with

children. Thus it appears that negativity with one's parents during middle childhood is associated, in general, with a lower likelihood of being married or living with a romantic partner in early adulthood, but an increased likelihood of becoming a parent outside the context of a marital or cohabiting relationship. Interestingly, those reporting less positive support from siblings were less likely to be married with children 12 years later than those reporting more. This may be due to a high proportion of positive support functions being filled by siblings indicating a low level of positive support being filled by parents and friends. Receiving support from parents and friends may be more adaptive, and in the case of friends, reflect greater social skills than receiving support from siblings. Such social skills, particularly in the arena of interacting with peers, may be more likely to result in the establishment of a cohabiting partnership and the formation of one's own nuclear family. The effects of the number of supporters a child had on later adult role entry varied by who the child's focal figure was. Among children whose focal figure was not their mother, those with fewer supporters were more likely to report living with a partner 12 years later. Among those whose focal figure was their father, children reporting support from fewer sources were more likely to live with their parents 12 years later than those with more supporters.

Patterns of social relations during childhood were also associated with wave 2 education and social roles, though differentially by race and mother's marital status. Among White children, the pattern of social relations they exhibited during middle childhood was not associated with their later educational attainment, but those exhibiting the diverse network pattern were more likely to live alone, with their parents, or with a partner (relative to another arrangement) 12 years later than those exhibiting other

patterns of social relations. Among nonwhite children, however, exhibiting the diverse network pattern was associated with attaining higher levels of education by early adulthood than those exhibiting the other three patterns, but patterns of social relations were not associated with later living arrangements.

The findings regarding the transition to adult roles should be interpreted with respect to the developmental period in which participants were situated at wave 2. As noted above, participants in their early twenties may best be conceptualized as *emerging adults*, rather than simply young adults. Thus, the meaning of marriage and parenthood, and of work and education, may be different than what we would expect among young adults as a whole. In interviews with emerging adults, Arnett (2004) found that while most desire marriage and parenthood eventually, they often prefer to delay these transitions until their late twenties or later, with marriage occurring before parenthood. Thus, marriage and parenthood by one's early twenties may be seen as an undesirable outcome by some of the participants who were in this situation, especially those who were parents but not married (or partnered). However, this is difficult to interpret, as individual participants' views on the best timing for marriage and childbearing were not assessed among this sample. Similarly, work during the emerging adulthood period frequently has an exploratory quality, with emerging adults shifting between school and a series of temporary jobs while they attempt to determine a career path for themselves. Therefore, "student" and "working full time" may be equally desirable outcomes at this period. "Working part-time (only)" or "neither working nor student", on the other hand, likely represent stalling or having difficulty in the realm of career explorations, and may be seen as maladaptive or developmentally inappropriate outcomes. Unfortunately, data



is not available on the extent to which individual participants felt that their educational pursuits or current employment were, in fact, helping them to move toward a promising and fulfilling career.

*Contributions and limitations of question 4.* The current study illustrates that children's social relations can have long-lasting implications not only for physical and psychological well-being, but also for the roles individuals adopt as they enter adulthood.

Some of the findings reported here warrant further investigation. For instance, the findings regarding the proximity of network members reflect the *proportion* of network members living within an hour's drive. This proportion may have different meanings among those with small and large networks. For instance, those with small proximal networks have nearly all of their network members living nearby, whereas those with large proximal networks may have several network members living far away, but have a sufficient number of proximal members to make up for this. Well-being may differ between these groups. In the future, examining the effect of the *number* of proximal network members may add additional information and enhance our understanding of the processes behind this association. Future research should also investigate the mechanisms through which having a greater proportion of females in one's social network is associated with a higher likelihood of being enrolled in school 12 years later. Finally, the processes involved in the association between the amount of immediate and extended family included in the network and later formation of one's own family should be investigated further. Identification of the processes underlying this association may help to elucidate the ways in which a positive transition to adult roles can be promoted among children who may not have large families.

Another interesting and informative direction for future research would involve a closer examination of the connections between social relations and the experience of emerging adulthood. As Arnett (2004) and others have noted, emerging adulthood as a distinct period of the lifespan describing a prolonged transition from adolescence into adulthood may be more relevant to some individuals and groups than for others. Thus, a logical follow-up to this study would be to explore more subjective assessments of the transition to adulthood, and to examine connections between these assessments and earlier social relations. Are those who have experienced more supportive social relations during childhood likely to experience shorter or longer “emerging adult” periods than their peers? Are those who exhibit certain patterns of social relations likely to feel more or less satisfied with their progress toward achieving career and family goals during their early twenties?

*Research question 4 summary and conclusions.* Social relations during childhood do appear to have implications for children’s future educational attainment and adoption of adult social roles. Marital and parental status may be especially strongly related to earlier social relations.

*Limitations.*

In addition to the limitations noted above with respect to each research question, the dissertation as a whole has an important limitation that should be noted. A large number of statistical analyses (with associated significance tests) were conducted as part of this dissertation. Although care was taken to ensure that each analysis was grounded in a theoretically based research question, it is nevertheless still quite possible that some of the findings reported here were statistically significant due to chance alone. Because it

is impossible to know which findings may have been affected in this manner, replication of these findings using independent samples will be important to confirm (or disconfirm) each individual finding.

*Overall summary and conclusions.*

When considered together, the results from the four research questions addressed in this study emphasize the importance of social relations during middle childhood for individuals' functioning over the long term. Overall, and contrary to expectations, examining each aspect of social relations separately results in better prediction of later well-being and social roles than does examining patterns of social relations based on network structure and composition. Among those characteristics of social relations that appear to be beneficial for long-term development are having a more proximal network, including a higher proportion of adults in the network, including many immediate and extended family members in the network, receiving the greatest amount of support from the mother, and for some, having more supporters. Among those characteristics of social relations that may be detrimental include having a large inner circle, having a network that has been known for a long period of time, having frequent contact with the social network, and relying on a father or sibling for the greatest amount of social support. With respect to patterns of social relations, the large family network pattern appears to be beneficial for long-term developmental outcomes, whereas the friend network patterns may be detrimental. The diverse network pattern may have both positive and negative implications, depending on the child's background and the outcome considered. Results were consistent with the convoy model of social relations (Kahn & Antonucci, 1980) in illustrating important connections between social relations and well-being over time.

**Appendix: Tables and Figures**  
(see list of tables, p. vii and list of figures, p. ix)

**Table 1. Demographic profiles of the samples at Wave 1 and 2**

	<b>Wave 1</b> (N = 205)		<b>Wave 2</b> (N = 150)	
	Range <i>or</i> categories	M (sd) <i>or</i> n (%)	Range <i>or</i> categories	M (sd) <i>or</i> n (%)
Gender	1 (male) 2 (female)	99 (48.3) 106 (51.7)	1 (male) 2 (female)	66 (44.0) 84 (56.0)
Age	8 – 12	10.4 (1.4)	20 - 27	23.3 (1.5)
Age group	0 (8-10) 1 (11-12)	100 (49.5) 102 (50.5)	0 (8-10 at w1) 1 (11-12 at w1)	76 (51.4) 72 (48.6)
Grade in school	2 - 8	5.0 (1.5)		
Education completed (years)			9-17	13.5 (2.0)
Race	1 (white) 0 (not white) Black Native Am. Asian Other	117 (61.6) 73 (38.4) 69 (36.3) 1 (0.5) 2 (1.1) 1 (0.5)	1 (white) 0 (not white) Black Native Am. Asian Other	94 (66.2) 48 (33.8) 47 (33.1) 0 (0.0) 1 (0.7) 0 (0.0)
Type A Characteristics				
Competitive	8-35	17.1 (6.1)		
Impatient- aggressive	9-45	27.9 (8.0)		
Total	21-75	45.0 (11.0)		

**Table 2. Structure of Children's Social Networks (Wave 1)**

	<b>Range</b>	<b>Mean (sd)</b>
Network size (number of individuals included)	1 – 39	8.7 (5.8)
Inner circle size	0 – 29	4.0 (3.2)
Middle circle size	0 – 15	2.7 (2.5)
Outer circle size	0 – 16	1.9 (2.7)
Average age of 1 <sup>st</sup> 10 network members	7 - 60	28.7 (10.5)
Average years known 1 <sup>st</sup> 10 network members	1 - 12	8.5 (2.2)
Proportion of 1 <sup>st</sup> 10 network members within an hour's drive	0.0 – 1.0	.79 (.25)
Average frequency of contact with 1 <sup>st</sup> 10 network members (1-5 scale)	2 - 5	4.3 (0.6)

**Table 3. Composition of Children's Social Networks (1<sup>st</sup> 10 members at Wave 1)**

Type of Relationship	Children	Number reported		Proportion of network	
	reporting at least one n (%)	range	mean (sd)	range	mean (sd)
<b>Immediate family</b>	195 (95.1)	0-9	3.0 (1.5)	0%-100%	43% (0.28)
Mother	191 (93.2)	0-1	0.9 (0.3)		
Father	158 (77.1)	0-1	0.4 (0.4)		
Sibling (any)	140 (68.3)	0-7	1.3 (1.3)		
<i>Brother</i>	96 (48.6)	0-3			
<i>Sister</i>	87 (42.4)	0-4			
<b>Extended family</b>	141 (68.8)	0-8	2.5 (2.4)	0%-100%	27% (0.24)
Grandparent (any)	96 (46.8)	0-5	1.0 (1.3)		
<i>Grandmother</i>	94 (45.9)	0-3	0.6 (0.8)		
<i>Grandfather</i>	57 (27.8)	0-2	0.4 (0.6)		
Aunt/uncle	84 (41.0)	0-6	1.0 (1.5)		
Cousin	55 (26.8)	0-5	0.5 (1.0)		
Niece/nephew	1 (0.5)	0-4			
Great-grandparent	5 (2.4)	0-2			
<b>Friend (any)</b>	102 (49.8)	0-9	1.3 (1.8)	0%-100%	18% (0.24)
Male friend	56 (27.3)	0-8			
Female friend	66 (32.2)	0-5			
Child friend	73 (48.7%)	0-7	1.1 (1.5)		
Adolescent friend	19 (12.7%)	0-5	0.2 (0.8)		
Adult friend	15 (10.0%)	0-3	0.1 (0.5)		
Total family		0-10	5.7 (2.9)	0%-100%	73% (0.28)
Total friends		0-9	1.3 (1.8)	0%-100%	18% (0.25)
Total children (<13)		0-8	2.0 (1.8)	0%-100%	26% (0.24)
Total adolescents (13-17)		0-6	0.8 (1.1)	0%-100%	9% (0.15)
Total adults (18+)		0-10	4.3 (2.4)	0%-100%	56% (0.28)
Total females		0-9	3.7 (2.1)	0%-100%	48% (0.22)
Total males		0-9	3.4 (2.0)	0%-100%	43% (0.21)

**Table 4. Social Support at Wave 1**

Relationship	Total functions filled			Positive functions filled			Negative functions filled			% of children reporting this fills at least one function			Relationship is top support provider		
	M (sd)	% of 20	min-max	M (sd)	% of 18	min-max	M (sd)	% of 2	min-max	total	pos	neg	overall	pos	neg
Mother	6.8 (3.2)	34%	0-16	6.3 (3.1)	35%	0-16	0.5 (0.5)	25%	0-2	98.5	98.0	44.9	48.8% (n=100)	48.3% (n=99)	11.7% (n=24)
Father	2.1 (2.0)	11%	0-8	1.9 (2.0)	11%	0-8	0.2 (0.4)	10%	0-2	69.8	66.8	17.6	2.9% (n=6)	4.4% (n=9)	3.9% (n=8)
Any sibling	2.2 (2.1)	11%	0-11	1.4 (1.8)	8%	0-10	0.8 (0.7)	40%	0-2	79.0	58.5	62.9	5.9% (n=12)	4.4% (n=9)	22.9% (n=47)
<i>Any immediate family (parents, sibs)</i>	11.0 (3.7)	55%	0-20	9.6 (3.4)	53%	0-18	1.4 (0.7)	0-2	70%						
Grandmother	0.3 (0.8)	2%	0-6	0.2(0.7)	1%	0-6	0.01 (0.1)	.5%	0-1	16.6	16.1	1.5			
Grandfather	0.1 (0.8)	.5%	0-9	0.1 (0.4)	.5%	0-4	0.02 (0.1)	1%	0-1	7.3	6.3	2.0			
Any grandparent	0.4 (1.2)	2%	0-11	0.4 (1.1)	2%	0-10	0.03 (0.2)	2%	0-1	20.0	18.5	3.4	1.0% (n=2)	1.0% (n=2)	0.5% (n=1)
Aunt/uncle	0.2 (0.8)	1%	0-5	0.2 (0.7)	1%	0-5	0.03 (0.2)	2%	0-1	14.1	12.2	2.9			
Cousin	0.2 (0.9)	1%	0-7	0.2 (0.9)	1%	0-7	0.02 (0.1)	1%	0-1	9.3	8.8	1.5			
<i>Any extended family</i>	1.0 (1.8)	5%	0-14	0.7 (1.6)	4%	0-12	0.1 (0.3)	5%	0-2						
Friend	5.8 (3.5)	29%	0-20	5.0 (3.3)	31%	0-18	0.2 (0.5)	10%	0-2	95.6	95.1	18.0	35.1% (n=72)	35.6% (n=73)	6.3% (n=13)



**Table 5. Structure of Young Adults' Social Networks (Wave 2)**

	<b>Range</b>	<b>Mean (sd)</b>
Network size (number of individuals included)	1 – 33	9.9 (5.2)
Inner circle size	0 – 14	3.9 (2.3)
Middle circle Size	0 – 16	3.6 (2.8)
Outer circle Size	0 – 12	2.4 (2.3)
Average age of network members	15.1 – 52.8	32.6 (7.1)
Average years known network members	5.9 – 27.0	16.3 (3.7)
Proportion of network members within an hour's drive	0% - 100%	68% (0.27)
Average frequency of contact with network members (1-5 scale)	2.8 – 5.0	4.3 (0.7)

**Table 6. Composition of Young Adults' Social Networks (1<sup>st</sup> 20 members at Wave 2)**

Type of relationship	Participants	Number reported		Proportion of network	
	reporting at least one	range	mean (sd)	range	mean (sd)
	%				
<b>Immediate family (any)</b>	98.7	0-9	3.9 (1.7)	0.0-1.0	.46 (.23)
New family	48.0	0-5	0.9 (1.1)	0.0-.75	.11 (.16)
Spouse	9.8	0-1	0.1 (0.3)		
Partner	14.1	0-1	0.2 (0.4)		
Child	24.4	0-3	0.5 (0.8)		
Step child	1.0	0-2	0.02 (0.2)		
Family of origin	98.7	0-7	3.0 (1.4)	0.0-1.0	.35 (.17)
Parents	68.8	0-3	1.6 (0.6)		
Sibling (any)	57.6	0-5	1.4 (1.1)		
<b>Extended family (any)</b>	63.3	0-7	1.6 (1.7)	0.0-0.67	.17 (.18)
Parents-in-law	2.4	0-2	0.04 (0.2)		
Siblings-in-law	4.9	0-2	0.08 (0.3)		
Grandparent (any)	24.9	0-3	0.5 (0.8)		
Aunt/uncle	19.0	0-4	0.4 (0.9)		
Cousin	17.1	0-6	0.4 (0.8)		
Niece/nephew	5.9	0-6	0.14 (0.6)		
Great-grandparent	1.0	0-1	0.01 (0.1)		
Other relative	1.5	0-4	0.04 (0.3)		
Stepfamily	8.0	0-3	0.1 (0.5)	0.0-0.27	.01 (.04)
<b>Any family</b>	99.3	0-15	5.6 (2.5)	0.14-1.0	.64 (.25)
Romantic partners	54.0	0-4	0.6 (0.6)	0.0-0.5	.07 (.08)
<b>Friend (any)</b>	67.3	0-8	2.0 (2.0)	0.0-0.83	.20 (.20)

**Table 7. Relationship Quality at Wave 2**

	N	Positive quality range	M (sd)	Negative quality Range	M (sd)
Mother	146	1.6 - 5.0	4.7 (0.6)	1.0 – 5.0	3.0 (1.3)
Father	135	1.0 - 5.0	4.4 (1.1)	1.0 – 5.0	2.6 (1.3)
Spouse/partner	89	3.2 - 5.0	4.8 (0.4)	1.0 – 5.0	2.6 (1.4)
Friend	108	3.2 – 5.0	4.9 (0.3)	1.0 – 4.5	1.8 (1.0)
Child	0				
Sibling	138	1.2 – 5.0	4.5 (0.7)	1.0 – 5.0	2.3 (1.1)

Note: scale 1 (least positive/negative) – 5 (most positive/negative)

**Table 8. Variables Examined**

Category	Variable	How operationalized	
		Childhood (Wave 1; N = 205)	Young adulthood (Wave 2; N = 150)
<u>Personal Characteristics</u>			
	Gender	1 (male) 2 (female)	1 (male) 2 (female)
	Age	Calculated from birth year	
	Age group	1 (age 8-10) 2 (age 11-12)	1 (age 8-10 at w1) 2 (age 11-12 at w1)
	Grade in school	Reported by mother	
	Race	1 (not white) 2 (white)	1 (not white) 2 (white)
	Competitiveness Impatient-aggressiveness	Reported by mother	
<u>Situational Characteristics</u>			
	Stressful Life Events	Total number of events (of 10) in the past year	Total number of events (of 43) in the past year
	Social class	Mother's education (years completed)	Household income
	Maternal characteristics	Mother's age Mother's marital status Mother's employment status Mother's relationship quality	
<u>Network Structure</u>			
	Network size	Number of individuals included in diagram	Number of individuals included in diagram
	Inner circle size	Number of individuals in inner circle	Number of individuals in inner circle
	Middle circle size	Number of individuals in middle circle	Number of individuals in middle circle
	Outer circle size	Number of individuals included in outer circle	Number of individuals included in outer circle
	Network age	Average age of 1 <sup>st</sup> 10 Network members	Average age of 1 <sup>st</sup> 10 Network members
	Time known	Average years known 1 <sup>st</sup> 10 Network members	Average years known 1 <sup>st</sup> 10 Network members

Category	Variable	How operationalized	
		<i>Childhood</i> (Wave 1; N = 205)	<i>Young adulthood</i> (Wave 2; N = 150)
	Proximity	Proportion of network within an hour's drive	Proportion of network within an hour's drive
	Frequency of contact	Average frequency of contact with 1 <sup>st</sup> 10 Network members (1-5 scale)	Average frequency of contact with 1 <sup>st</sup> 10 Network members (1-5 scale)
	<u>Network Composition</u>		
	Includes:	Whether or not participant included one or more network members with given relationship type, including: mother father sibling grandparent aunt/uncle cousin friends	Whether or not participant included one or more network members with given relationship type, including: mother father sibling extended family  friend spouse
	Number of	The number of network members included in the given category, including: immediate family  extended family friends	The number of network members included in the given category, including: immediate family family of origin (parents, siblings) nuclear family (spouse, children) extended family friends

Category	Variable	How operationalized	
		<i>Childhood</i> (Wave 1; N = 205)	<i>Young adulthood</i> (Wave 2; N = 150)
	Proportion of:	Female (total females in network divided by total number of network members)	Female (total females in network divided by total number of network members)
		Adult (total adults in network divided by total number of network members)	Adult (total adults in network divided by total number of network members)
<u>Support from network</u>			
	Support from (emotional, instrumental, total positive, negative)	Number of support functions of each type (18 positive, 2 negative) for which child listed network member as fulfilling: mother father sibling extended family friend	average rating on items regarding each type of support (5 emotional, 2 instrumental, 5 overall positive, and 2 negative) for: mother father sibling extended family friend Spouse/partner
	Focal figure	Which relationship type provides the most total, positive, and negative support (mother, father, sibling, friend)	
	Number of supporters	The number of different relationship types reported to fill at least one function	
<u>Well-Being (Composites)</u>			
	Physical health	Composite of chronic illness, self-rated health, and health relative to others	Composite of chronic illness, self-rated health, and health relative to others
	Depression	Children's Depressive Inventory (mean of 19	Composite of CIDI depressive status and

Category	Variable	How operationalized	
		Childhood (Wave 1; N = 205)	Young adulthood (Wave 2; N = 150)
	Subjective well-being	items; higher score = greater depressive symptoms)	CES-D score for depressive symptoms
	Feelings about self	Composite of Self-Esteem and Self-Efficacy	Composite of Self-Esteem and Self-Efficacy
	Mental health	Composite of Depression, Self-Esteem, and Self-Efficacy	Composite of Depression, Subjective well-being, and Feelings about self
<u>Education</u>			
	Intellectual/educational orientation	Endorsement: number of education-relevant items (out of 3) that child endorsed in the ideal self scale Prioritization: number of education-relevant items (out of 3) that child included in top 3 descriptors of ideal self	
	Educational attainment		Number of years completed
<u>Entry into Adult Roles</u>			
	Occupational category		Self-reported (student, working full or part time, or neither)
	Marital /parental status		Self-reported
	Living arrangement		Self-reported (alone, with partner, with parents, or other arrangement)

**Table 9. Results of Logistic Regression Models Predicting Attrition between Waves.**

Model	Predictors	-2LL	Exp (B)
Personal characteristics		217.18	
	Gender		2.02*
	Age		0.70
	Grade in school		1.17
	Race		2.17*
	Temp-type A		
	Competitive		0.99
	Impatient-aggressive		1.00
Situational characteristics		233.65	
	Stress. Life Events		0.96
	Maternal age		1.02
	Mother's ed.		0.95
	M's marital status		1.32
	M's employment		1.59
	M's av pos rel		0.94
	M's av neg rel		1.22
Network structure		227.39	
	Network size		1.00
	Inner circle size		1.03
	Network Age		1.04
	Time known		.77**
	Proximity		.78
	Frequency of contact		.95
Network composition		233.44	
	Number of immediate family		0.91
	Number of extended family		1.01
	Number of friends		1.25
	Proportion female		1.16
	Proportion adults		1.60
Network composition: includes specific relationships		229.06	
	Mothers		1.56
	Fathers		1.15
	Siblings		0.62
	Grandparents		1.56
	Aunt/uncles		0.69
	Cousins		1.83
	Friends		2.00*



Social support (total) from:	231.2	
Mother		0.91
Father		1.03
Sibling		0.91
Extended family		0.86
Friend		1.02
Well-being	226.26	
Chronic illness		0.98
Self-Rated health		1.46
Health rel. to oth.		0.68
Dep.symptoms		0.72
Self-efficacy		1.43
Self-esteem		0.60
Educational Orientation (W1)	233.73	
Number of items endorsed		.088
Number of items prioritized		1.70

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 10. Demographic Factors Associated with Network Structure**

	Model 1: Network size	Model 2: Inner circle size	Model 3: Network Age	Model 4: Time known	Model 5: Proximity	Model 6: Frequency of contact
<b>Step 1: Personal characteristics</b>						
R <sup>2</sup>	0.08*	0.05	0.07*	0.29***	0.01	0.05
Gender (female)	0.16*	0.15*	0.07	0.01	0.06	- 0.05
Age	- 0.04	0.03	0.19	0.53***	-0.01	0.05
Grade	0.05	-0.07	- 0.08	- 0.01	0.05	- 0.01
Race (white)	0.22**	0.14	- 0.05	- 0.10	0.05	- 0.17*
Competitive	- 0.10	-0.04	- 0.10	- 0.06	-0.03	- 0.08
Impatient-aggressive	0.01	-0.01	0.22**	0.14*	-0.02	0.01
<b>Step 2: Situational characteristics</b>						
Δ R <sup>2</sup>	0.05	0.04	.08*	0.03	0.03	0.05
Stressful life events	0.20**	0.12	0.01	- 0.03	- 0.03	- 0.10
Maternal age	- 0.05	- 0.06	0.25**	0.07	- 0.06	- 0.10
Mother's education	0.07	- 0.01	- 0.10	- 0.10	- 0.07	- 0.07
Mother is married/ partnered	0.04	- 0.01	- 0.02	- 0.16*	0.13	0.10
Mother is employed	- 0.03	- 0.01	0.04	0.01	- 0.06	- 0.10
Mother's average positive relationship quality	0.02	0.05	0.09	0.01	0.09	0.07
Mother's average negative relationship quality	- 0.07	- 0.13	- 0.07	- 0.05	0.06	0.05

Note: when the model fit is not significantly improved by adding the block of situational predictors, individual predictors in this block are shown in gray text.

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 11. Demographic Factors Associated with Network Composition.**

	Model 1: num. imm. Fam.	Model 2: num. ext. family	Model 3: num. friends	Model 4: prop. female	Model 5: prop. adults
Step 1: Personal characteristics					
R <sup>2</sup>	0.01	0.02	0.10**	0.22***	0.09**
Gender (female)	0.04	0.09	- 0.02	0.45***	0.15*
Age	0.15	- 0.04	- 0.09	- 0.04	0.17
Grade	- 0.10	0.02	0.19	0.02	- 0.20
Race (white)	0.07	0.04	0.29***	- 0.13*	- 0.21**
Competitive	- 0.02	- 0.08	- 0.10	- 0.05	- 0.05
Impatient-aggressive	- 0.02	0.05	- 0.07	0.10	0.16*
Step 2: Situational characteristics					
$\Delta R^2$	.08*	.08*	.060	0.04	0.05
Stressful life events	0.04	0.12	0.20**	- 0.08	- 0.06
Maternal age	0.04	- 0.23**	0.10	- 0.03	0.04
Mother's education	0.05	0.02	- 0.01	0.06	- 0.14
Mother is married/ partnered	0.15	- 0.05	0.04	- 0.18	- 0.14
Mother is employed	- 0.23**	0.04	0.07	- 0.02	- 0.03
Mother's average positive relationship quality	- 0.07	0.09	0.03	- 0.05	0.05
Mother's average negative relationship quality	- 0.10	- 0.12	0.07	0.03	- 0.05

Note: when the model fit is not significantly improved by adding the block of situational predictors, individual predictors in this block are shown in gray text.

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 12. Demographic Factors Associated with Positive Support from each source**

	Model 1: mother	Model 2: father	Model 3: siblings	Model 4: friends	Model 5: ext. family
<b>Step 1: Personal characteristics</b>					
R <sup>2</sup>	0.06	0.05	0.01	0.08*	0.04
Gender (female)	0.11	- 0.15*	- 0.02	0.03	- .02
Age	- 0.08	0.14	- 0.12	0.18	- .09
Grade	- 0.07	- 0.00	0.05	-0.08	17
Race (white)	- 0.15*	0.10	- 0.03	0.25**	- 0.18*
Competitive	- 0.04	0.07	0.04	-0.06	- 0.01
Impatient-aggressive	0.05	0.00	- 0.05	-0.05	0.02
<b>Step 2: Situational characteristics</b>					
Δ R <sup>2</sup>	.05	.09*	.09*	0.05	0.04
Stressful life events	- 0.11	- 0.02	0.08	0.09	0.07
Maternal age	- 0.06	0.02	0.05	0.04	- 0.06
Mother's education	0.06	0.07	0.02	- 0.10	- 0.00
Mother is married/ partnered	- 0.17*	0.29**	0.07	0.00	- 0.08
Mother is employed	- 0.12	- 0.12	- 0.05	0.10	0.12
Mother's average positive relationship quality	0.03	- 0.05	- 0.20*	0.17*	0.00
Mother's average negative relationship quality	0.05	0.04	- 0.22**	0.04	- 0.12

Note: when the model fit is not significantly improved by adding the block of situational predictors, individual predictors in this block are shown in gray text.

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 13. Demographic Factors Associated with Negative Support from each source.**

	Model 1: mother	Model 2: father	Model 3: siblings	Model 4: friends	Model 5: ext. family
<b>Step 1: Personal characteristics</b>					
R <sup>2</sup>	0.03	0.07*	0.04	0.04	0.07*
Gender (female)	0.10	- 0.15*	0.10	- 0.09	- 0.00
Age	0.02	0.16	0.09	- 0.27	- 0.15
Grade	- 0.03	0.06	- 0.05	0.13	0.09
Race (white)	- 0.09	0.02	0.16*	0.06	- 0.16*
Competitive	0.13	- 0.06	- 0.03	- 0.07	- 0.09
Impatient-aggressive	- 0.04	0.01	0.01	0.03	- 0.14
<b>Step 2: Situational characteristics</b>					
Δ R <sup>2</sup>	0.08	0.04	0.04	0.02	0.04
Stressful life events	- 0.08	0.05	0.11	- 0.04	0.03
Maternal age	0.02	0.01	- 0.04	0.02	0.04
Mother's education	0.08	- 0.09	0.06	- 0.01	0.02
Mother is married/ partnered	- 0.21**	0.20*	0.09	0.04	- 0.17*
Mother is employed	- 0.04	0.03	- 0.11	0.06	- 0.07
Mother's average positive relationship quality	- 0.13	0.07	0.02	0.06	0.01
Mother's average negative relationship quality	0.12	0.05	- 0.10	0.08	0.12

Note: when the model fit is not significantly improved by adding the block of situational predictors, individual predictors in this block are shown in gray text.

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 14. Demographic Factors Associated with Well-Being and educational orientation at wave 1.**

	Model 1: chronic illness	Model 2: self-rated health	Model 3: health relative to others	Model 4: depressive symptoms	Model 5: self-esteem	Model 6: self- efficacy	Model 7: educational endorseme nt	Model 8: educational priority
<b>Step 1: Personal characteristics</b>								
R <sup>2</sup>	0.06	0.02	0.03	0.11**	0.03	0.10**	0.04	0.05
Gender (female)	0.17*	- 0.02	- 0.05	0.04	- 0.09	- 0.03	- 0.13	0.05
Age	0.07	- 0.19	0.22	0.01	- 0.01	0.08	0.03	- 0.01
Grade	0.04	0.10	- 0.14	- 0.12	0.12	0.03	- 0.06	0.10
Race (white)	0.05	- 0.08	- 0.10	- 0.02	0.07	- 0.02	- 0.13	- 0.21**
Competitive	- 0.08	- 0.04	- 0.00	- 0.07	- 0.08	- 0.24**	0.08	- 0.01
Impatient-aggressive	0.06	- 0.02	0.03	- 0.29***	0.08	0.21**	- 0.02	0.02
<b>Step 2: Situational characteristics</b>								
Δ R <sup>2</sup>	0.07*	0.05	0.04	0.12***	0.07*	0.06	0.07	0.07
Stressful life events	- 0.12	- 0.16*	- 0.00	0.31***	- 0.20**	- 0.08	- 0.06	- 0.12
Maternal age	0.01	- 0.02	- 0.12	0.11	- 0.14	- 0.21	- 0.07	- 0.06
Mother's education	- 0.03	- 0.07	0.10	- 0.04	0.05	0.05	0.02	- 0.09
Mother is married/ partnered	- 0.02	0.08	- 0.07	- 0.03	0.02	0.06	- 0.11	0.06
Mother is employed	- 0.12	0.02	- 0.02	- 0.01	0.09	0.10	- 0.18	- 0.07
Mother's average positive relationship quality	0.13	0.07	0.05	- 0.12	0.11	0.06	0.04	- 0.11
Mother's average neg. rel. quality	- 0.12	- 0.13	- 0.12	0.08	0.05	- 0.10	- 0.11	- 0.21**

Note: when the model fit is not significantly improved by adding the block of situational predictors, individual predictors in this block are shown in gray text.

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 15. Cluster Centroids for Four-Cluster Solution Including Childhood (Wave 1) Network Structure.**

	Young networks (cluster 1)	Dense networks (cluster 2)	Sparse networks (cluster 3)	Large networks (cluster 4)	Overall Mean
<i>n:</i>	81	76	27	20	204
Network size	7.78	7.04*	8.74	18.95*	8.73
Inner circle size	3.65	3.07*	3.00*	10.00*	4.06
Average network age	21.70*	35.55*	26.50	32.51	28.56
Time known	6.87*	10.32*	8.13	8.31	8.46
Proximity (prop. within 1 hr)	0.97*	0.92*	0.40*	0.87	0.87
Frequency of contact	4.54*	4.39	3.77*	4.17	4.34

\*Examination of attribute importance indicated that cluster value significantly differed from overall mean.

**Table 16. Cluster Centroids and Percentages for Four-Cluster Solution Including Childhood (Wave 1) Network Composition.**

	Imm. family & friend networks (cluster 1)	Imm. family networks (cluster 2)	Low family networks (cluster 3)	Mostly family networks (cluster 4)	Overall Mean
<i>n:</i>	53	47	37	68	205
Proportion female	0.52	0.51	0.56	0.54	0.53
Proportion adults	0.43*	0.78*	0.51	0.71*	0.62
Number of immediate family	3.86	3.43	1.27*	3.35*	3.00
Number of extended family	1.19*	1.30*	1.54*	5.01*	2.55
Number of friends	3.28*	0.00	1.27	0.74*	1.32
Network includes mother	98.1%	100.0%	64.9%*	100.0%	93.2%
Network includes father	90.6%	100.0%*	0.0%*	92.6%*	77.1%
Network includes sibling	79.2%	66.0%	37.8%*	77.9%	68.3%
Network includes grandparent	35.8%	48.9%	21.6%*	67.6%*	46.8%
Network includes aunt/uncle	1.9%*	0.0%*	40.5%	100.0%*	41.0%
Network includes cousin	13.2%	14.9%	21.6%	48.5%*	26.8%
Network includes friend	100.0%*	0.0%*	56.8%	41.2%	49.8%

\*Examination of attribute importance indicated that cluster value significantly differed from overall mean.



**Table 17. Associations between Wave 1 Structure Clusters and Wave 1 Composition Clusters.**

	-2LL	Parameter: Cluster 1 (family & friend)	Parameter Cluster 2 (immediate family)	Parameter: Cluster 3 (low family)
Intercept:	116.1			
Full:	36.8			
Removed	116.1***			
Cluster 1: Young		22.3***	8.6*	0.0***
Cluster 2: Dense		2.8	8.9**	0.0***
Cluster 3: Sparse		2.0	0.0	0.0
Cluster 4: Large		--	--	--

Comparison group = cluster 4 (mostly family)

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 18. Cluster Centroids and Percentages for Two-Cluster Solution Including Childhood (Wave 1) Sources of Social Support**

	Friend- supported (cluster 1)	Little friend support (cluster 2)	Overall mean
<i>n:</i>	87	118	205
Mother positive support	6.07	6.44	6.28
Mother negative support	0.30*	0.60*	0.47
Father positive support	1.90	1.89	1.89
Father negative support	0.45*	0.00	0.19
Sibling positive support	0.98*	1.74	1.41
Sibling negative support	0.38*	1.07*	0.78
Friend positive support	6.49*	4.82*	5.53
Friend negative support	0.52*	0.00	0.22
Extended family positive support	1.06	0.71	0.86
Extended family negative support	0.22*	0.00	0.09

\*Examination of attribute importance indicated that cluster value significantly differed from overall mean.

**Table 19. Associations between Wave 1 Structure Clusters and Wave 1 Support Clusters.**

	-2LL	Parameter:
		cluster 1
		(friend
		supported)
Intercept:	23.6	
Full:	16.6	
Removed	23.3	
<hr/>		
Cluster 1: Young		1.3
Cluster 2: Dense		1.9
Cluster 3: Sparse		4.0*
Cluster 4: Large		--

Comparison group = cluster 2 (little friend support)

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 20. Associations between Wave 1 Composition Clusters and Wave 1 Support Clusters.**

	-2LL	Parameter:
		cluster 1 (friend supported)
Intercept:	35.2	
Full:	17.0	
Removed	35.2***	
Cluster 1: fam & fr		2.0
Cluster 2: imm fam		0.34*
Cluster 3: low fam		1.51
Cluster 4: mostly fam		--

Comparison group = cluster 2 (little friend support)

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 21. Cluster Centroids and Percentages for Three-Cluster Solution Including Childhood (Wave 1) Network Structure, Network Composition, and Sources of Social Support.**

	Low family presence and support (cluster 1) <i>n:</i> 46	Immediate- family centered (cluster 2) 70	Extended family included (cluster 3) 88	Overall Mean 204
Network size	4.93*	6.76*	12.27*	8.73
Time known	7.31*	8.37	9.15*	8.46
Proximity (prop. within 1 hr)	0.78	0.96*	0.83	0.87
Frequency of contact	4.29	4.64*	4.13*	4.34
Proportion female	0.55	0.50	0.54	0.53
Proportion adults	0.48*	0.58	0.71*	0.62
Number of immediate family	1.61*	3.50*	3.33*	3.00
Number of extended family	1.35*	0.66*	4.69*	2.55
Number of friends	1.59	1.84	0.78*	1.33
Network includes mother	69.6%*	100.0%	100.0%*	93.1%
Network includes father	10.9%*	100.0%*	93.2%*	77.0%
Network includes sibling	47.8%*	72.9%	76.1%	68.6%
Network includes grandparent	19.6%*	31.4%*	73.9%*	47.1%
Network includes aunt/uncle	30.4%	2.9%*	77.3%*	41.2%
Network includes cousin	28.3%	0.0%*	47.7%*	27.0%
Network includes friend	65.2%	54.3%	38.6%	50.0%
Mother positive support	6.54	6.69	5.82	6.28
Mother negative support	0.50	0.51	0.42	0.47
Father positive support	0.74*	2.19	2.26	1.89
Father negative support	0.11	0.19	0.24	0.19
Sibling positive support	1.00	1.33	1.68	1.41
Sibling negative support	0.54*	0.71	0.94	0.77
Friend positive support	6.43	5.73	4.94	5.55
Friend negative support	0.24	0.26	0.18	0.22
Extended family pos. support	1.26	0.17*	1.18	0.85
Extended family neg. support	0.28	0.01*	0.06	0.09

\*Examination of attribute importance indicated that cluster value significantly differed from overall mean.

**Table 22. Cluster Centroids and Percentages for four-cluster solution including childhood (wave 1) network structure and network composition.**

	Diverse networks (cluster 1)	Friend networks (cluster 2)	Small family networks (cluster 3)	Large family networks (cluster 4)	Overall Mean
<i>n:</i>	61	27	43	73	204
Network size	8.67	5.19*	3.53*	13.14*	8.73
Time known	7.82*	6.20*	9.93*	8.97*	8.46
Proximity (prop. within 1 hr)	0.94*	0.77	0.92	0.81	0.87
Frequency of contact	4.49*	4.19	4.67*	4.09*	4.34
Proportion female	0.51	0.43	0.60	0.54	0.53
Proportion adults	0.49*	0.30*	0.85*	0.70*	0.62
Number of immediate family	3.74*	1.30*	2.56	3.27	3.00
Number of extended family	1.38*	1.07*	0.91*	5.05*	2.55
Number of friends	2.36*	2.26	0.00	0.90*	1.33
Network includes mother	100.0%	48.1%*	100.0%	100.0%	93.1%
Network includes father	100.0%*	7.4%*	69.8%	87.7%	77.0%
Network includes sibling	85.2%*	44.4%*	48.8%*	75.3%	68.6%
Network includes grandparent	50.8%	14.8%*	23.3%*	69.9%*	47.1%
Network includes aunt/uncle	0.0%*	18.5%	18.6%*	97.3%*	41.2%
Network includes cousin	11.5%*	33.3%	4.7%*	50.7%*	27.0%
Network includes friend	72.1%*	88.9%*	0.0%*	46.6%	50.0%

\*Examination of attribute importance indicated that cluster value significantly differed from overall mean.

**Table 23. ANOVAs Examining Differences in Social Support between Wave 1 Network Structure and Composition Clusters**

	F	Mean			
		Diverse networks (cluster 1)	Friend networks (cluster 2)	Small family networks (cluster 3)	Large family networks (cluster 4)
Mother positive	3.16*	6.18 <sup>a,b</sup>	5.44 <sup>a</sup>	7.47 <sup>b</sup>	5.97 <sup>a,b</sup>
Mother negative	4.89**	0.39 <sup>a</sup>	0.44 <sup>a</sup>	0.74 <sup>b</sup>	0.38 <sup>a</sup>
Father positive	2.52	2.30	1.11	1.70	1.96
Father negative	2.14	0.28	0.15	0.07	0.21
Sibling positive	1.14	1.41	1.04	1.19	1.67
Sibling negative	1.78	0.70	0.62	0.72	0.92
Friend positive	4.89**	6.03 <sup>a,b</sup>	7.19 <sup>b</sup>	4.34 <sup>a</sup>	5.25 <sup>a</sup>
Friend negative	1.27	0.28	0.26	0.09	0.23
Extended family positive	2.94*	0.53 <sup>a</sup>	1.41 <sup>a</sup>	0.51 <sup>a</sup>	1.12 <sup>a</sup>
Extended family negative	0.51	0.07	0.15	0.12	0.08
Number of supporters	3.78*	3.54 <sup>a</sup>	3.54 <sup>a</sup>	3.90 <sup>a</sup>	4.13 <sup>a</sup>

Note: Clusters with the same superscript within a row do not significantly differ on that support source. Superscripts are not shown for support sources that do not vary significantly by cluster membership

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 24. Cluster Centroids and Percentages Patterns of Childhood (Wave 1) Network Structure and Network Composition among Younger and Older Children.**

	Younger Children (age 8-10)				Older Children (age 11-12)				
	Peer dominant networks (cluster 1)	Ext. fam –dom. networks (cluster 2)	Family-only networks (cluster 3)	Overall mean	Ext. fam –dom. networks (cluster 1)	Family-only networks (cluster 2)	No parents (cluster 3)	Peer dominant networks (cluster 4)	Overall mean
<i>n:</i>	42	23	35	100	37	30	6	29	102
Network size	9.40	5.43*	10.66	8.93	12.89*	4.10*	2.17*	8.90	8.54
Time known	6.45*	8.13*	8.26*	7.47	9.94	10.64*	6.75	8.32*	9.50
Proximity (prop. within 1 hr)	0.85	0.83	0.90	0.86	0.80	0.94*	0.58	0.93*	0.86
Frequency of contact	4.30	4.11	4.48	4.32	4.07*	4.67*	3.79	4.16	4.36
Proportion female	0.49	0.61	0.50	0.52	0.56	0.61	0.18*	0.50	0.54
Proportion adults	0.39*	0.93*	0.65	0.61	0.70*	0.82*	0.17*	0.42*	0.63
Number of immediate family	2.88	1.61*	4.20*	3.05	3.05	2.97	0.33*	3.34	2.95
Number of extended family	1.64*	3.04	3.49	2.61	5.14*	0.90*	1.17	1.10*	2.51
Number of friends	2.71*	0.48*	0.00	1.25	0.98*	0.00	0.67	3.62*	1.40
Network includes mother	81.0%*	100.0%	100.0%	92.0%	60.7%	100.0%	0.0%*	100.0%	94.1%
Network includes father	66.7%	60.9%	94.3%*	75.0%	49.2%	80.0%	0.0%*	93.1%	79.4%
Network includes sibling	73.8%	0.0%*	100.0%*	66.0%	44.3%	66.7%	33.3%	82.8%	71.6%
Network includes grandparent	26.2%*	60.9%	60.0%	46.0%	41.0%	36.7%	33.3%	41.4%	49.0%
Network includes aunt/uncle	26.2%	56.5%	51.4%	42.0%	60.7%*	6.7%*	0.0%	6.9%*	40.2%
Network includes cousin	28.6%	13.0%	28.6%	25.0%	36.1%*	13.3%	33.3%	3.4%*	28.4%
Network includes friend	100.0%*	26.1%	0.0%*	48.0%	32.8%	0.0%*	50.0%	100.0%*	51.0%

\*Examination of attribute importance indicated that cluster value significantly differed from overall mean.



**Table 25. Cluster Centroids and Percentages for Three-Cluster Solution Including Adulthood (Wave2) Network Structure and Network Composition.**

	Family networks (cluster 1)	Small, diverse networks (cluster 2)	Large diverse networks (cluster 3)	Overall mean
<i>n:</i>	69	34	46	149
Married/living with partner	39.1%*	5.9%*	17.4%	24.8%
Has children	66.7%*	8.8%*	0.0%*	32.9%
Network size	8.43*	8.44*	13.30*	9.94
Time known	17.80*	13.21*	16.33	16.30
Proximity (proportion within 1 hr)	0.89	0.81	0.74	0.82
Frequency of contact	4.40	4.30	4.08*	4.28
Proportion female	0.53	0.48	0.50	0.51
Proportion adults	0.76*	0.94*	0.93*	0.86
Number of immediate family	4.23	3.62	3.61	3.90
Number of extended family	1.59	0.00	2.41*	1.48
Number of friends	0.52*	3.74*	2.67*	1.92
Network includes mother	88.4%	94.1%	95.7%	91.9%
Network includes father	47.8%*	88.2%*	82.6%	67.8%
Network includes sibling	72.5%	79.4%	89.1%	79.2%
Network includes extended family	71.0%	0.0%*	100.0%*	63.8%
Network includes friend	31.9%*	100.0%*	91.3%*	65.8%

\*Examination of attribute importance indicated that cluster value significantly differed from overall mean.

**Table 26. ANOVAs Examining Differences in Social Support between Wave 2 Network Structure and Composition Clusters**

	F	Family networks (cluster 1)	Mean Small, diverse networks (cluster 2)	Mean Large diverse networks (cluster 3)
Mother positive	0.66	4.64	4.68	4.77
Mother negative	1.75	2.93	3.26	2.72
Father positive	4.09*	4.19 <sup>a</sup>	4.18 <sup>a</sup>	4.75 <sup>b</sup>
Father negative	3.15*	2.36 <sup>a</sup>	3.03 <sup>b</sup>	2.50 <sup>a,b</sup>
Sibling positive	2.04	4.61	4.32	4.60
Sibling negative	2.19	2.23	2.71	2.27
Friend positive	0.63	4.91	4.84	4.84
Friend negative	0.76	1.75	2.04	1.81
Spouse positive	0.88	4.72	4.75	4.86
Spouse negative	1.42	2.56	3.06	2.33

Note: Clusters with the same superscript within a row do not significantly differ on that support source. Superscripts are not shown for support sources that do not vary significantly by cluster membership.

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 27. Cluster Centroids and Percentages Patterns of Adulthood (Wave2) Network Structure and Network Composition among Younger and Older Participants.**

	Younger (8-10 at wave 1)			Older (11-12 at wave 1)		
	Friends, no children (cluster 1)	No friends, may have children (cluster 2)	Overall Mean	No friends, may have children (cluster 1)	Friends, no children (cluster 2)	Overall Mean
	<i>n:</i> 48	28	76	27	44	71
Married/living with partner	12.5%	17.9%	14.5%	51.9%	25.0%	35.2%
Has children	4.2%*	42.9%*	18.4%	77.8%*	29.5%*	47.9%
Network size	10.00	8.54	9.46	8.33	11.64	10.38
Time known	14.60	17.47*	15.66	18.98*	15.79	17.01
Proximity (proportion within 1 hr)	0.80	0.94	0.85	0.87	0.75	0.79
Frequency of contact	4.31	4.43	4.36	4.37	4.09	4.20
Proportion female	0.50	0.56	0.52	0.50	0.49	0.49
Proportion adults	0.93*	0.82	0.89	0.69*	0.91*	0.82
Number of immediate family	3.56	3.89	3.68	4.67	3.73	4.08
Number of extended family	1.27	2.00	1.54	1.22	1.57	1.44
Number of friends	2.98*	0.14*	1.93	0.04*	2.98*	1.86
Network includes mother	93.8%	85.7%	90.8%	88.9%	95.5%	93.0%
Network includes father	77.1%	53.6%	68.4%	48.1%	79.5%	67.6%
Network includes sibling	81.3%	82.1%	81.6%	77.8%	75.0%	76.1%
Network includes extended family	54.2%	82.1%	64.5%	55.6%	65.9%	62.0%
Network includes friend	100.0%*	10.7%*	67.1%	3.7%*	100.0%*	63.4%

\*Examination of attribute importance indicated that cluster value significantly differed from overall mean.

**Table 28. Cluster Centroids and Percentages for Patterns of Adulthood (Wave2) Network Structure and Network Composition by Marital and Parental Status.**

	Married/partnered or has children			Single with no children			
	Adult-centered with father (cluster 1)	Has children, no father (cluster 2)	Overall mean	High contact, no friends (cluster 1)	Large, diverse networks (cluster 2)	Many friends, no ext. family (cluster 3)	Overall mean
<i>n:</i>	42	22	64	17	39	29	85
Married/living with partner	71.4%	31.8%*	57.8%				
Has children	64.3%	100.0%*	76.6%				
Network size	10.98	7.91	9.92	6.41*	12.90*	8.07*	9.95
Time known	17.37	16.85	17.19	18.37*	16.10	13.38*	15.63
Proximity (proportion within 1 hr)	0.82	0.93	0.86	0.92*	0.73	0.82	0.80
Frequency of contact	4.18	4.47	4.28	4.58*	4.10*	4.34	4.28
Proportion female	0.47	0.56	0.50	0.62	0.52	0.46	0.52
Proportion adults	0.82*	0.62*	0.75	0.90	0.94	0.95	0.93
Number of immediate family	5.24	4.00*	4.81	2.88	3.26	3.34	3.21
Number of extended family	1.57	1.36	1.50	1.82	2.41*	0.00*	1.47
Number of friends	1.21	0.55	0.98	0.00*	2.82	3.90*	2.62
Network includes mother	97.6%	81.8%	92.2%	88.2%	92.3%	93.1%	91.8%
Network includes father	90.5%*	0.0%*	59.4%	52.9%	74.4%	86.2%	74.1%
Network includes sibling	81.0%	68.2%	76.6%	82.4%	82.1%	79.3%	81.2%
Network includes extended family	61.9%	72.7%	65.6%	82.4%	100.0%*	0.0%*	62.4%
Network includes friend	54.8%	36.4%	48.4%	0.0%*	97.4%*	100.0%*	78.8%

\*Examination of attribute importance indicated that cluster value significantly differed from overall mean.

**Table 29. Multinomial Logistic Regressions Examining Associations between Wave 1 and 2 Patterns of Social Relations among All Participants**

	<b>-2LL</b>	Parameter: family networks (w2)	Parameter: small diverse networks (w2)
Model 1: pattern only			
Intercept:	31.86		
Full:	29.35		
	Removed		
Wave 1 Social Relations Pattern	31.89		
Diverse networks		1.06	1.52
Friend networks		1.44	0.82
Small family networks		1.57	1.43
Large family networks		--	--
Model 2: with demographic factors			
Intercept:	135.0		
Full:	115.2		
	Removed		
Wave 1 social relations pattern	117.3		
Diverse networks		1.47	1.67
Friend networks		1.44	0.83
Small family networks		1.09	1.43
Large family networks		--	--
Gender	115.9		
Male		0.72	0.73
Race	122.4*		
Not White		3.27*	1.60
Mother marital status	120.2		
Not married		2.61	1.05

Comparison group = large diverse networks (w2)

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 30. Multinomial Logistic Regressions Examining Associations between Wave 1 and 2 Patterns of Social Relations among Older Participants.**

	<b>-2LL</b>	Parameter: No Friends, may have children (w2)
<hr/>		
Model 1: pattern only		
Intercept:	14.16	
Full:	12.44	
	Removed	
Wave 1 social relations pattern	14.16	
Extended family-dominant networks		1.22
Family-only networks		0.59
No parents networks		0.53
Peer-dominant networks		--
<hr/>		
Model 2: with demographic factors		
Intercept:	94.32	
Full:	85.72	
	Removed	
Wave 1 social relations pattern	86.2	
Extended family-dominant networks		1.24
Family-only networks		0.78
No parents networks		0.68
Peer-dominant networks		--
Gender	86.0	
Male		1.33
Race	85.8	
Not White		0.79
Mother marital status	87.6	
Not married		0.37
Age	85.8	1.20
Competitiveness	88.3	0.93
Mother's Age	85.9	0.98

Comparison group = friends, no children (w2)

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 31. Multinomial Logistic Regressions Examining Associations between Wave 1 and 2 Patterns of Social Relations among Younger Participants.**

	<b>-2LL</b>	Parameter: Friends, no children (w2)
<hr/>		
Model 1: pattern only		
	Intercept: 12.11	
	Full: 10.71	
	Removed	
Wave 1 social relations pattern	12.11	
Peer-dominant networks		0.55
Extended family-dominant networks		0.95
Family-only networks		--
<hr/>		
Model 2: with demographic factors		
	Intercept: 98.16	
	Full: 81.92*	
	Removed	
Wave 1 social relations pattern	89.6*	
Peer-dominant networks		0.46
Extended family-dominant networks		4.41
Family-only networks		--
Gender	81.9	
	Male	1.09
Race	89.4**	
	Not White	0.19*
Mother marital status	85.2	
	Not married	0.24
	Age	0.67
	Grade in school	1.64
	Mother's average negative relationships	0.67
<hr/>		

Comparison group = no friends, may have children (w2)

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 32. Example Set of Models for Analyses Pertaining to Research Question 2. Predicting Early Adult Depression**

<b>Variable group</b>	Model 1	Model 2a	Model 2b	Model 2c	Final Model
Childhood depression (W1)	X	X	X	X	X
Gender and race (assoc. with attrition)	X	X	X	X	X
Personal/situational characteristics associated with wave 2 depression	X	X	X	X	X
Personal/situational characteristics associated with wave 1 network structure		X			X (*)
Network structure characteristics (W1)		X			X (*)
Personal/situational characteristics associated with wave 1 network composition			X		X (*)
Selected network composition variables (W1)			X		X (*)
Personal/situational characteristics associated with wave 1 social support				X	X (*)
Social support (W1)				X	X (*)

Note: (\*) indicates that only those variables in this category that were significant ( $p < .05$ ) or nearly significant ( $p < .10$ ) predictors in prior models will be included.



**Table 33. Multiple Linear Regressions Examining Associations between Childhood Social Relations and Adult Physical Health: Preliminary Models**

		Model 1	Model 2a	Model 2b	Model 2c	Model 2d	Model 2e	Model 2f	Model 2g	
<b>R<sup>2</sup> (adj.)</b>		.15***	.19***	.14**	.19***	.20***	.18***	.26***	.16***	
Personal/situational (all models)	W1 phys. health	.26**	.29***	.29**	.32**	.27**	.27**	.29***	.29**	
	Gender (female)	-.20**	-.18**	-.19*	-.19**	-.21***	-.18*	-.16*	-.18*	
	Race (white)	-.09	-.08	-.13	-.12	-.11	-.14	-.12	-.13	
Personal/situational (associated with predictor block)	W2 stressful life ev.	-.28***	-.30***	-.32***	-.25**	-.27**	-.30**	-.27***	-.27**	
	Impatient-aggressive Mother's age		-.02 .06	-.06	-.02	-.04	-.02	-.07	-.01	
	W1 stressful life ev. Mother married			-.07		.05 .07	.07	.05	.06	
	Mother working					.20* .19*	.17*	.15 <sup>†</sup>	.19*	
	Mother's av. pos. rel.					-.02 .06	.06	-.00	.06	
	Mother's av. neg. rel.					.07 .11	.14	.11	.13	
	Network structure	Total size		.02						
		Inner circle size		-.22 <sup>†</sup>						
		Network age		.00						
Time known network			-.18 <sup>†</sup>							
Network proximity			-.08							
Contact frequency			.09							
Network composition	Proportion female			.06						
	Proportion adults			-.18						
	Number of imm. fam.			-.19						
	Number of ext. fam.			.07						
	Number of friends			.03						
	Includes mother			-.09						
	Includes father			.06						
	Includes sibling			.03						
	Includes grandparent			-.00						
	Includes aunt/uncle			.01						
Includes cousin			-.14							
Includes friend			-.03							

Social support: Number of functions filled	Positive mother								
	Negative mother								
	Positive father								
	Negative father								
	Positive sibling								
	Negative sibling								
	Positive friend								
	Negative friend								
	Positive ext. fam.								
	Negative ext. fam.								
Social support: Focal figures	Mother			.20*					
	Father					.58			
	Sibling							-2.33***	
	Friend								.01
	Number of supporters				-.05	.74		-2.69***	-.05
Interactions: Focal figure by number of supporters	$\Delta R^2$			.00		.02 <sup>†</sup>		.07***	.01
	Num sup x mother								
	Num sup x father						-1.02 <sup>†</sup>		
	Num sup x sibling							3.51***	
	Num sup x friend								

<sup>†</sup>p<.10 \*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 34. Multiple Linear Regressions Examining Associations between Childhood Social Relations and Adult Well-Being: Final Models**

		Physical health	Depression	Subjective well-being	Feelings about self
<b>OVERALL R<sup>2</sup></b>		.46***	.38***	.25***	.29***
R <sup>2</sup> Step 1		.21***	.27***	.18***	.33***
Wave 1	Child phys health	.31***			
Well-Being	Child depression		.17*		
	Child feelings about self				.31***
	Child mental health				
Controls (personal/situational)	Child female	-.14*	.11	-.08	.04
	Child White	-.05	.11	.16*	-.25**
	Child impatient-aggressive		3.15		
	-quadratic		-5.94		
	-cubic		2.76		
	Mother working (wave 1)	.16*	-.25**		
	Wave 2 stressful events	-.24***	.32***	-.25**	-.38***
	Wave 2 household income			.22**	
$\Delta R^2$		.21***	.11**	.07 <sup>†</sup>	.01
Network structure	Inner circle size	-.21**			-.09
	Network average age			.05	
	Time known network	-.17*			
	Proximity of network				
	-quadratic				
	-cubic				
Network Composition	Proportion female				
	Proportion adults		-.27*		
	Number of friends		-.18 <sup>†</sup>		
	Includes mother		.10		
Social Support	Positive support from mother			-.24*	
	Negative support from mother			.13	
	Positive support from father			-.14	
	Positive support from sibling	-.56*	.19**	-.21*	
	-quadratic	1.52**			
	-cubic	-1.41***			
	Positive support from friend			-.22*	
	Positive support from extended Family		.16*		

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 35. Multiple Linear Regressions Examining Associations between Childhood Social Relations and Adult Well-Being: Revised Social Support Indicators**

		Physical health			Depression		
		Mother	Father	Sibling	Father	Sibling	Number of supporters only
<b>OVERALL Adjusted R<sup>2</sup></b>		.27***	.26***	.40***	.29***	.28***	.27***
R <sup>2</sup> Step 1		.21***	.21***	.21***	.28***	.28***	.28***
W1 Well-Being	Child phys health	.27***	.27***	.31***			
Controls (personal/situational)	Child depression				.14	.12	.14
	Child female	-.20***	-.18*	-.16*	.12	.09	.10
	Child white	-.08	-.11	-.06	.12	.11	.11
	Child impatient-aggressive				5.05	6.05*	6.16*
	-quadratic				-9.73	-11.90*	-12.21*
	-cubic				4.70	5.90*	6.08*
	Mother working (wave 1)	.19**	.18*	.18**	-.23**	-.23**	-.24**
	Wave 2 stressful events	-.28***	-.30***	-.24***	.35***	.33***	.33***
$\Delta R^2$		.11***	.10**	.23***	.08*	.07*	.05
Network structure	Inner circle size	-.20**	-.22**	-.14*			
	Network average age						
	Time known network	-.18*	-.18*	-.17*			
Network Composition	Proportion adults				-.23*	-.20	-.24*
	Number of friends				-.14	-.10	-.14
Social Support	Includes mother				.10	.10	.12
	Mother is focal figure	.17*					
	Father is focal figure		.41		-.57		
	Sibling is focal figure			-4.33***		1.04	
	Friend is focal figure						
	Number of supporters		.58	-5.59***	-.66	1.33	.14
	Interaction: number*mother						
Interaction: number*father			-.79		1.03		
Interaction: number*sibling				7.05***	-1.58		

**Table 35 (continued). Multiple Linear Regressions Examining Associations between Childhood Social Relations and Adult Well-Being: Revised Social Support Indicators**

		Subjective well-being		Feelings About Self	
		father	friend	father	sibling
<b>OVERALL Adjusted R<sup>2</sup></b>		.21***	.16***	.32***	.32***
R <sup>2</sup> Step 1		.18***	.18***	.31***	.35***
Wave 1 Well-Being	Child feelings about self			.28***	.30***
Controls (personal/situational)	Child female	-.06	-.05	.03	.05
	Child White	-.12	-.12	-.25***	-.25**
	Child impatient-aggressive	.17*	.17*		
	Mother working (wave 1)				
	Wave 2 stressful events	-.31**	-.25**	-.44***	-.39***
	Wave 2 household income	.22**	.22*		
$\Delta R^2$		.04	.04	.05*	.05*
Network structure	Inner circle size			-.08	-.08
	Network average age	.08	.11		
Network Composition Social Support	Time known network				
	Proportion adults				
	Mother is focal figure			.87*	
	Father is focal figure	.76			
	Sibling is focal figure				-1.21*
	Friend is focal figure		.60*		
	Number of supporters	.94*	.55*	1.14**	-1.28
	Interaction: number*mother				
Interaction: number*father	-1.15*		-1.34**		
Interaction: number*sibling				1.82*	
Interaction: number*friend		-.73*			

†p<.10 \*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 36. Follow-up Analyses to Significant Interactions: Multiple Linear Regressions Examining Associations between Number of Supporters and Adult Well-Being, Separated by Focal Figure**

	Physical health		Subjective well-being				Feelings about self			
	FF not sibling (n=139)	FF is sibling (n=7)	FF not father (n=137)	FF is father (n=12)	FF not friend (n=81)	FF is friend (n=68)	FF not father (n=137)	FF is father (n=12)	FF not sibling (n=142)	FF is sibling (n=8)
<b>R<sup>2</sup> (adj.)</b>	-.01	.82**	-.01	-.07	.03 <sup>†</sup>	.00	.01 <sup>†</sup>	-.07	.00	.39 <sup>†</sup>
Number of supporters	-.02	.92**	.04	-.17	.21 <sup>†</sup>	-.13	.14 <sup>†</sup>	-.18	.11	.69 <sup>†</sup>

<sup>†</sup>p<.10 \*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 37. Multiple Linear Regressions Examining Associations between Childhood Social Relations and Adult Depression: Preliminary Models.**

Variable	Model 1	Model 2a	Model 2b	Model 2c	Model 2d	Model 2e	Model 2f	Model 2g	
<b>R<sup>2</sup> (adj.)</b>	.20***	.24***	.24***	.24***	.25***	.27***	.27***	.25***	
Personal/situational (all models)	W1 depression	.16*	.11	.15 <sup>†</sup>	.09	.11	.13	.10	.11
	Gender (female)	.07	.10	.18*	.12	.12	.12	.10	.11
	Race (white)	.15 <sup>†</sup>	.13	.11	.14	.13	.15 <sup>†</sup>	.14 <sup>†</sup>	.15 <sup>†</sup>
	W2 stressful life ev.	.35***	.35***	.32***	.31***	.33***	.36***	.34***	.33***
Personal/situational (associated with predictor block)	Mother working (w1)	-.22**	-.19*	-.23**	-.24**	-.24**	-.22**	-.22**	-.24**
	Impatient-aggressive		6.27*	5.39*	5.48*	6.97**	6.36*	7.28**	7.76**
	-quadratic		-12.33*	-10.55 <sup>†</sup>	-10.87 <sup>†</sup>	-14.07*	-12.59*	-14.62**	-15.74**
	-cubic		6.09*	5.20 <sup>†</sup>	5.41 <sup>†</sup>	7.15*	6.27*	7.41	8.03**
	Mother's age		-.05						
	W1 stressful life ev.			.01					
	Mother married				-.00	.02	.01	.03	.03
	Mother's av. pos. rel.				.12	.09	.09	.12	.09
	Mother's av. neg. rel.				.14	.07	.05	.08	.06
	Network structure	Total size		.00					
Inner circle size			.07						
Network age			-.16						
Time known network			.13						
Network proximity			.09						
Contact frequency			.02						
Network composition		Proportion female			-.17				
	Proportion adults			-.26 <sup>†</sup>					
	Number of imm. fam.			-.20					
	Number of ext. fam.			-.13					
	Number of friends			-.30*					
	Includes mother			.23 <sup>†</sup>					
	Includes father			.01					
	Includes sibling			.08					

	Includes grandparent	.02				
	Includes aunt/uncle	.11				
	Includes cousin	-.00				
	Includes friend	.08				
Social support: number of functions filled	Positive mother	.06				
	Negative mother	-.08				
	Positive father	.08				
	Negative father	-.03				
	Positive sibling	.23*				
	Negative sibling	-.04				
	Positive friend	.04				
	Negative friend	.01				
	Positive ext. fam.	.16 <sup>†</sup>				
	Negative ext. fam.	-.09				
Social support: focal figures	Mother		-.09			
	Father			-.55		
	Sibling				1.31*	
	Friend					-.07
	Number of supporters		.14 <sup>†</sup>	-.64	1.59*	.14 <sup>†</sup>
Interactions: Focal figure by number of supporters	$\Delta R^2$		.00	.02 <sup>†</sup>	.02*	.00
	Num sup x mother					
	Num sup x father			1.02 <sup>†</sup>		
	Num sup x sibling					-1.93*
	Num sup x friend					

<sup>†</sup>p<.10 \*p<.05 \*\*p<.01 \*\*\*p<.001



**Table 38. Multiple Linear Regressions Examining Associations between Childhood Social Relations and Adult Subjective Well-Being: Preliminary Models.**

		Model 1	Model 2a	Model 2b	Model 2c	Model 2d	Model 2e	Model 2f	Model 2g
<b>R<sup>2</sup> (adj.)</b>		.15***	.15**	.14**	.17**	.13**	.14**	.12**	.15**
Personal/situational (all models)	Gender (female)	-.05	-.05	-.16	-.05	-.06	-.05	-.05	-.04
	Race (white)	-.13	-.10	-.08	-.09	-.10	-.12	-.11	-.13
	Impatient-aggressive	.19*	.18*	.17 <sup>†</sup>	.16 <sup>†</sup>	.17*	.18*	.18*	.20*
	W2 stressful life ev.	-.27**	-.26**	-.29**	-.27**	-.26**	-.31**	-.27**	-.25**
	W2 HH income	.20*	.20*	.21*	.20*	.20*	.23*	.21*	.21*
Personal/situational (associated with predictor block)	Mother's age		.04						
	W1 stressful life ev.			-.09					
	Mother married				.01	-.04	-.06	-.05	-.04
	Mother working				.10	.09	.07	.09	.11
	Mother's av. pos. rel.				-.01	-.00	-.00	-.01	-.01
Network structure	Mother's av. neg. rel.				-.13	-.05	-.02	-.05	-.03
	Total size		.09						
	Inner circle size		-.15						
	Network age		.20*						
	Time known network		-.16						
	Network proximity		-.07						
	Contact frequency		.10						
Network composition	Proportion female			.15					
	Proportion adults			.05					
	Number of imm. fam.			-.06					
	Number of ext. fam.			-.01					
	Number of friends			-.03					
	Includes mother			-.05					
	Includes father			-.10					
	Includes sibling			.07					
	Includes grandparent			.17					
	Includes aunt/uncle			.04					
	Includes cousin			-.02					

			.08				
Social support:	Includes friend						
Number of functions filled	Positive mother					-.31*	
	Negative mother					.22 <sup>†</sup>	
	Positive father					-.19 <sup>†</sup>	
	Negative father					-.03	
	Positive sibling					-.26*	
	Negative sibling					.11	
	Positive friend					-.29*	
	Negative friend					.14	
	Positive ext. fam.					-.08	
	Negative ext. fam.					.09	
Social support: Focal figures	Mother			.09			
	Father					.76 <sup>†</sup>	
	Sibling						-.04
	Friend						.60*
	Number of supporters			.05	.94*	.05	.55*
Interactions: Focal figure by number of supporters		$\Delta R^2$		.01	.02 <sup>†</sup>	.00	.03*
	Num sup x mother						
	Num sup x father					-1.15 <sup>†</sup>	
	Num sup x sibling						
	Num sup x friend						-.74*

<sup>†</sup>p<.10 \*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 39. Multiple Linear Regressions Examining Associations between Childhood Social Relations and Adult Feelings About Self: Preliminary Models.**

Variable	Model 1	Model 2a	Model 2b	Model 2c	Model 2d	Model 2e	Model 2f	Model 2g
<b>R<sup>2</sup> (adj.)</b>	.29***	.28***	.27***	.25***	.28**	.30**	.30**	.28***
Personal/situational (all models)	W1 feelings about self .30***	.30***	.30***	.29***	.29***	.28***	.27***	.29***
	Gender (female) .03	.02	.01	.04	.02	.03	.03	.03
	Race (white) -.26***	-.25**	-.23**	-.27**	-.27*	-.28**	-.27*	-.28***
Personal/situational (associated with predictor block)	W2 Stressful life ev. -.38***	-.36***	-.40***	-.36***	-.38***	-.43**	-.38***	-.38***
	Impatient-aggressive .08	.07	.07	.09	.06	.06	.03	.07
	Mother's age	-.07						
	W1 Stressful life ev.		.07					
	Mother married			.05	.02	.01	.02	.01
	Mother working			.09	.06	.04	.04	.06
	Mother's av. pos. rel.			-.06	-.06	-.06	-.09	-.06
	Mother's av. neg. rel.			-.04	-.04	-.01	-.04	-.03
Network structure	Total size	.15						
	Inner circle size	-.21 <sup>†</sup>						
	Network age	.11						
	Time known network	-.08						
	Network proximity	-.05						
	Contact frequency	-.00						
Network composition	Proportion female		-.04					
	Proportion adults		.16					
	Number of imm. fam.		-.01					
	Number of ext. fam.		-.09					
	Number of friends		.02					
	Includes mother		.05					
	Includes father		-.10					
	Includes sibling		.13					
	Includes grandparent		.13					
	Includes aunt/uncle		.00					
	Includes cousin		.07					
	Includes friend		.05					

Social support: Number of functions filled	Positive mother								
	Negative mother								
	Positive father								
	Negative father								
	Positive sibling								
	Negative sibling								
	Positive friend								
	Negative friend								
	Positive ext. fam.								
	Negative ext. fam.								
Social support: Focal figures	Mother		.04						
	Father			.86*					
	Sibling							-1.25*	
	Friend								.07
	Number of supporters		.09	1.11*	-1.32 <sup>†</sup>				.09
Interactions: Focal figure by number of supporters	$\Delta R^2$	.00	.03*	.02*	.00				
	Num sup x mother								
	Num sup x father								
	Num sup x sibling								
	Num sup x friend								

<sup>†</sup>p<.10 \*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 40. ANCOVAs Predicting Wave 2 Well-Being from Wave 1 Pattern of Social Relations**

		Physical health		Depression		Subjective well-being		Feelings about self	
		Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Wave 1 Cluster Membership		.18	1.09	1.14	0.40	1.51	0.13	0.64	0.87
Personal/ Situational	Gender (female)		2.69		0.91		0.78		0.00
	Race (white)		2.82		3.07		1.63		10.22**
	Impatient-aggressiveness						6.08*		
	Mother married/ partnered		1.77		0.19		1.03		0.03
	Mother's employment				3.38				
	Wave 2 stressful life events		10.11**		16.12***		4.02*		25.80***
	Wave 2 household income						2.96		
	Interactions with cluster	X Gender		1.05		2.69*		0.03	
	X Race (white)		0.71		0.44		0.25		0.54
	X Impatient-aggressiveness						0.38		
	X Mother marital status		1.02		1.08		1.20		1.03
	X Mother's employment				0.43				
	X Wave 2 stressful life events		0.85		2.08		3.26*		3.27*
	X Wave 2 household income						0.19		

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 41. Multiple Linear Regressions Examining Associations between Childhood Social Relations and Educational Orientation (Endorsement): Preliminary Models.**

		Model 1	Model 2a	Model 2b	Model 2c	Model 2d	Model 2e	Model 2f	Model 2g
<b>R<sup>2</sup> (adj.)</b>		.05**	.05*	.05 <sup>†</sup>	.04 <sup>†</sup>	.06*	.06*	.05*	.05*
Personal/situational (all models)	Gender (female)	-.15*	-.16*	-.15*	-.18*	-.16*	-.15*	-.15*	-.15*
	Race (white)	-.09	-.10	-.10	-.07	-.03	-.04	-.04	-.04
	Mother working	-.18**	-.18**	-.15**	-.14 <sup>†</sup>	-.16*	-.16*	-.16*	-.16*
Personal/situational (associated with predictor block)	Impatient-aggressive		.00	-.05	-.01	-.03	-.02	-.03	-.03
	Mother's age		-.06						
	W1 Stressful life ev.			-.07					
	Mother married				-.11	-.11	-.12	-.11	-.11
	Mother's av. pos. rel.				.00	-.00	-.00	-.00	-.00
Network structure	Mother's av. neg. rel.				-.09	-.12	-.11	-.11	-.11
	Total size		.02						
	Inner circle size		-.05						
	Network age		-.10						
	Time known network		.09						
	Network proximity		.18*						
	Contact frequency		-.12						
Network composition	Proportion female			.01					
	Proportion adults			-.01					
	Number of imm. fam.			.24 <sup>†</sup>					
	Number of ext. fam.			.23					
	Number of friends			.11					
	Includes mother			.10					
	Includes father			-.26*					
	Includes sibling			-.13					
	Includes grandparent			-.10					
	Includes aunt/uncle			-.09					
Includes cousin			-.11						

	Includes friend							
Social support:	Positive mother							
Number of	Negative mother							
functions filled	Positive father							
	Negative father							
	Positive sibling							
	Negative sibling							
	Positive friend							
	Negative friend							
	Positive ext. fam.							
	Negative ext. fam.							
Social support:	Mother							
Focal figures	Father							
	Sibling							
	Friend							
	Number of supporters							
Interactions: Focal		$\Delta R^2$						
figure by number of	Num sup x mother							
supporters	Num sup x father							
	Num sup x sibling							
	Num sup x friend							

†p<.10 \*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 42. Multiple Linear Regressions Examining Associations between Childhood Social Relations and Educational Orientation: Final Models**

		# Endorsed	# Prioritized (top 3)
<b>OVERALL R<sup>2</sup></b>		.11**	.12***
R <sup>2</sup> Step 1		.07**	.08**
Controls (personal/situational)	Child female	-.15*	.01
	Child White	-.07	-.16*
	Mother working (wave 1)	-.16*	
	Child stressful events		-.16*
	Mother's negative relationships		-.16*
$\Delta R^2$		.04*	.04**
Network structure	Proximity of network	.13	
Network composition	Number of immediate family	.12	
	Includes cousin		.19**
	Includes father	-.19*	
Social support			

†p<.10 \*p<.05 \*\*p<.01 \*\*\*p<.001



**Table 43. Multiple Linear Regressions Examining Associations between Childhood Social Relations and Educational Orientation (Priority): Preliminary Models.**

		Model 1	Model 2a	Model 2b	Model 2c	Model 2d	Model 2e	Model 2f	Model 2g
	<b>R<sup>2</sup> (adj.)</b>	.06**	.03	.07*	.02	.04 <sup>†</sup>	.04 <sup>†</sup>	.04 <sup>†</sup>	.05 <sup>†</sup>
Personal/situational	Gender (female)	.04	.02	.03	.04	.04	.03	.03	.03
	Race (white)	-.20**	-.20**	-.15 <sup>†</sup>	-.22**	-.22**	-.21**	-.21**	-.22**
	Mother's av. neg. rel.	-.15**	-.15*	-.15*	-.17*	-.18*	-.18*	-.18*	-.19*
Personal/situational	Impatient-aggressive		.01	.02	.01	.00	.00	.00	.00
	Mother's age		-.07						
	W1 Stressful life ev.			-.17*					
	Mother married				.04	.04	.04	.05	.05
	Mother working				-.08	-.07	-.07	-.07	-.08
	Mother av. pos. rel.				-.13	-.10	-.10	-.10	-.11
Network structure	Total size		-.03						
	Inner circle size		.11						
	Network age		-.03						
	Time known network		.05						
	Network proximity		.03						
	Contact frequency		-.06						
Network composition	Proportion female			-.15					
	Proportion adults			.14					
	Number of imm. fam.			-.06					
	Number of ext. fam.			-.09					
	Number of friends			.10					
	Includes mother			-.01					
	Includes father			-.04					
	Includes sibling			.01					
	Includes grandparent			.08					
	Includes aunt/uncle			.00					
	Includes cousin			.27**					

	Includes friend							
Social support:	Positive mother							
Number of	Negative mother							
functions filled	Positive father							
	Negative father							
	Positive sibling							
	Negative sibling							
	Positive friend							
	Negative friend							
	Positive ext. fam.							
	Negative ext. fam.							
Social support:	Mother							
Focal figures	Father							
	Sibling							
	Friend							
	Number of supporters							
Interactions: Focal		$\Delta R^2$						
figure by number of	Num sup x mother							
supporters	Num sup x father							
	Num sup x sibling							
	Num sup x friend							

†p<.10 \*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 44. ANCOVAs Predicting Wave 1 Educational Orientation from Wave 1 Pattern of Social Relations**

		Endorsement		Prioritization	
		Model 1	Model 2	Model 1	Model 2
Wave 1 Cluster Membership		.32	0.19	.31	0.28
Personal/ situational	Child gender (female)		4.08*		0.44
	Child race (white)		0.16		9.37**
	Mother's employment		4.66*		4.66*
	Mother's marital status		2.13		0.52
Interactions with cluster	X Gender		0.72		0.47
	X Race		0.21		0.26
	X Mother's employment		0.61		0.75
	X Mother's marital status		0.69		0.05

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 45. Multiple Linear Regressions Examining Associations between Childhood Social Relations and Educational Attainment: Preliminary Models.**

		Model 1b	Model 2a	Model 2b	Model 2c	Model 2d	Model 2e	Model 2f	Model 2g
<b>R<sup>2</sup> (adj.)</b>		.36***	.38***	.36***	.36***	.37***	.40***	.40***	.37***
Age	Age at wave 2	.07	.08	.06	.04	.08	.08	.06	.07
Personal/ situational (all models)	Gender (female)	.03	.00	-.02	.00	-.00	-.01	.00	.00
	Race (white)	.01	-.00	-.00	-.01	.02	-.01	.02	.00
	Impatient-aggressive	.16*	.15*	.15 <sup>†</sup>	.13 <sup>†</sup>	.13 <sup>†</sup>	.12	.09	.13 <sup>†</sup>
	W2 stressful life ev.	.35 <sup>†</sup>	.30	.38 <sup>†</sup>	.45 <sup>†</sup>	.41 <sup>†</sup>	.31	.47*	.44*
	- quadratic	-.57**	-.50*	-.54*	-.67**	-.65**	-.51*	-.71**	-.67**
	Mother's education	.42***	.42***	.41***	.40***	.38***	.40***	.35***	.40***
	Mother married	.17*	.15*	.21*	.17*	.16*	.19*	.16*	.15*
	Childhood educational endorsement (priority)	-.05	-.03	-.04	-.07	-.10	-.10	-.09	-.09
	Personal/ situational (by block)	Mother's age		.01					
W1 stressful life ev.				.02					
Mother working					.04	.02	.02	.01	.02
Mother av. pos. rel.					-.15 <sup>†</sup>	-.12	-.11	-.17*	-.12
Mother av. neg. rel.					-.22*	-.19*	-.19*	-.21**	-.18*
Network structure	Total size		.02						
	Inner circle size		-.11						
	Network age		.11						
	Time known network		-.05						
	Network proximity		.21**						
	Contact frequency		-.18*						
Network composition	Proportion female			.13					
	Proportion adults			-.08					
	Number of imm. fam.			-.17					
	Number of ext. fam.			.08					
	Number of friends			.01					

	Includes mother	.12				
	Includes father	.14				
	Includes sibling	-.10				
	Includes grandparent	-.02				
	Includes aunt/uncle	-.03				
	Includes cousin	-.06				
	Includes friend	-.03				
Social support: Number of functions filled	Positive mother		-.11			
	Negative mother		.06			
	Positive father		-.11			
	Negative father		.06			
	Positive sibling		-.11			
	Negative sibling		.03			
	Positive friend		.01			
	Negative friend		-.01			
	Positive ext. fam.		-.12			
	Negative ext. fam.		.03			
Social support: Focal figures	Mother			.03		
	Father				-.19**	
	Sibling					-1.13*
	Friend					.07
	Number of supporters			.03	.02	-1.15 <sup>†</sup>
Interactions:		$\Delta R^2$	.00	.00	.01	.01
Focal figure by number of supporters	Num sup x mother					
	Num sup x father					
	Num sup x sibling					1.58 <sup>†</sup>
	Num sup x friend					

<sup>†</sup>p<.10 \*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 46. Regressions Examining Associations between Childhood Social Relations and Early Adult Education and Adult Roles: Final Models**

		Linear regression (continuous outcome) Years of Education (A2)		Multinomial logistic regression (categorical outcomes)		
		$R^2$	$\beta$ (st)	Occupational status	Marital/ parental status	Living arrangement
		Overall.		Intercept:	<b>-2LL</b>	<b>-2LL</b>
		Step 1:		Full:		
		.44***		348.55	336.14	383.3
		.41***		240.21***	153.55***	329.4***
				Removed	Removed	Removed
Age	Age at wave 2			241.5	173.5***	340.9**
Child personal	Child gender (female)		-.03	247.0	158.9	337.0
	Child race (white)		-.01	242.2	186.1***	333.4
	Child grade in school			240.8	165.9**	
	Imatient-aggressiveness		.18			
	Child competitiveness				172.1***	
Wave 1 situational	W1 stressful life events			252.0**		
	Mother's education		.42***		159.7	345.0**
	Mother married/partnered		.17*		165.1**	
	Mother employment (working)			249.4*	156.6	
	Mother's positive relationship quality		-.11	247.4	180.5***	
	Mother's negative relationship quality		-.16*	259.6***	161.8*	333.7
Wave 2 situational	W2 stressful life events		.36*	249.3*		
	-- quadratic		-.58**			
		$\Delta R^2$	.03*			
Network structure	Inner circle size				174.9***	
	Proximity of network		.20*	248.0		
	Frequency of contact with network		-.15	247.1		
Network composition	Proportion female			247.7	157.7	
	Proportion adults				156.3	
	Number of immediate family				160.4	
	Number of extended family				165.2**	

		Linear regression (continuous outcome) Years of Education (A2)	Multinomial logistic regression (categorical outcomes)		
			Occupational status	Marital/ parental status	Living arrangement
	Number of Friends				
	Includes mother				334.6
	Includes father	245.2			
	Includes sibling				331.4
	Includes aunt/uncle			160.8	336.2
	Includes friend				
Social support	Negative support from mother			167.3**	
	Positive support from father	246.0			
	Negative support from father			170.6**	
	Positive support from sibling			170.6**	
	Negative support from sibling				
	Positive support from friend	246.8			
	Negative support from friend			169.0**	
	Positive support from extended family	247.9		159.9	
	Negative support from extended family			157.8	

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 47. Multiple Linear Regressions Examining Associations between Childhood Social Relations and Early Adult Education: Revised Social Support Indicators**

		Father	Sibling
		Overall $R^2$ :	.42***
		$R^2$ Step 1:	.41***
Age	Age at wave 2		
Child personal	Child gender (female)	-.04	-.02
	Child race (white)	-.03	.01
	Child grade in School		
	Child impatient-aggressiveness	.12	.09
	Child competitiveness		
Wave 1 situational	W1 stressful life events		
	Mother's education	.43***	.38***
	Mother married/partnered	.19*	.16*
	Mother employment (working)		
	Mother's positive relationship quality	-.11	-.15*
Wave 2 situational	Mother's negative relationship quality	-.16*	-.18*
	W2 stressful life events	.27	.41
	-- quadratic	-.46**	-.64**
		$\Delta R^2$	.05*
Network structure	Total network size		
	Inner circle size		
	Proximity of network	.19*	.17*
	Frequency of contact with network	-.14	-.11
Network composition	Proportion female		
	Proportion adults		
	Number of immediate family		
	Number of extended family		
	Number of friends		
	Includes mother		
	Includes father		
	Includes sibling		
Social Support	Includes aunt/uncle		
	Includes friend		
	Focal figure is father	-.17*	
	Focal figure is sibling		-1.13*
	Number of supporters		-1.19
	Interaction: number of supporters by focal figure is father		
	Interaction: num. supp. by foc. fig. sib.		1.61

\*p<.05 \*\*p<.01 \*\*\*p<.001



**Table 48. Multinomial Logistic Regressions Examining Associations between Childhood Social Relations and Occupational Status: Preliminary Models.**

		Model 1	Model 2a	Model 2b	Model 2c	Model 2d	Model 2e	Model 2f	Model 2g
	-2LL Intercept only	348.6	348.6	348.6	348.55	347.1	347.1	347.1	347.1
	-2LL Overall model	299.7**	270.2**	248.2**	246.0**	260.3***	265.2**	261.0***	250.9***
	-2LL Removed:								
	Educational orientation (priority)	299.7	271.4	252.6	249.0	262.6	267.9	263.8	253.0
Personal/situational (all models)	Age at wave 2	299.5	272.0	249.7	.48.6	261.8	266.3	263.5	253.4
	Gender (male)	301.1	275.6	252.9	248.5	262.9	268.1	263.2	253.0
	Race (not white)	299.4	270.7	249.4	248.4	263.0	266.9	262.9	253.9
	Grade in school	297.9	270.5	248.8	246.4	260.9	265.6	261.4	251.7
	W1 stressful life ev.	306.0*	279.4*	255.6 <sup>†</sup>	258.0**	269.3*	272.6 <sup>†</sup>	269.9*	258.8*
	W1 stressful life ev.	306.5*	278.8*	265.7**	257.2*	270.8*	275.3*	271.5*	260.5*
	Mother's av. neg. rel.	310.9**	283.8**	263.7**	265.0***	277.0**	279.8**	279.1***	267.9**
	Impatient-aggressive		272.6	248.8	247.7	260.6	266.0	262.0	251.8
Personal/situational (by block)	Mother's age		272.4						
	Mother married				249.5	264.2	267.5	264.7	255.6
	Mother working				257.9**	268.1*	274.3*	267.1	260.6*
	Mother's av. pos. rel.				255.5*	266.2	270.4	268.8 <sup>†</sup>	259.6*
Network structure	Total size		271.8						
	Inner circle size		274.2						
	Network age		270.8						
	Time known network		271.6						
	Network proximity		282.0**						
Network composition	Contact frequency		277.0 <sup>†</sup>						
	Proportion female			255.4 <sup>†</sup>					
	Proportion adults			250.8					
	Number of imm. fam.			252.5					
	Number of ext. fam.			249.9					
	Number of friends			253.3					

		Includes mother	252.0				
		Includes father	255.4 <sup>†</sup>				
		Includes sibling	248.5				
		Includes grandparent	253.2				
		Includes aunt/uncle	250.0				
		Includes cousin	254.1				
		Includes friend	252.0				
	Social Support:	Positive mother	251.0				
	Number of	Negative mother	246.5				
	Functions Filled	Positive father	252.4 <sup>†</sup>				
		Negative father	247.2				
		Positive sibling	248.0				
		Negative sibling	249.9				
		Positive friend	253.4 <sup>†</sup>				
		Negative friend	249.9				
		Positive ext. fam.	257.2*				
		Negative ext. fam.	246.4				
	Social Support:	Mother		263.2			
	Focal Figures	Father			268.7		
		Sibling				263.3	
		Friend					256.8
		Number of supporters		263.1	268.3	263.2	264.7**
	Interactions:	Num sup x mother		266.4			
	Focal figure by	Num sup x father			269.2		
	number of	Num sup x sibling				263.6	
	supporters	Num sup x friend					261.0*

\*p&lt;.05 \*\*p&lt;.01 \*\*\*p&lt;.001

**Table 49. Multinomial Logistic Regressions Examining Associations between Childhood Social Relations and Occupational Status: Parameter Estimates**

		-2LL	Parameter: student Exp (CI)	Parameter: part time work Exp (CI)	Parameter: full time work Exp (CI)
		Intercept: Full: Removed	347.1 227.6***		
Age	Age at wave 2	230.0			
Child personal	Child gender (male)	236.8*	3.33 (0.49 – 22.54)	0.43	2.97
	Child race	230.1			
	Child grade in school	227.9			
Wave 1 situational	W1 stressful life events	238.0*	0.83 (0.52 – 1.34)	0.45**	0.73
	Mother employment	233.2			
	Mother’s positive relationship quality	234.2			
	Mother’s negative relationship quality	245.8***	0.32* (0.10 – 0.95)	2.11	1.90
Wave 2 situational	W2 stressful life events	237.3*	0.78* (0.63 – 0.96)	0.80*	0.82*
Network structure	Proximity of network	240.0**	98.75* (2.86 – 3411.3)	16.58	227.32**
	Frequency of contact with network	237.7*	0.13* (0.02 – 0.75)	0.11*	0.12*
Network composition	Proportion female	234.4			
	Number of friends	236.6*	2.41** (1.29 – 4.52)	1.17	1.30

	Includes father	231.2			
	Includes friend	232.6			
Social support	Focal figures is not friend	233.9	0.01 (0.00 – 4.69)	0.03	0.00*
	Number of supporters	242.4**	19.68 (0.98 – 396.38)	17.95*	76.35**
	Interaction: num. supp. by foc. fig. fr.	237.9*	0.23 (	0.19	0.12**
Interaction follow-up	Number of supporters when FF is friend		0.94	0.61	0.89
	Number of supporters when FF is not friend		1.95	1.28	3.33**
	Focal figure is not friend when number of supporters is low ( $\leq 3$ )		1.29	0.64	0.43
	Focal figure is not friend when number of supporters is high ( $> 3$ )		5.60 <sup>†</sup>	3.20 <sup>†</sup>	1.24

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 50. Multinomial Logistic Regressions Examining Associations between Childhood Social Relations and Marital/Parental Status: Preliminary Models.**

		Model 1	Model 2a	Model 2b	Model 2c	Model 2d	Model 2e	Model 2f	Model 2g	
	-2LL Intercept only	334.8	336.1	336.1	336.1	331.5	331.5	331.5	331.5	
	-2LL Overall model	262.6***	245.4***	216.5***	183.8***	224.9***	223.0**	227.8***	224.5***	
	-2LL Removed:									
Personal/ situational (all models)	Age at wave 2	269.8 <sup>†</sup>	251.7 <sup>†</sup>	224.3 <sup>†</sup>	209.0***	243.0***	235.7***	239.9**	242.0**	
	Gender (male)	266.8	249.0	223.3 <sup>†</sup>	192.0*	233.1*	230.9*	235.0 <sup>†</sup>	234.8*	
	Race (not white)	280.7***	268.1***	229.7**	217.5***	247.2***	241.2***	249.9***	248.5***	
	Grade in school	265.5	247.0	219.7	199.7**	231.8 <sup>†</sup>	226.9	231.2	231.1 <sup>†</sup>	
	Competitive	267.8	250.7	223.4 <sup>†</sup>	199.2**	238.2**	234.6**	238.8**	239.3**	
	Mother's education	273.3*	254.3*	223.2 <sup>†</sup>	191.7*	233.2*	229.3 <sup>†</sup>	233.3	231.1 <sup>†</sup>	
	Mother married	270.1 <sup>†</sup>	253.5*	224.8*	191.3 <sup>†</sup>	231.8 <sup>†</sup>	230.8 <sup>†</sup>	235.8*	232.4*	
	Persona l/ situational (by block)	Impatient-aggressive		246.8	218.1	189.0	229.8	227.2	232.5	230.1
		Mother's age		247.0						
		Mother working				190.8 <sup>†</sup>	227.9	225.1	229.5	227.7
Mother's av. pos. rel.					208.1***	243.7***	237.5**	243.0**	245.0***	
Mother's av. neg. rel.					192.8*	239.4**	235.2**	240.9**	240.6**	
	W1 stressful life ev.			219.3						
Network structure	Total size		247.4							
	Inner circle size		254.0*							
	Network age		246.1							
	Time known network		247.3							
	Network proximity		245.6							
	Contact frequency		246.2							
Network composition	Proportion female			222.9 <sup>†</sup>						
	Proportion adults			225.2*						
	Number of imm. fam.			228.6**						
	Number of ext. fam.			226.8*						
	Number of friends			219.2						
	Includes mother			220.4						
	Includes father			220.6						
	Includes sibling			219.5						
	Includes grandparent			220.1						
	Includes aunt/uncle			223.4 <sup>†</sup>						

	Includes cousin	219.4				
	Includes friend	216.8				
Social Support:	Positive mother		188.0			
Number of	Negative mother		193.7*			
Functions Filled	Positive father		188.2			
	Negative father		201.5**			
	Positive sibling		190.8 <sup>†</sup>			
	Negative sibling		189.4			
	Positive friend		188.9			
	Negative friend		197.3**			
	Positive ext. fam.		195.2**			
	Negative ext. fam.		190.5 <sup>†</sup>			
Social Support:	Mother			227.5		
Focal Figures	Father				229.8 <sup>†</sup>	
	Sibling					230.9
	Friend					229.6
Interactions:	Number of supporters			227.5	231.1*	230.8
Focal figure by	Num sup x mother			226.7		227.1
number of	Num sup x father				231.0*	
supporters	Num sup x sibling					230.8
	Num sup x friend					228.5

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 51. Multinomial Logistic Regressions Examining Associations between Childhood Social Relations and Marital/Parental Status: Parameter Estimates**

		-2LL	Parameter: unmarried, has children	Parameter: married with children	Parameter: married, no children
		Intercept: 331.5			
		Full: 179.6***			
		Removed			
Age	Age at wave 2	173.5***	1.45	170.41**	0.27
Child Personal	Child gender (male)	158.9			
	Child race (not white)	186.1***	8.73*	0.00*	0.17
	Child grade in school	165.9**	0.71	0.06*	7.22*
	Child competitiveness	172.1***	0.97	1.52**	1.13
Wave 1 Situational	Mother's education	159.7			
	Mother employment	156.6			
	Mother's marital status (not married=partnered)	165.1**	6.92	32.17	19.36*
	Mother's positive relationship quality	180.5***	0.55	109747.2**	0.23
Network Structure Network Composition	Mother's negative relationship quality	161.8*	0.65	11.06*	0.76
	Inner circle Size	174.9***	1.32	0.31*	1.01
	Proportion female	157.7			
	Proportion adults	156.3			
Social Support	Number of immediate family	160.4			
	Number of extended family	165.2**	.49*	1.89	0.65
	Does not include aunt/uncle	160.8			
	Negative support from mother	167.3**	7.69**	0.65	.07*
	Negative support from father	170.6**	7.99	0.00*	5.94
	Positive support from sibling	170.6**	1.41	0.14*	1.27
Negative support from friend	169.0**	5.55*	0.01*	3.10	
	Positive support from extended family	169.9			
	Negative support from extended family	157.8			

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 52. Multinomial Logistic Regressions Examining Associations between Childhood Social Relations and Marital/Parental Status: Revised Social Support Indicators**

		-2LL	Parameter: unmarried, has children	Parameter: married with children	Parameter: married, no children
		Intercept: 331.5			
		Full: 179.6***			
		Removed			
Age	Age at wave 2	193.5**	2.50	11.26**	0.49
Child Personal	Child gender (male)	183.5			
	Child race	201.2***	9.12*	0.02**	0.37
	Child grade in school	185.2			
	Child competitiveness	193.0**	0.94	1.22**	1.14
Wave 1 Situational	Mother's education	185.3			
	Mother employment	180.3			
	Mother's marital status (not married=partnered)	190.5*	9.62*	15.96*	1.83
	Mother's positive relationship quality	196.9**	0.24	219.67**	1.65
	Mother's negative relationship quality	191.2**	1.16	4.13*	0.45
Network Structure	Inner circle size	194.2**	1.32	0.64*	0.93
Network Composition	Proportion female	182.7			
	Proportion adults	187.3			
	Number of immediate family	188.6*	2.25*	2.04*	1.29
	Number of extended family	193.3**	0.41**	0.96	0.77
	Does not include aunt/uncle	188.4*			0.06*
Social Support	Focal figures is not father	189.1*	0.00	897.26	0.04
	Number of supporters	192.5**	0.00	4.11***	0.94
	Interaction: num. supp. by foc. fig. fa.	191.2**	0.00	0.23	0.65
Interaction follow-up	Number of supporters when FF is father		0.00		0.32
	Number of supporters when FF is not father		1.05	0.91	0.92

\*p<.05 \*\*p<.01 \*\*\*p<.001



**Table 53. Multinomial Logistic Regressions Examining Associations between Childhood Social Relations and Living Arrangement: Preliminary Models.**

		Model 1	Model 2a	Model 2b	Model 2c	Model 2d	Model 2e	Model 2f	Model 2g
	-2LL Intercept Only	319.0	378.5	378.5	378.5	375.9	375.9	375.9	375.9
	-2LL Overall Model	281.5***	334.2	299.3*	304.1 <sup>†</sup>	311.9**	316.8**	320.7*	315.6**
	-2LL Removed:								
Personal/ situational (all models)	Age at wave 2	291.88*	341.1 <sup>†</sup>	309.9*	313.7*	322.4*	326.1	329.2*	324.5*
	Gender (male)	290.67*	343.4*	309.8*	315.5*	322.1*	326.3*	328.7*	325.6*
	Race (not white)	285.34	336.2	302.9	307.6	316.9	322.2	325.4	319.8
	Grade in school	296.86**	349.6**	313.2**	317.4**	332.6***	332.1	335.9**	334.7***
Persona I/ situational (by block)	Impatient- aggressive		335.1	301.2	304.5	313.0	318.5	321.4	316.9
	Mother's age		335.5						
	Mother married				306.0	316.1	321.7	325.4	320.4
	Mother working				305.7	314.9	318.2	322.4	318.7
	Mother's av. pos. rel.				306.6	314.3	319.1	322.0	317.4
	Mother's av. neg. rel.				310.6 <sup>†</sup>	316.0	320.7	324.5	319.8
	W1 stressful life ev.			303.3					
Network structure	Total size		337.4						
	Inner circle size		337.0						
	Network age		334.7						
	Time known network		334.2						
	Network proximity		335.8						
	Contact frequency		334.4						
Network composition	Proportion female			303.3					
	Proportion adults			304.4					
	Number of imm. fam.			301.0					
	Number of ext. fam.			302.1					
	Number of friends			300.8					
	Includes mother			306.0 <sup>†</sup>					
	Includes father			300.7					
Includes sibling			306.5 <sup>†</sup>						

	Includes grandparent	301.8				
	Includes aunt/uncle	307.1*				
	Includes cousin	300.6				
	Includes friend	302.0				
Social support:	Positive mother		304.5			
	Negative mother		307.2			
Number of functions filled	Positive father		305.9			
	Negative father		310.0			
	Positive sibling		308.8			
	Negative sibling		305.3			
	Positive friend		305.2			
	Negative friend		308.6			
	Positive ext. fam.		304.4			
	Negative ext. fam.		309.3			
Social support:	Mother			320.5*		
	Father				326.7*	
Focal figures	Sibling					322.9
	Friend					
	Number of supporters			325.3**	326.0*	323.0
Interactions:	Num sup x mother			323.8**		
Focal figure by number	Num sup x father				326.8*	
	Num sup x sibling					323.0
of supporters	Num sup x friend					
						325.1*

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†p<.10 \*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 54. Multinomial Logistic Regressions Examining Associations between Childhood Social Relations and Living Arrangement: Revised Social Support Indicators**

		-2LL	Parameter: lives with parent(s)	Parameter: lives with partner	Parameter: lives alone
		Intercept: 380.7			
		Full: 302.6***			
		Removed			
Age	Age at wave 2	314.4**	0.82 (0.71* in father model)	1.38	0.67
Child personal	Child gender (male)	311.7*	0.36*	0.24*	1.20
	Child race	305.8			
	Child grade in school	323.5***	0.84	0.88	1.91**
Wave 2 situational	Mother's negative relationship quality	307.2			
	W2 stressful life events				
Network structure	Proportion adults	305.6			
	Does not includes mother	313.0*	0.09*	0.00	0.21
	Includes sibling	308.1			
Network composition	Includes aunt/uncle	310.6			
	Focal Figure is not mother	311.4*	59.85*	161.1*	0.35
Social support	Focal Figures is not father	318.2**	0.00	0.00	0.00
	Focal figure is friend	313.9	0.06	0.02*	6.09
	Number of supporters	314.9** (ns in friend model)	0.22* (ns in father model)	0.01	2.64
	Interaction: Num. supp. by foc. fig. mo.	314.4**	3.06*	4.29	0.55
	Interaction: Num. supp. by foc. fig. fa.	317.8**	0.00	0.00	0.00
	Interaction: Num. supp. by foc. fig. fr.	315.8*	0.40	0.32*	1.68
Interaction follow-up	Num. of supporters when FF is mother		1.14	1.49	1.14
	Num. of supporters when FF not mother		0.42**	0.66	0.95
Interaction follow-up	Num. of supporters when FF is father		0.00***	0.00	0.00
	Num. of supporters when FF is not father		0.71	1.02	1.05

Interaction follow-up	Num. of supporters when FF is friend	0.70	0.47*	1.01
	Num. of supporters when FF is not friend	1.37	1.09	1.14

Comparison group = other living arrangement

Note: Associations with mother, father, and friend as social figure were examined in three separate models. -2LLs and Parameters for personal, situational, network structure, and composition variables as well as number of supporters are from the model including mother as focal figure; Parameters in the other models differed slightly from these; Where they differed substantially (e.g., significant vs. not significant, this is noted);

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 55. ANCOVAs Predicting Educational Attainment at Wave 2 from Pattern of Social Relations at Wave 1**

		Model 1	Model 2	Model 3	Model 3b
Wave 1 cluster membership		2.43 <sup>†</sup>	1.17	0.26	0.64
Personal/ situational	Gender (female)		0.06	0.52	0.26
	Race (white)		0.13	0.00	0.06
	Age at wave 2		0.23	0.10	0.37
	Child impatient-aggressiveness		0.50	5.33*	5.55*
	Wave 2 stressful life events		3.08	5.04*	5.88*
	Mother's education		26.41***	31.90***	29.44***
	Mother's marital status		2.05	5.99*	5.36*
Interactions with cluster	X Gender		0.79		
	X Race		2.96*		
	X age		0.75		
	X Impatient-aggressiveness		1.69		
	X Wave 2 stressful life events		0.32		
	X Mother's education		0.27		
	X Mother's marital status		0.32		
Child educational orientation	Endorsement			1.46	
	Cluster X endorsement			0.21	
	Priority				0.67
	Cluster X priority				0.25

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 56. Hypothetical Social Network Illustrating the Large Family Networks Pattern.**

	<b>Name/ Relationship</b>	<b>Adult/ child</b>	<b>Years known</b>	<b>Within an hour's drive?</b>	<b>Frequency of contact</b>
<u>Immediate family:</u>					
	Mother	A	10	Y	5 (every day)
	Father	A	10	Y	5 (every day)
	Sister	C	10	Y	5 (every day)
	<b>Total immediate family: 3</b> (cluster centroid = 3.3)				
<u>Extended family:</u>					
	Paternal grandmother	A	10	Y	4 (weekly)
	Paternal grandfather	A	10	Y	4 (weekly)
	Paternal aunt	A	10	Y	3 (monthly)
	Maternal grandmother	A	10	N	3 (monthly)
	Maternal uncle	A	10	N	2 (yearly)
	<b>Total extended family: 5</b> (cluster centroid = 5.1)				
<u>Friends:</u>					
	Friend 1	C	10	Y	5 (every day)
	<b>Total friends: 1</b> (cluster centroid = 0.9)				
<u>Others:</u>					
	Babysitter	C (teen)	6	Y	5 (every day)
	Neighbor	A	6	Y	4 (weekly)
	Neighbor	C	6	Y	4 (weekly)
	Teacher	A	4	Y	4 (weekly)
Network summary (mean)	13 members	69% adults	8.6	85%	4.1
Cluster centroid	13.1 members	70% adults	9.0	81%	4.1

**Table 57. Hypothetical Social Network Illustrating the Diverse Networks Pattern:**

	<b>Name/ Relationship</b>	<b>Adult/ child</b>	<b>Years known</b>	<b>Within an hour's drive?</b>	<b>Frequency of contact</b>
<u>Immediate family:</u>					
	Mother	A	10	Y	5 (every day)
	Father	A	10	Y	5 (every day)
	Sister	C	10	Y	5 (every day)
	Brother	C	7	Y	5 (every day)
	<b>Total immediate family: 4</b> (cluster centroid = 3.7)				
<u>Extended family:</u>					
	Maternal grandmother	A	10	Y	4 (weekly)
	Paternal grandfather	A	10	N	4 (weekly)
	<b>Total extended family: 2</b> (cluster centroid = 1.4)				
<u>Friends:</u>					
	Friend 1	C	3	Y	5 (every day)
	Friend 2	C	9	Y	4 (weekly)
	<b>Total friends: 2</b> (cluster centroid = 2.4)				
<u>Others:</u>					
	Teacher	A	1	Y	4 (weekly)
Network summary (mean)	9 members	55% adults	7.8	89%	4.6
Cluster centroid	8.7 members	49% adults	7.8	94%	4.5

**Table 58. Hypothetical Social Network Illustrating the Small Family Network Pattern**

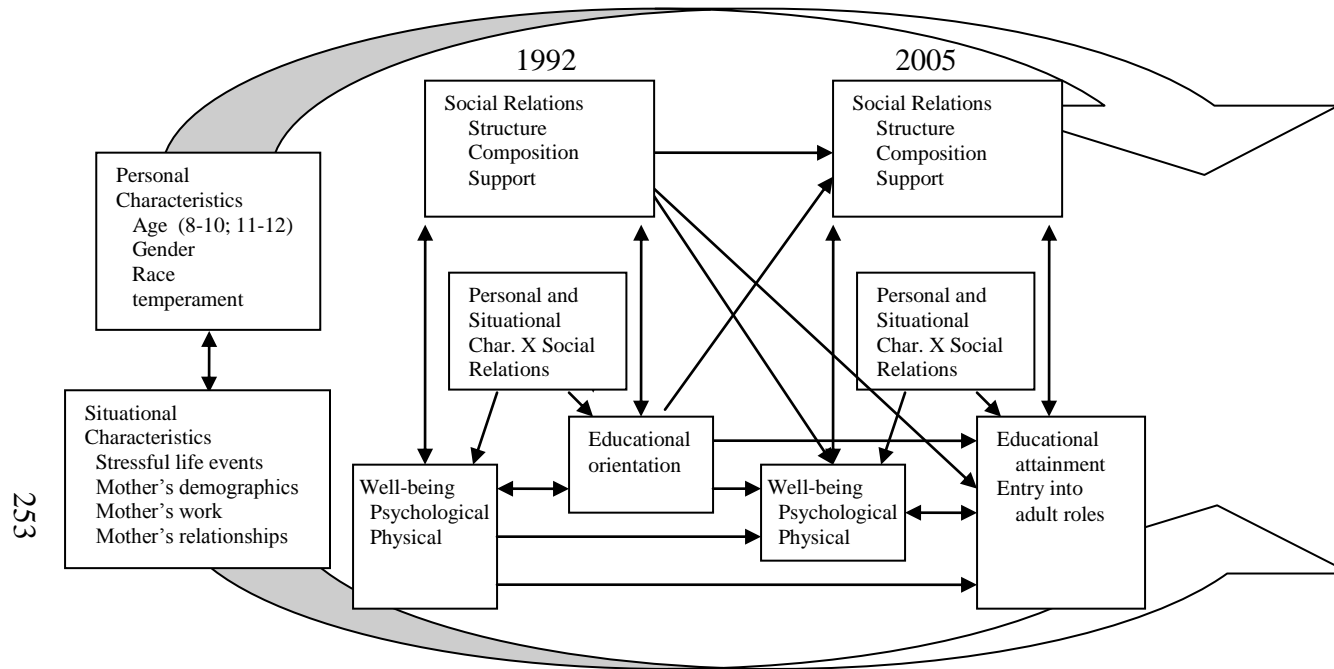
	<b>Name/ Relationship</b>	<b>Adult/ child</b>	<b>Years known</b>	<b>Within an hour's drive?</b>	<b>Frequency of contact</b>
<u>Immediate family:</u>					
	Mother	A	10	Y	5 (every day)
	Father	A	10	Y	5 (every day)
	Brother	C	10	Y	5 (every day)
	<b>Total immediate family: 3</b> (cluster centroid = 2.6)				
<u>Extended family:</u>					
	Grandmother	A	10	Y	4 (weekly)
	<b>Total extended family: 1</b> (cluster centroid = 0.9)				
<u>Friends:</u>					
	<b>Total friends: 0</b> (cluster centroid = 0.0)				
Network summary (mean)	4 members	75% adults	10	100%	4.8
Cluster centroid	3.5 members	85% adults	9.9	92%	4.7



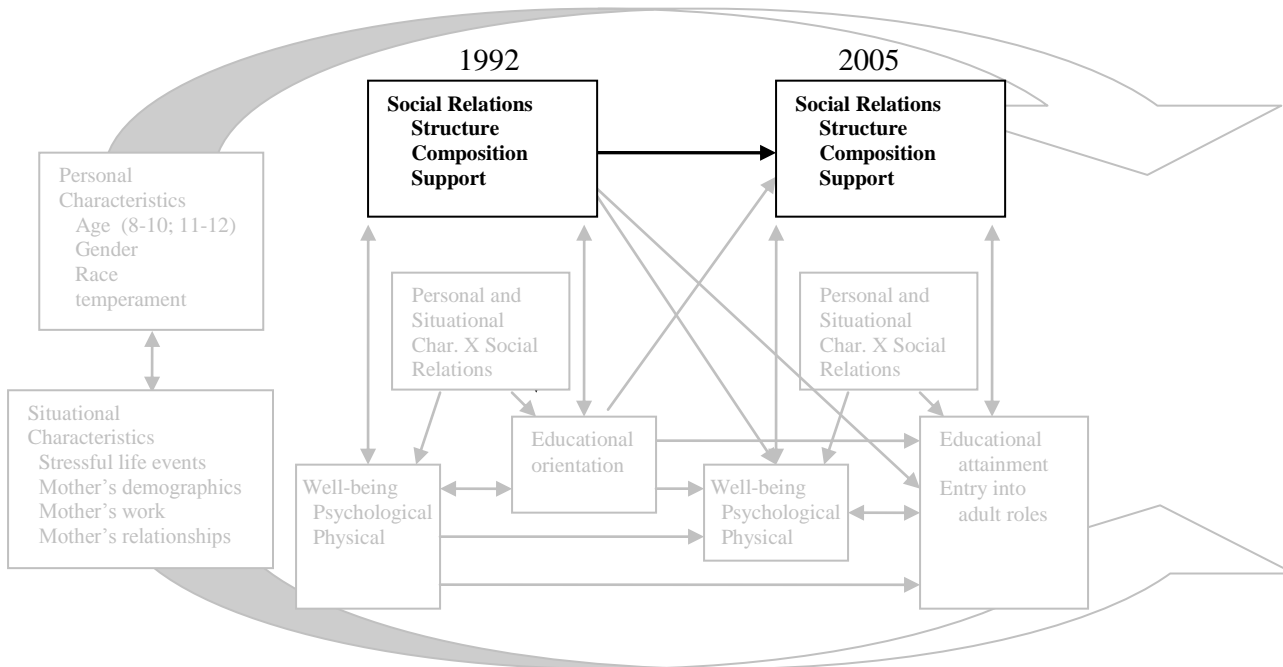
**Table 59. Hypothetical Social Network Illustrating the Friend Pattern.**

Name/ Relationship		Adult/ child	Years know n	Within an hour's drive?	Frequency of contact
<u>Immediate family:</u>					
Mother		A	10	Y	5 (every day)
Brother		C	8	Y	5 (every day)
<b>Total immediate family: 2</b> (cluster centroid = 1.3)					
<u>Extended family:</u>					
Cousin		C	9	N	3 (monthly)
<b>Total extended family: 1</b> (cluster centroid = 1.1)					
<u>Friends:</u>					
Friend 1		C	3	Y	4 (weekly)
Friend 2		C	1	Y	4 (weekly)
<b>Total friends: 2</b> (cluster centroid = 2.4)					
Network Summary (mean)	5 members	20% adults	6.2	80%	4.2
Cluster Centroid	5.2 members	30% adults	6.2	77%	4.2

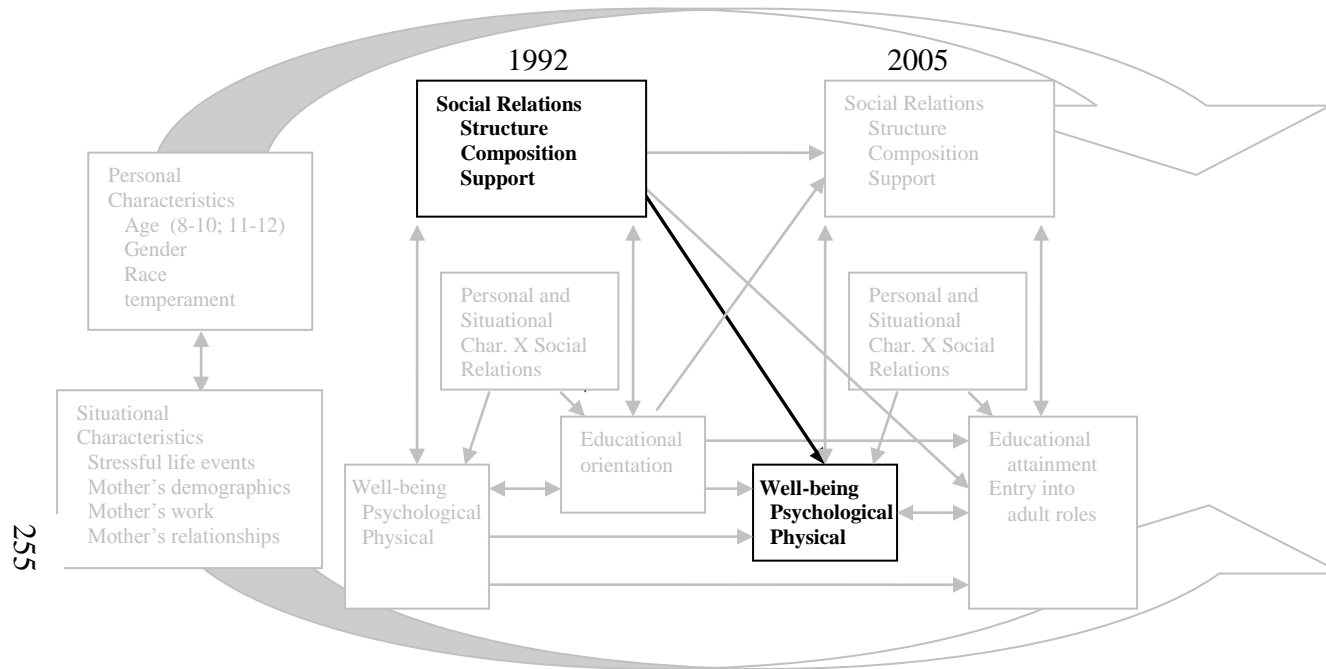
**Figure 1. Theoretical Model for the Proposed Study**



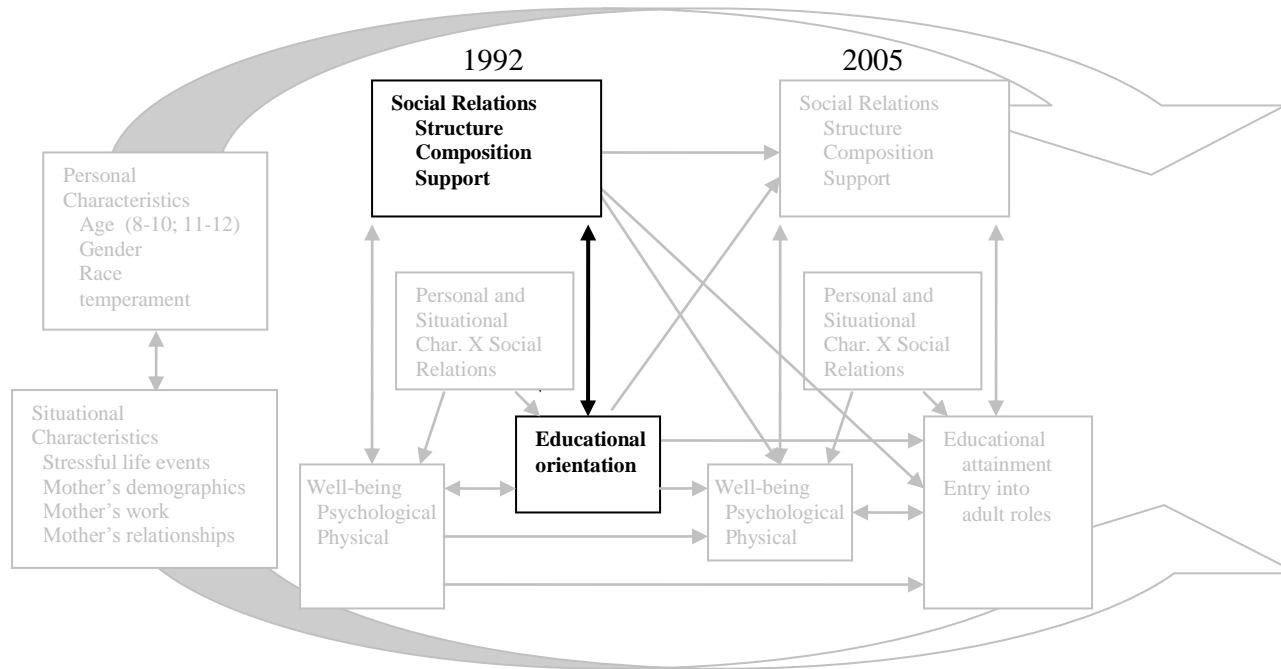
**Figure 2. Components of the Theoretical Model Addressed by Research Question 1**



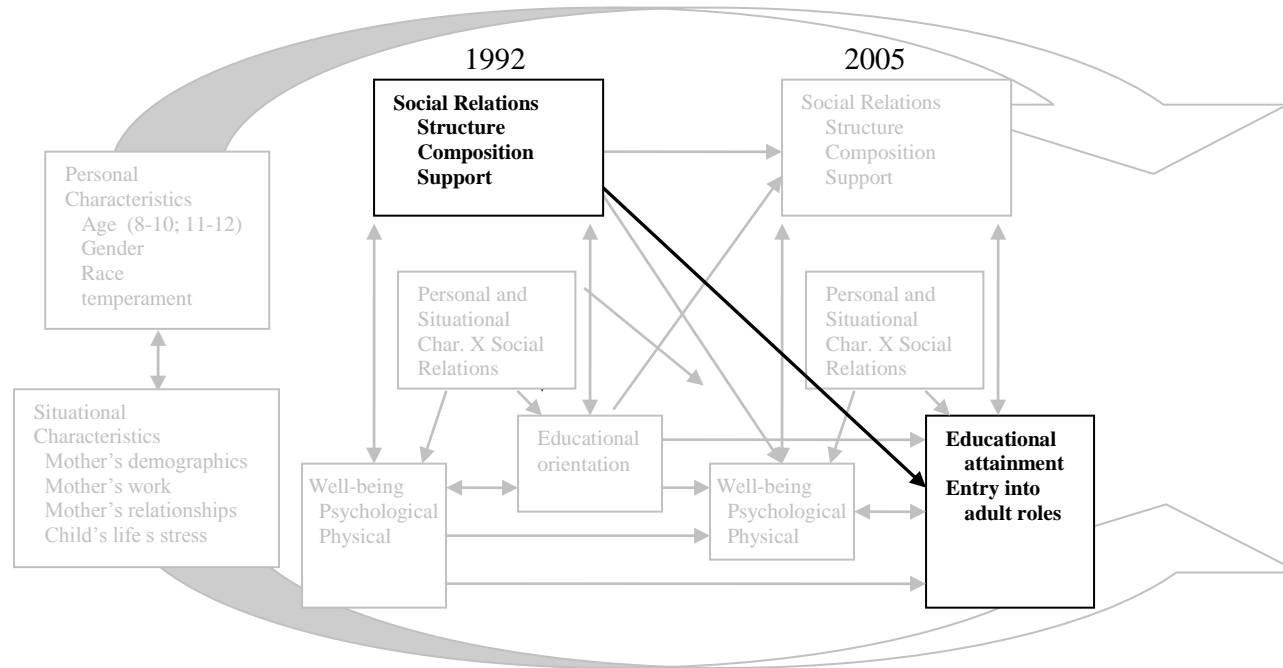
**Figure 3. Components of the Theoretical Model Addressed by Research Question 2.**



**Figure 4. Components of the Theoretical Model Addressed by Research Question 3.**



**Figure 5. Components of the Theoretical Model Addressed by Research Question 4.**



**Figure 6. Hierarchical Mapping Technique (Antonucci, 1986)**

Instructions:

1. Beginning with the people you feel closest to, is there any one person or persons that you feel so close to that it's hard to imagine life without them? Those people would go in the first circle.
2. Are there people to whom you may not feel quite that close, but who are still very important to you? Those people would go in the second circle.
3. Are there people whom you haven't already mentioned who are close enough and important enough in your life that they should also be placed in your diagram? Those people would go in the third circle.

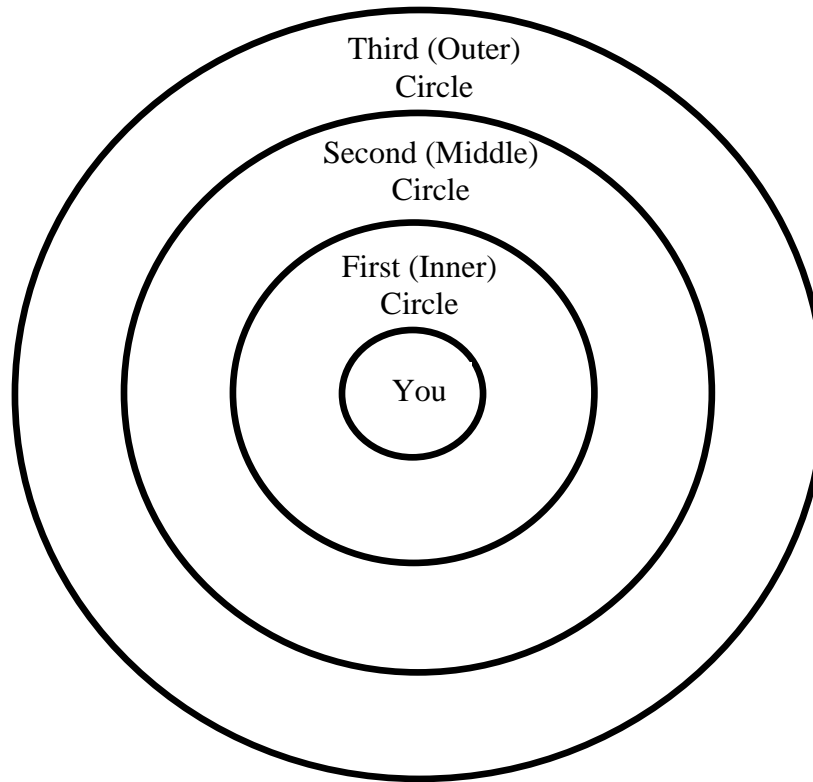
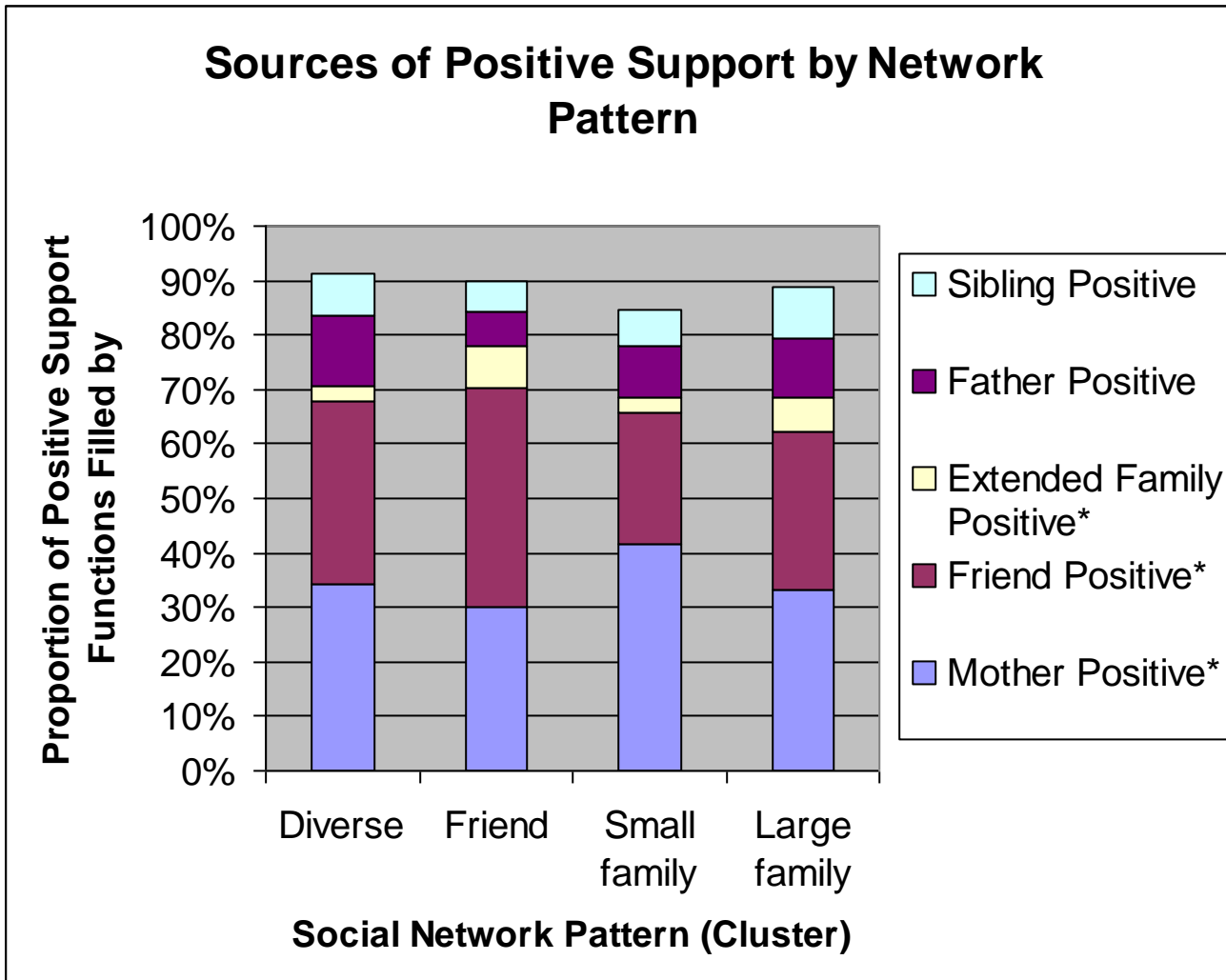
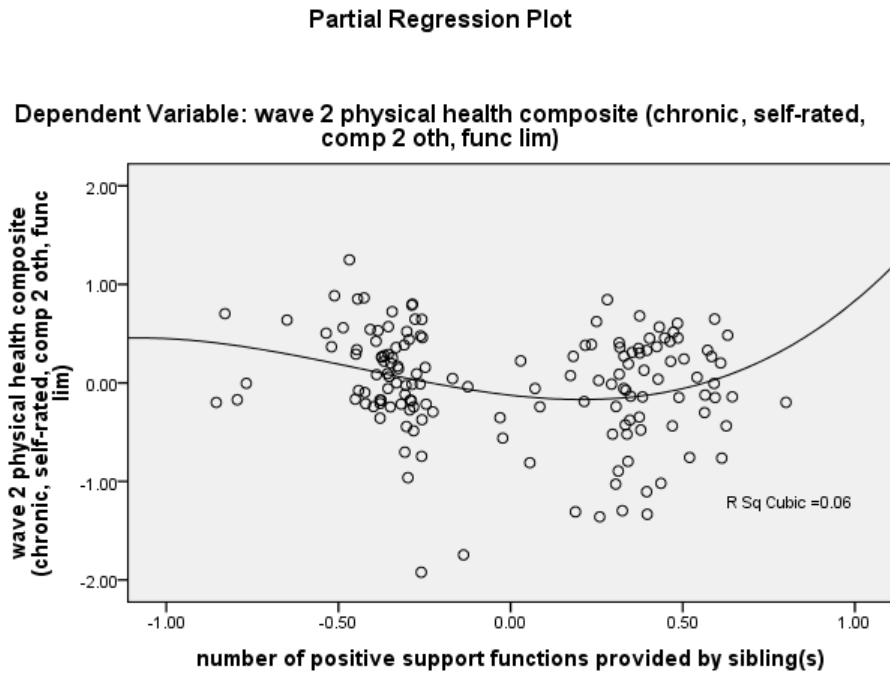


Figure 7. Proportion of Social Support Functions Filled by Mothers, Friends, Extended family, Fathers, and Siblings for Children Exhibiting each Social Network Pattern.





**Figure 8. Illustration of the Nonlinear Relationship between Positive Support from Sibling at Wave 1 and Physical Health at Wave 2.**



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