



Published in final edited form as:

J Marriage Fam. 2012 October 1; 74(5): 913–930.

Sibling Relationships and Influences in Childhood and Adolescence

Susan M. McHale, Kimberly A. Updegraff*, and Shawn D. Whiteman**

Department of Human Development and Family Studies, 601 Oswald, The Pennsylvania State University, University, Park, PA 16801 (mchale@psu.edu).

*School of Social and Family Dynamics, 951 S. Cady Mall, Arizona State University, Tempe, AZ 85287.

**Department of Human Development and Family Studies, Hanley Hall, Purdue University, West Lafayette, IN 47907.

Abstract

The authors review the literature on sibling relationships in childhood and adolescence, starting by tracing themes from foundational research and theory and then focusing on empirical research during the past 2 decades. This literature documents siblings' centrality in family life, sources of variation in sibling relationship qualities, and the significance of siblings for child and adolescent development and adjustment. Sibling influences emerge not only in the context of siblings' frequent and often emotionally intense interactions but also by virtue of siblings' role in larger family system dynamics. Although siblings are building blocks of family structure and key players in family dynamics, their role has been relatively neglected by family scholars and by those who study close relationships. Incorporating study of siblings into family research provides novel insights into the operation of families as social and socializing systems.

Keywords

adolescents; childhood/children; family process; sibling relations

Siblings are a fixture in the family lives of children and adolescents, and a body of work documents their role in one another's everyday experiences as companions, confidantes, combatants, and as the focus of social comparisons. Research on sibling relationships has been aimed at identifying factors that explain these and other social dynamics between siblings and at examining the role of sibling experiences in youth development and well-being. From this work we know that sibling relationships are shaped by factors ranging from child characteristics to cultural norms and values. We also know that siblings can have direct effects on one another's development when they serve as social partners, role models, and foils and that siblings can influence one another indirectly by virtue of their impact on larger family dynamics—such as by serving as building blocks of the family structure, holding a favored family niche, or diluting family resources (McHale, Kim, & Whiteman, 2006).

Recent national data document the ubiquity of siblings in U.S. families, even in the face of declines in family size. Data from the Integrated Public Use Microdata Series' harmonization of the 2010 Current Population Survey (King et al., 2010) indicate that 82.22% of youth age 18 and under lived with at least one sibling—a higher percentage than were living in a household with a father figure (78.19%). In 2010, the number of siblings in the household for youth age 18 and under averaged 1.51, with almost 40% of youth living with one sibling, about 25% living with two siblings, and over 15% living with 3 or more

siblings. Given changing U.S. demographics, it is important to note that these data also revealed variability in sibship size across racial/ethnic groups, with Asian ($M = 1.41$) and White ($M = 1.49$) youth having fewer siblings and African American ($M = 1.64$) and Hispanic youth ($M = 1.68$) growing up with more siblings. Divorce, remarriage, and multipartner fertility patterns also have had implications: In 2010, more than 10% of households with children included step- or adoptive siblings.

In the face of their ubiquity and potential for influence, however, sibling relationships have been relatively neglected by researchers studying close relationships and by family scholars, in particular. Our search of the 1990 – 2011 psychological and sociological abstracts for “sibling and relation or relationships,” for example, yielded 741 citations. In contrast, the counts were 33,990 citations for “parent or parenting,” 8,685 citations for “marriage or marital relationship or marital relation,” and 5,059 citations for “peer relations or peer relationships or friend-ships.” Drilling down to the abstracts of the major family journals between 1990 and 2011 and focusing on the neonatal through adolescent periods yielded citation counts of 41 articles in the *Journal of Marriage and Family*, 18 articles in *Family Relations*, 21 articles in the *Journal of Family Issues* and 131 articles in the *Journal of Family Psychology* with the term *sibling* in the abstract; only about one third of these articles, however, focused directly on sibling relationships.

Given their relative neglect, the overarching goal of this article is to stimulate interest of family scholars in sibling relationships by portraying the centrality of siblings in family life and sibling influences on child and adolescent development. In so doing we also aim to illuminate the ways in which the study of sibling relationships and dynamics can inform our understanding of how families operate as social and socializing systems. Our review is divided into four sections. First, to introduce family scholars who are new to the field to research on siblings, we begin with an overview of the theoretical traditions and early studies that provide the foundation for contemporary research. This early work was aimed primarily at two topics: (a) factors that shape sibling relationship qualities and (b) sibling influences on one another’s development. In the second and third sections of this article, we review research conducted between 1990 and 2011 on these two topics. In the fourth and final section, we take stock of what we have learned to date about this primary family relationship and make recommendations for future research directions.

Foundations of Research on Sibling Relationships and Influences

From its inception, research on siblings has been grounded in a range of disciplinary perspectives. Below we consider five traditions that continue to shape the field. We note, however, that a challenge for sibling relationship researchers is to better integrate concepts and methods toward an interdisciplinary approach to studying sibling relationships.

Sociological and Social Psychological Approaches

One early line of research focused on the significance of sibling structure variables. From this perspective, siblings’ position in the family gives rise to social psychological processes, with lifelong implications for individual development and adjustment (Irish, 1964). Interest in birth order and its impact on achievement emerged in the late 1800s, with Galton’s (1874) analysis of British scientists. Galton concluded that the overrepresentation of firstborns in science leadership was due to the rights and responsibilities conferred on them by laws and mores around primogeniture. As we describe later in this article, scholars from other traditions, such as Adler’s ethological/analytic perspective, also highlighted birth order effects but targeted social and psychological processes, such as firstborns’ dethronement and parents’ tendency to overindulge younger siblings, to explain birth order differences in siblings’ personality and psychological adjustment (Ansbacher & Ansbacher, 1956).

Beginning in the 1950s, sibling gender constellation became a focus (Brim, 1958; Koch, 1960). Findings from a study of 350 five- and six-year-olds, published in a series of monographs and articles, anticipated tenets of social learning theory in demonstrating that higher status, older siblings tended to be more influential models and that model similarity (i.e., same-gender siblings) enhanced a model's impact. An important insight from this work was that sibling gender constellation effects emerged not only via parent-driven dynamics such as gendered differential treatment but also from siblings' direct experiences with one another.

A third structure factor was sibship size, in particular its role in achievement. One early perspective that remains influential held that siblings dilute resources available to individual children and thereby limit their achievement (Blake, 1981), and population studies (Blau & Duncan, 1965) found evidence of sibship size effects on education and occupation attainment. A second, confluence model (Zajonc & Markus, 1975) held that families' overall intellectual climate is a function of its age distribution as determined by number of children, age spacing between them, and children's corresponding opportunities to teach and be taught by siblings.

A limitation of work on structural variables that persists today, however, is that the social and psychological processes purported to account for sibling constellation effects—such as rivalry, differential treatment, or resource allocation—were inferred on the basis of patterns of sibling outcomes instead of being measured directly. In a series of articles, Furman and Buhrmester (e.g., Buhrmester & Furman, 1990) examined links between structure characteristics and relationship dynamics. Their work showed that structure variables do not fully account for relationship processes and underscored that influence processes should be directly measured.

Psychoanalytic and Ethological Groundings of a Developmental Perspective

A second thread in contemporary research on siblings originated within the psychoanalytic and ethological traditions in the first half of the 20th century. Adler's theory of individual psychology placed sibling dynamics at the center of family life and personality development (Ansbacher & Ansbacher, 1956). Adler argued that social comparisons and power dynamics in families, in particular sibling rivalry for family resources, were fundamental influences on personality development. He suggested that, as a means of reducing competition, siblings differentiate or de-identify, developing different qualities and choosing different niches. A handful of early studies found evidence consistent with Adler's ideas (Grotevant, 1978; Schachter, Shore, Feldman-Rotman, Marquis, & Campbell, 1976) and, as we later discuss, recent research on parents' differential treatment of siblings also provides support for Adler's hypotheses about the significance of sibling dynamics in psychological adjustment.

More generally, two themes from psychoanalytic and ethological perspectives that influenced early sibling research were (a) the significance of early experience and (b) the adaptive functions of social behavior. The ethological tradition also was influential in its emphasis on naturalistic observation methods, an approach adopted by developmental scholars who examined the role of siblings in early socioemotional development (Abramovitch, Corter, & Lando, 1979; Bryant & Crockenberg, 1980; Dunn & Kendrick, 1980). On the basis of this early work, Dunn (1983) concluded that sibling relationships are unique in that they encompass both the complementary interactions typical of adult – child relationships and the reciprocal and mutually influential interactions of peers. Further, the frequent and often emotionally charged social exchanges of siblings serve as an impetus for socioemotional development as young children work to establish their status in the sibling relationship and their niche in the family. Finally, Dunn emphasized moving beyond structural variables to focus on influence processes and stressed the significance of studying

sibling relationships within the larger family system. Thirty years after Dunn's article was published, her ideas remain integral to research on sibling relationships and influences.

Learning and Social Learning Perspectives

Learning theories, targeting reinforcement and observational learning, were a third early influence, and they continue to shape the literature on sibling influences. Early findings were consistent with the idea that siblings serve as role models (Brim, 1958). Also consistent were findings from observational studies documenting asymmetrical sibling influences, with toddlers imitating their (higher status) older siblings more than the reverse (Abramovitch et al., 1979).

Patterson (1984) broke new ground in his observational research on the sibling relationships of children with conduct disorders. Through analyses of observed reinforcement dynamics, Patterson concluded that sibling relationships can serve as a training ground for aggression when siblings become involved in coercive cycles wherein escalation of negative behavior is rewarded by one partner giving in to the other's demands. A key contribution of this work was that sibling influence processes were directly observed and measured, and Patterson's insights continue to motivate contemporary research on siblings' influences on risky behavior.

Contributions From Behavior Genetics

Studies in this tradition generally treat data on siblings as a methodological tool, comparing siblings of differing degrees of biological relatedness to draw inferences about the relative roles of genes and environment in development. Such findings are not relevant to understanding sibling relationships, but behavior geneticists' insights into the significance of the nonshared environment pointed to the potential significance of sibling influences in such forms as siblings' position in the family structure, parents' differential treatment of siblings, and asymmetrical sibling interactions (Rowe & Plomin, 1981). Although the nonshared environment is not directly measured in most behavioral genetics research, Plomin and Daniels's (1987) seminal article "Why are children in the same family so different from one another?" motivated new attention to these differentiation processes by sibling researchers.

Cross-Cultural Perspectives

Using ethnographic methods, cultural anthropologists have long highlighted the ubiquity of siblings in the lives of children and families (Whiting & Whiting, 1975). Research in this tradition aims to identify cross-cultural universals in social patterns and uncover the ecological bases of cultural differences. Summarizing results from work beginning in the 1950s, Weisner (1989) noted four cultural universals in sibling relationships: (a) Structural characteristics provide a metric for comparison, and although cultures differ in the emphasis they place on them, these characteristics have implications ranging from their effects on family dynamics to their effects on cultural beliefs; (b) siblings are common companions growing up and share a family history; (c) in childhood, siblings are ubiquitous across all primate species; and (d) cultures imbue sibling roles and relationships with meaning because "siblings always matter" (p. 14).

Cross-cultural research emphasized the care-giving responsibilities of older siblings and the hierarchical structure of sibling roles in non-Western societies as well as cultural differences in dynamics such as rivalry and competition (Nuckolls, 1993; Weisner, 1989). Weisner pointed to subsistence demands in the development of sibling dynamics, including sibling residence and inheritance patterns. In daily life, social institutions structure siblings' roles and relationships, which in turn shape and reinforce cultural beliefs about siblings. Weisner also contrasted kin-focused societies, wherein sibling relationships serve as the "moral

ideals,” with North American families, whose social institutions fail to promote sibling bonds and responsibilities after adolescence. Nonetheless, even in the Western world, elements of the moral ideal of sisterhood (“Sisterhood is powerful”) and brotherhood (“He’s not heavy; he’s my brother”) persist.

Weisner (1989) argued that cross-cultural analyses of sibling relationships provide insights into what is universal in human experience and into ecological factors that promote differences in sibling bonds across place and time. This tradition provides a foundation for emerging research on siblings from racial/ethnic minority groups within the United States that is beginning to examine cultural values and practices that explain variability in sibling dynamics and influences.

Sources of Variation in Sibling Relationships

We turn now to research on factors that shape sibling relationship dynamics, ranging from characteristics of siblings themselves to the family and cultural contexts within which they are embedded. We also consider recent intervention research aimed at designing and evaluating programs that promote positive sibling relationships. As will be evident, much of this work is built on the theoretical perspectives we have just reviewed.

Role of Child Characteristics in Sibling Relationships

Early research on structural factors inferred social processes from status characteristics such as gender constellation and age spacing, and an important advance is research that goes beyond status characteristics to directly measure siblings’ personal qualities in an effort to understand their impact on sibling ties. One line of work examined siblings’ temperament (Stoneman & Brody, 1993) showing that difficult temperaments, in particular, were linked to sibling relationship difficulties. Later studies tested temperament as a moderator of links between family conditions and sibling relationships, suggesting that siblings’ characteristics could exacerbate the effects of stressful family circumstances on sibling ties (Stoneman, Brody, Churchill & Winn, 1999). The latter work also highlighted the role of contextual characteristics in sibling relationships, a topic to which we return later.

Child effects also were evident in research on families with children who had a disability or a chronic illness. Research comparing sibling relationships and child adjustment in families with versus without a child with a disability or chronic illness revealed two patterns. First, dyads with a disabled or ill sibling consistently displayed more warmth and positive affect than typical-only dyads (Stoneman, 2001). Second, typical siblings of disabled or ill children had a slightly elevated risk of adjustment problems (Sharpe & Rossiter, 2002). This research tended to be grounded in a deficit model that assumed siblings of atypical youth were at risk (Levy-Wasser & Katz, 2004). Few studies included indices of positive adjustment, but the ones that did showed that there also can be benefits of growing up with a sibling with a disability or illness (Mandelco, Olsen, Dyches, & Marshall, 2003; McHale & Harris, 1992). This work implies that an atypical sibling may make for greater variability in children’s adjustment and that the conditions under which children adjust in more positive or negative ways are an important target for research.

Such insights come from research designs that move beyond group comparisons of adjustment outcomes to examine the processes—such as coping styles or family supports—that explain within-group variability among children with atypical siblings (McHale & Harris, 1992). Longitudinal research also is needed. Knott, Lewis, and Williams (2007) provided a rare picture of the development of sibling relationships of children with autism and Down syndrome. Such studies can illuminate how these relationships evolve as the typical sibling takes on a more parentlike role, an important issue given parents’ concerns

about who will care for the child with a disability when they themselves no longer can (McHale & Harris).

Family Influences on Sibling Relationships

Studying how sibling relationships are embedded within families advances our understanding of both sibling relationships and families as social systems. Although not traditionally applied to study of sibling relationships, a family systems perspective directs attention to the interdependence among the subsystems that comprise families (Minuchin, 1985) and provides an overarching framework for examining how marital and parental subsystems are linked to sibling relationships. With respect to the marital subsystem, a meta-analysis that included eight studies on marital – sibling relationship associations revealed that sibling relationships were more positive in divorced as compared with always-married families (Kunz, 2001). Other research showed, however, that sibling conflict and negativity were higher in divorced and separated versus married families (Noller, Conway, & Blakeley-Smith, 2008), and higher in single-parent versus stepparent and married families (Deater-Deckard, Dunn, & Lussier, 2002). Inconsistent findings may be due to the dimensions of sibling relationships examined. Noller et al. classified siblings on the basis of the combination of positivity and negativity and found that “affect intense” sibling relationships, characterized by both high positivity and high negativity, were overrepresented in divorced and separated families as compared with married families. An important insight here is that understanding sibling dynamics requires simultaneous attention to multiple dimensions of the relationship.

Accumulating research also suggests that marital and family processes, such as spousal conflict, coparenting, and parenting behaviors, are better predictors of sibling relationship qualities than is family status (O’Connor, Hetherington, & Reiss, 1998). Findings have generally been consistent with a spillover process, such that hostility and conflict in the marital subsystem and negativity in parent – child relationships are linked to sibling conflict (Kim, McHale, Osgood, & Crouter, 2006) and violence (Hoffman, Kiecolt, & Edwards, 2005). Negativity in the parent – child relationship also was shown to mediate links between marital and sibling subsystem dynamics (Stocker & Youngblade, 1999). Some youth may compensate for family negativity (e.g., in their parents’ marriage), however, by forming close sibling relationships, which in turn protect youth from adjustment problems (Jenkins, 1992; Kim et al.; Milevsky & Levitt, 2005). An important step is to identify the conditions under which spillover versus compensatory processes emerge.

Family systems influences on sibling relationships also have been studied via mothers’ and fathers’ differential treatment of siblings. Systemic family influences are evident in investigations of mother – father patterns of differential treatment and their implications for siblings (Kan, McHale, & Crouter, 2008; Solmeyer, Killoren, McHale, & Updegraff, 2011; Volling & Elins, 1998). This work suggests that incongruence between mothers’ and fathers’ differential treatment, such that one parent shows preferential treatment toward one sibling and the other does not, may mark a parent – child coalition or breakdown in coparenting that is associated with negative sibling and marital dynamics and poorer adjustment in both siblings. This work also exemplifies how including siblings in research on families allows researchers to capture novel dynamics and illuminate how families operate as systems.

Sociocultural Factors in Sibling Relationships

Substantial variability in the cultural and family settings in which children’s and adolescents’ lives are embedded underscores the need to represent these diverse contexts in efforts to understand variations in sibling relationships. The rapid growth of ethnic minority

and immigrant populations (U.S. Census Bureau, 2011), underscores the need for greater attention to sibling dynamics in these groups. The literature provides a foundation for understanding sibling dynamics among at-risk ethnic minority youth, but research on normative processes in ethnic minority youths' sibling relationships and sources of within-culture variation is rare.

Studies of families in challenging circumstances highlight the unique contributions of siblings to ethnic minority youths' adjustment. For example, longitudinal data showed that the risk of teenage pregnancy increased fourfold for the younger sisters of Latina and African American adolescent mothers and that having an older sister who became a parent before age 20 posed a substantially greater risk than having a mother who became pregnant during adolescence (East, Reyes, & Horn, 2007). Among poor, rural, African American families, older siblings' problem behaviors and attitudes were significantly linked to their younger siblings' conduct problems (Brody, Ge, et al., 2003).

Much less is known about the ways siblings contribute to one another's positive development in ethnic minority families. One exception is a longitudinal study conducted by Brody, Kim, Murry, and Brown (2003), which showed that, in rural, African American, single-parent families, older siblings' social and cognitive competence explained changes in younger siblings' competencies via their self-regulation. How siblings promote positive development among ethnic minority youth in both high- and low-risk settings is an important direction for future research.

Other studies complement cross-cultural work (Nuckolls, 1993), using ethnic-homogeneous research designs to illuminate sources of within-group variability in sibling processes. An advantage of ethnic-homogeneous designs is that researchers can target cultural practices and values specific to a cultural group. For example, familism and *simpatía* values in Mexican American families (Gamble & Modry-Mandell, 2008; Killoren, Thayer, & Updegraff, 2008; Updegraff, McHale, Whiteman, Thayer, & Delgado, 2005) and spirituality and ethnic identity in African American families (McHale, Whiteman, Kim, & Crouter, 2007) were linked to more positive sibling relationships. In contrast to ethnic-comparative designs, in which inferences about the role of culture are made on the basis of patterns of group differences, ethnic-homogeneous designs allow for direct tests of the role of cultural processes in sibling dynamics.

Sibling Relationship-Focused Interventions

Sibling relationships can be shaped deliberately in intervention programs designed to promote positive and reduce negative dynamics. Although siblings have been largely overlooked in family-based prevention and intervention programs, targeting sibling relationships can provide a less stigmatizing entrée into families than focusing on parent – child or marital relationship problems (Feinberg, Solmeyer, & McHale, 2012). Defining the role of siblings in interventions broadly, current work falls into three areas: (a) interventions that target siblings of at-risk youth; (b) family-based programs whose effects cross over to benefit the siblings of targeted youth; and (c) programs designed to alter sibling relationships via changes in parents' or siblings' behaviors, skills, and cognitions.

In recognition of the potential family system effects of children's disabilities and illnesses, some programs have been designed to support their siblings. One community-based program targeting children with chronic health problems and disabilities resulted in increases in siblings' self-esteem, perceived support, and knowledge of siblings' illness/disability and in declines in behavior problems (Williams et al., 2003). Equally important are prevention programs for siblings of youth with adjustment problems who are at disproportionate risk for exhibiting similar problems. East, Kiernan, and Chavez (2003) showed that younger sisters

of adolescent mothers who participated in a multifaceted prevention program exhibited lower pregnancy and truancy rates compared with girls in the control group.

Effects of family-based programs can also cross over to nontarget siblings. An intervention for younger siblings of adjudicated youth found positive effects on nontarget adolescent, but not preadolescent, siblings: Adolescent siblings in the intervention group, as compared with the control group, showed declines in delinquency and deviant behaviors (Brotman et al., 2005). These sibling effects were unexpected but suggest that family-based interventions aimed at reducing problem behavior for multiple children in a family may be cost efficient and effective.

Only a few programs directly target sibling relationships, and these generally focus on reducing conflict and aggression (Kramer, 2004). Typically, parents are trained to address young children's sibling relationship problems. In one study, mothers were taught to serve as mediators of sibling disputes, and the results revealed improvements in children's conflict resolution, social understanding, and engagement (Siddiqui & Ross, 2004).

Kennedy and Kramer (2008) designed an intervention to promote prosocial sibling relationship skills and reduce problem behaviors. A trial with European American siblings in early and middle childhood demonstrated positive effects, including enhanced emotional regulation and positive sibling relationship ratings postintervention. Feinberg and colleagues' (e.g., Solmeyer et al., 2010) intervention for middle childhood siblings was aimed at promoting social competencies and reducing sibling conflict via an after-school program with interspersed family meetings. Preliminary results provided evidence of the program's effectiveness in improving sibling relationships and youth and parent well-being. In addition to their practical utility, such experimental studies allow for tests of causal hypotheses regarding sibling dynamics that can only be inferred from descriptive and correlational research. Testing theory in such translational research is an important direction for work on factors that shape sibling relationships and their influences.

Sibling Influences on Development and Adjustment

In this section, we review research on siblings' influences on one another's development. Most of this work has focused on siblings' direct influences, such as when they shape behavior during everyday interactions, serve as sources of social support, or act as role models. Less attention has been paid to the ways siblings influence one another indirectly in their roles as building blocks of the family structure and through ripple effects of their behavior and experiences throughout the family system. Although family scholars have not focused extensively on siblings, investigators from disciplines including human development, sociology, psychology, and health have paid increasing attention to sibling influences. Because of space limitations, our review is not exhaustive but is directed at showcasing major areas of study. Again, readers will see that much of this work is grounded in the theoretical perspectives we described earlier.

Direct Sibling Influences

Siblings' extensive contact and companionship during childhood and adolescence—increasingly outside the direct supervision of parents or other adults—provides ample opportunity for them to shape one another's behavior and socioemotional development and adjustment. Most research on direct sibling influences is grounded in developmental or social learning models, suggesting that, by virtue of their everyday involvement, siblings can promote positive development as well as adjustment problems.

Sibling interactions and children's social-cognitive development—One line of work can be traced to early observational studies of young siblings (Dunn, 1983) and targets sibling interactions as unique opportunities for social – cognitive development. Through their conflicts, for example, siblings can develop skills in perspective taking, emotion understanding, negotiation, persuasion, and problem solving (Brown, Donelan-McCall, & Dunn, 1996; Dunn, 2007; Howe, Rinaldi, Jennings, & Petrakos, 2002). Notably, these competencies extend beyond the sibling relationship and are linked to later social competence, emotion understanding, and peer relationships (Stormshak, Bellanti, Bierman, & The Conduct Problems Prevention Research Group, 1996; Updegraff, McHale, & Crouter, 2002; Youngblade & Dunn, 1995). In adolescence, siblings also contribute to positive developmental outcomes, including prosocial behavior (Brody, Kim, et al., 2003; Whiteman, McHale, & Crouter, 2007), empathy (Tucker, Updegraff, McHale, & Crouter, 1999), and academic engagement (Bouchey, Shoulberg, Jodl, & Eccles, 2010). Although influence processes in adolescence are rarely studied directly, sibling support has been linked to adolescent adjustment (Branje, van Lieshout, van Aken, & Haselager, 2004).

Sibling influences on adjustment problems—Not all of what siblings learn in their exchanges is positive, and an increasing focus in the past two decades has been on sibling influences on adolescents' risky behavior and adjustment problems. Sibling conflicts in childhood, for example, are associated with concurrent and later deviance, school problems, bullying, substance use, and internalizing symptoms (Bank, Burraston, & Snyder, 2004; Stocker, Burwell, & Briggs, 2002). Much of the work on sibling influences on adjustment problems is grounded in Patterson's (1984) social learning model, showing that coercive interaction styles learned in the context of sibling conflict extend to aggression with peers (Bank et al., 2004; Criss & Shaw, 2005) and antisocial behaviors (Compton, Snyder, Schrepferman, Bank, & Shortt, 2003). In addition to providing a setting for practicing coercive behaviors, reinforcing antisocial behaviors such as deviant talk, and colluding to undermine parental authority (Bullock & Dishion, 2002), siblings (especially older ones) provide each other with models of deviant behavior and serve as gatekeepers to delinquent peers and risky activities (Rowe & Gulley, 1992; Windle, 2000). Concordance between siblings' externalizing and antisocial behaviors during adolescence (Criss & Shaw, 2005; Fagan & Najman, 2003) has been interpreted as evidence of sibling influences, although again, in studies of adolescents, these sibling influence processes are rarely measured directly.

Other work has documented sibling concordance in adolescents' substance use (Fagan & Najman, 2005; Scholte, Poelen, Willemsen, Boomsma, & Engels, 2008; Slomkowski, Rende, Novak, Lloyd-Richardson, & Niaura, 2005). An important methodological advance here is documenting that sibling influences emerge beyond the effects of parents and peers (Fagan & Najman, 2005; Windle, 2000). Some findings suggest that sibling influences are stronger than parental influences and possibly as strong as that of peers (Brook, Whiteman, Gordon, & Brook, 1990). Although sibling similarities in substance use can arise through a variety of mechanisms, including shared genetics and parenting, twin and adoption studies show that siblings have unique social influences (McGue, Sharma, & Benson, 1996; Rende, Slomkowski, Lloyd-Richardson, & Niaura, 2005; Slomkowski et al., 2005). In addition to social learning, youth shape the environments in which their siblings' substance use attitudes and behaviors develop. Older siblings also help to create family norms and expectancies regarding substance use (Epstein, Griffin, & Botvin, 2008), which influence later use. Finally, siblings may expose each other to settings and peer groups in which substance use is accepted. In fact, siblings' patterns of use are more strongly correlated when they share friends (Rende et al., 2005).

Siblings also are similar in their risky sexual behaviors, including age at first intercourse (Widmer, 1997) and attitudes about sex and teenage pregnancy (East, 1998; McHale, Bissell, & Kim, 2009). In explaining sibling similarity, researchers invoke family norms and sibling socialization effects (East, 1998), especially social learning (McHale et al., 2009). For example, older siblings may transmit beliefs about sexual activity and childbearing; provide information regarding sexual activities, including safe sexual practices; and even exert pressure to engage in sexual activities (East, 1998; Kowal & Blinn-Pike, 2004; Widmer, 1997). As a result, younger siblings may become sexually involved at an earlier age. In line with social learning tenets, sibling similarities in risky sexual behaviors are greatest for same-sex siblings and those with warm relationships (McHale et al., 2009) and when siblings share friends (East, 1998). Beyond models and sources of information, older siblings may play a matchmaker role, introducing their brothers and sisters to partners who are older and possibly more experienced sexually, leading to an increased risk for early sexual activity (Rodgers, Rowe, & Harris, 1992).

Sibling differentiation—Differentiation processes also involve siblings treating one another as sources of social comparison but imply that siblings treat one another as foils, de-identifying from one another by selecting different niches in the family and developing distinct personal qualities. In line with Adler's theory of individual psychology, some work suggests that differentiation dynamics help protect siblings from rivalry and jealousy (Schachter et al., 1976; Sulloway, 1996). Although sibling differentiation is hypothesized to lead to warmer and less conflictual sibling relationships, the findings have been mixed (Feinberg, McHale, Crouter, & Cumsille, 2003; Whiteman, Bernard, & McHale, 2010; Whiteman et al., 2007).

Early work on sibling differentiation focused on personality and temperament (Schachter et al., 1976), and more recent studies have shown that differentiation dynamics are prevalent in domains ranging from adjustment (Feinberg & Hetherington, 2000) to social competence and risky behaviors and attitudes (Whiteman et al., 2010). This work is important given that differentiation processes have not been the focus of research on sibling influences on adjustment and that differentiation processes may become increasingly evident in adolescence, when identity development is a salient task. Furthermore, when not measured directly, the strength of sibling influence processes may be underestimated, because some serve to make siblings alike and others serve to make siblings different.

Indirect Sibling Influences

Most current research focuses on direct mechanisms of sibling influence, but evidence is accumulating on the processes through which siblings indirectly affect one another (McHale et al., 2006). Below we consider siblings' indirect influences via their effects on other family members, on broader family dynamics, and as building blocks of the family structure. Our review reveals that we know far less about siblings' place in such family system dynamics than we do about the sibling dyad per se. This is a direction that is ripe for research.

Learning from experience—A recent line of study suggests that siblings can provide learning opportunities for their parents that have implications for how parents carry out their parental roles. The significance of child effects on parents has a long tradition in developmental and family studies, but almost all of this work has focused on children's dyadic relationships with their parents (McHale et al., 2006). Research that takes sibling dynamics into account has revealed that children also can influence parents' expectations, knowledge, and parenting behavior in ways that have implications for their siblings. Whiteman and Buchanan (2002) found that parents who had experienced an earlier-born child's transition to adolescence were less likely to expect later-born offspring to exhibit

emotional and behavioral problems during this transition. Altered expectations, combined with what parents learn through practice, may have important implications: Comparisons of siblings' relationships with parents at the same chronological ages, for example, have shown that parents exhibit more effective parenting behaviors, including lower conflict and higher levels of warmth and parental knowledge, with secondborn than with firstborn adolescents (Shanahan, McHale, Osgood, & Crouter, 2007; Whiteman, McHale, & Crouter, 2003). We know next to nothing, however, about parents' learning experiences at other points in family life, such as pregnancy and the transition to parenthood, children's school transitions, or young adults' transitions out of the home. A learning-from-experience model suggests that parents may be more efficient and effective at managing parenthood challenges the second (or third) time around. This model contrasts with the resource dilution model, described below, which holds that each successive child results in lowered family investments, with negative implications for later-born children.

Furthermore, what parents learn from their experiences may not always have positive implications. East (1998) argued that teenage childbearing by an older sister may increase the chances of a younger sister also becoming a teen parent when mothers come to believe that they are unable to control their daughters' sexual activities and give up on parenting efforts toward other daughters. Helping parents make the most of their learning experiences may be a fruitful focus for parent education and family interventions.

Parents' differential treatment—As Adler argued, children indirectly shape their brothers' and sisters' characteristics and behaviors by serving as sources of social comparison, and from a very young age they attend to the ways in which their parents treat them relative to their siblings (Ansbacher & Ansbacher, 1956). A body of work now shows that differential treatment, such as in privileges, discipline, and parent – child conflict and affection, are linked to less positive sibling relationships (Brody & Stoneman, 1994; Shanahan, McHale, Crouter, & Osgood, 2008), poorer adjustment, and adjustment differences between siblings, with disfavored children generally showing poorer adjustment (Coldwell, Pike, & Dunn, 2008; Conger & Conger, 1994; McGuire, Dunn, & Plomin, 1995). Some research indicates that the implications of differential treatment are evident beyond the effects of parent – child dyadic relationship quality (Feinberg & Hetherington, 2001; Shanahan et al., 2008). The negative implications of differential treatment, however, are moderated by youths' understanding of parents' reasons for differential treatment, their perceptions of its fairness, and their family values (Kowal & Kramer, 1997; McHale, Updegraff, Shanahan, Crouter, & Killoren, 2005).

Resource dilution—Siblings are building blocks of the family structure, and their constellation has implications for family dynamics. Grounded in ideas about the role of social and economic capital in youth development, decades of research tested the role of sibling constellation factors in intelligence and achievement. The *resource-dilution model* has considerable conceptual appeal, moving research on family influences beyond the sibling or parent – child dyad to target the larger family system (Downey, 2001; Rodgers, 2001; Steelman, Powell, Werum, & Carter, 2002). From this perspective, however, sibling influences are negative. On the basis of a review of hundreds of studies, mostly conducted in the United States, Steelman et al. concluded that “the evidence of a negative relationship between size of sibling group and academic success, at least in the United States ... has been virtually unequivocal” (p. 248).

Debate continues, however, regarding the causal effects of sibling constellation in achievement. For instance, instead of large sibships causing lower achievement, the alternative, *admixture hypothesis* proposes that lower achieving parents have more children (Rodgers, 2001). Sibship size effects also are malleable: National comparisons show that

family size effects are not evident in countries with strong family supportive policies (Park, 2008); historical analyses reveal within-country changes over time in these effects that are correlated with changes in social policies and economic conditions (Maralani, 2008); and even within the United States, sibship size effects on achievement are not evident in Mormon families, which emphasize the importance of family (Downey, 2001). Most significantly, although the resource-dilution model proposes that family size sets into motion family processes that are the proximal causes of youth achievement, as in other lines of research on siblings those processes have rarely been measured directly (see Downey, 1995, and Strohschein, Gauthier, Campbell, & Kleparchuk, 2008, for exceptions).

Conclusions

Our review reveals that early writers' efforts to motivate research on siblings have borne fruit in the form of a relatively small literature on siblings' place in family structure, their role in family dynamics, and their influences on child and adolescent development. In addition, the past two decades have seen advances in the methodological sophistication of sibling research, including attention to both members of the dyad, some efforts to directly measure social and socializing processes involving siblings, consideration of the larger contexts in which siblings are embedded, and the study of sibling relationships and influences using experimental and longitudinal designs. From this work we can draw several conclusions about sibling relationships and influences in childhood and adolescence, although there remain important directions for future research. We address these two topics in this final section of this review.

Lessons Learned From the Literature on Sibling Relationships

Taken together, theory and research on siblings reveal first that sibling relationships are shaped by individual, family, and extrafamilial forces. Although siblings are ubiquitous in the lives of children and adolescents, the characteristics of their relationships and roles vary considerably across time and place, with corresponding implications for the nature and power of sibling influences on youth and families (Updegraff, McHale, Killoren, & Rodriguez, 2010; Weisner, 1989).

A second insight from the extant literature is that sibling influences on youth development and adjustment are unique in the sense that evidence of sibling influences emerges even after the effects of other significant relationships are taken into account (Brook et al., 1990; Windle, 2000). The power of sibling influences may stem from the multifaceted—and, in some cases, unique—social and psychological processes through which siblings are thought to exert their effects (Dunn, 2007). A related lesson is that studying sibling influences directs attention to novel social, psychological, and family processes—such as sibling de-identification, parents' learning from experience, and the operation of family coalitions—that have been largely overlooked in empirical research on families. Most family research has been conducted with the seeming assumption that studying one child in a family is sufficient for understanding how families operate and how they influence individual development and adjustment. Research on siblings has revealed, however, that two individuals from the same family are often as different as unrelated individuals (Plomin & Daniels, 1987), suggesting that, in failing to incorporate siblings in their investigations, family scholars may be missing important pieces of the family puzzle.

In addition to the theoretical primacy of parent – child and marital bonds (Irish, 1964), methodological complexities may be a deterrent to incorporating siblings into family research: Identifying and recruiting a sample that takes sibling structure variables (age spacing, gender constellation, birth order, and sibship size) into account is an expensive and difficult task, measuring the individual and family relationship characteristics of more than

one child in a family increases the demands of data collection, and the field lacks a toolkit for quantitative analysis of triadic and larger systemic family processes. In the face of such deterrents, however, our review suggests that studying more than one child in a family can provide a window into how families operate as social and socializing systems. Despite its conceptual appeal, empirical research on families as systems is rare. This may be in part because systems processes are difficult to measure and in part because propositions regarding causal processes within family systems theory are limited. Including siblings in family research opens up opportunities to move beyond dyadic relationships to examine more complex, higher order processes, such as parents' differential treatment of two siblings or mothers' and fathers' coparenting of siblings, and to test hypotheses about family processes derived from a range of theoretical perspectives.

Directions for Future Research

For family scholars who pursue research on sibling relationships and influences, our review also reveals several directions for future research. Foremost is the necessity of direct measurement of hypothesized influence processes. In most research, sibling influence processes are inferred from patterns of sibling outcomes, such as when sibling concordance is interpreted as evidence of social learning (Criss & Shaw, 2005; Slomkowski et al., 2005). Given that some sibling influence processes operate to make siblings alike and other processes operate to make siblings different from one another (Whiteman et al., 2007), measuring only patterns of outcomes may underestimate sibling influences. Testing mediational models to document the processes that explain sibling similarities and differences is an important part of this agenda.

Direct examination of the processes through which siblings influence the larger family system also is needed. Several lines of work suggest that siblings have implications for one another's family experiences, but again, the underlying processes, such as whether parents learn from experience (Whiteman et al., 2003) or whether siblings dilute family resources (Downey, 2001), require direct assessment. Expanding these lines of research to examine the implications of developmental transitions (e.g., a firstborn's entry into formal schooling or move out of the home) for siblings and sibling dynamics may help to illuminate sibling influences on their families (Volling, 2012).

Another important direction is toward greater integration of the diverse theoretical and disciplinary approaches that undergird the study of sibling relationships. Our review reveals that research conducted in the past two decades has been grounded in theoretical traditions and associated methodologies that are largely complementary. Increasing appreciation of interdisciplinary scholarship, however, highlights what researchers can learn from theories, methods, and knowledge bases derived from different fields of study.

The field also would benefit from examinations of the increasingly diverse family and larger sociocultural contexts in which siblings interact and exert their influences. Most of the research we reviewed here draws from samples of European and European American families with singleton biological siblings. Demographic changes in rates of cohabitation, marriage, divorce, and multiple births have resulted in substantial diversity in the family contexts in which siblings' relationships are embedded. Comparative designs document differences in sibling relationship qualities as a function of family type (e.g., Deater-Deckard et al., 2002; Noller et al., 2008) but, as we have suggested, a process-oriented approach is necessary for illuminating how and why sibling relationships develop differently in different family contexts.

Relatedly, the growing immigrant population in the United States (U.S. Census Bureau, 2011) necessitates the study of sibling relationships and their influences in diverse groups.

Scholarship on siblings in African American and Latino families has emerged in the last decade, but our knowledge of sibling relationships in their sociocultural contexts remains limited. As in the larger field of research on ethnic minority families, researchers should investigate siblings' role in positive development, examine dyads from a range of socioeconomic circumstances, and study how sibling relationships and influences unfold over time. Using both ethnic-homogeneous and ethnic-comparative designs also will increase our understanding of within- and between-group variability in sibling relationship dynamics (McLoyd, 1998).

Building on these recommendations for a focus on process and context, and consistent with an ecological perspective (Bronfenbrenner, 1979), another step is to examine the interplay among sibling structure characteristics, relationship processes, and larger family and sociocultural contextual conditions. Early efforts to match sibling structure to relational processes revealed that structure explained process neither consistently nor completely (Buhrmester & Furman, 1990). A solution was to highlight the significance of social processes, but this approach leaves open the question of whether structural factors condition the effects of process. Relatedly, as we have noted, siblings are building blocks of family structure, yet beyond research on sibship size almost nothing is known about family-wide constellations of sibling relationships and roles, including how experiences in one sibling relationship influence dynamics in another, or moderate their impact on development. Given that about 40% of U.S. children live in households with more than one sibling, studying sibling relationships at the family level to capture multiple dyads is crucial for understanding how families operate.

Our final recommendation is to strengthen the theoretical and empirical understanding of sibling relationship and influence processes through translational research. Consistent with the neglect of sibling relationships by family scholars, prevention and intervention researchers have paid scant attention to siblings (Feinberg et al., 2012; Kramer, 2004). Experimental trials of sibling-focused interventions designed to alter sibling relationship qualities such as conflict resolution (Siddiqui & Ross, 2004) or emotion regulation (Kennedy & Kramer, 2008) have provided opportunities to study the causal effects of sibling dynamics on youth adjustment and larger family processes (Feinberg et al., 2012). Such experimental tests of models of sibling influence have both theoretical and practical implications.

Retrospect and Prospect

In his early efforts to motivate research on siblings, Irish (1964) noted that most of the literature on families “would lead one to conclude that parents rear their children one at a time—or in separate compartments” (p. 287). In the face of the ubiquity of siblings and sibling relationships in family life and their documented significance for family dynamics and development and adjustment during childhood and adolescence, sibling research still remains outside the mainstream of scholarship on families. We have argued that incorporating information about multiple siblings and their relationships into research on families can provide new insights about family dynamics and about how families operate as social and socializing systems. We hope that the next generation of family scholars finds our case convincing!

Acknowledgments

We acknowledge support from the National Institute for Child Health and Human Development (Grant r01-hd32336, Susan m. McHale and Ann c. Crouter, Co-Principal Investigators [PIs], and Grant r01hd39666, Kimberly Updegraff, pi); from the National Institute on Alcohol Abuse and Alcoholism (Grant r21-aa017490, Shawn d. Whiteman, pi); and from the Population Research Center at The Pennsylvania State University, which is supported

by an infrastructure grant (r24-hd041025) from the National Institutes of Health. We thank Susan Doughty and Cynthia Mitchell for their assistance in this article's preparation.

References

- Abramovitch R, Corter CM, Lando B. Sibling interaction in the home. *Child Development*. 1979; 50:997–1003.
- Ansbacher, HL.; Ansbacher, RR. *The individual psychology of Alfred Adler*. New York: Basic Books; 1956.
- Bank L, Burraston B, Snyder J. Sibling conflict and ineffective parenting as predictors of adolescent boys' antisocial behavior and peer difficulties: Additive and interactional effects. *Journal of Research on Adolescence*. 2004; 14:99–125.
- Blake JJ. Family size and the quality of children. *Demography*. 1981; 18:421–442. [PubMed: 7308532]
- Blau PM, Duncan OD. Some preliminary findings on social stratification in the United States. *Acta Sociologica*. 1965; 9:4–24.
- Boucheay HA, Shoulberg EK, Jodl KM, Eccles JS. Longitudinal links between older sibling features and younger siblings' academic adjustment during early adolescence. *Journal of Educational Psychology*. 2010; 102:197–211. [PubMed: 20376283]
- Branje SJ, van Lieshout CF, van Aken MA, Haselager GJ. Perceived support in sibling relationships and adolescent adjustment. *Journal of Child Psychology and Psychiatry*. 2004; 45:1385–1396. [PubMed: 15482499]
- Brim OG. Family structure and sex role learning by children: A further analysis of Helen Koch's data. *Sociometry*. 1958; 21:1–16.
- Brody GH, Ge X, Kim SY, Murry VM, Simons RL, Gibbons FX, Gerrard M, Conger RD. Neighborhood disadvantage moderates associations of parenting and older sibling problem attitudes and behavior with conduct disorders in African American children. *Journal of Consulting and Clinical Psychology*. 2003; 71:211–222. [PubMed: 12699016]
- Brody GH, Kim S, Murry VM, Brown AC. Longitudinal direct and indirect pathways linking older sibling competence to the development of younger sibling competence. *Developmental Psychology*. 2003; 39:618–628. [PubMed: 12760528]
- Brody, GH.; Stoneman, Z. Sibling relationships and their association with parental differential treatment. In: Hetherington, EM.; Reiss, D.; Plomin, R., editors. *Separate social world of siblings: The impact of the nonshared environment on development*. Hillsdale, NJ: Erlbaum; 1994. p. 129-142.
- Bronfenbrenner, U. *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press; 1979.
- Brook JS, Whiteman M, Gordon AS, Brook DW. The role of older brothers in younger brothers' drug use viewed in the context of parent and peer influences. *Journal of Genetic Psychology*. 1990; 151:59–75. [PubMed: 2332760]
- Brotman LM, Dawson-McClure S, Gouley KK, McGuire K, Burraston B, Bank L. Older siblings benefit from a family-based preventive intervention for preschools at risk for conduct problems. *Journal of Family Psychology*. 2005; 19:581–591. [PubMed: 16402873]
- Brown JR, Donelan-McCall N, Dunn J. Why talk about mental states? The significance of children's conversations with friends, siblings, and mothers. *Child Development*. 1996; 67:836–849. [PubMed: 8706529]
- Bryant B, Crockenberg S. Correlates and dimensions of prosocial behavior: A study of female siblings with their mothers. *Child Development*. 1980; 51:529–544. [PubMed: 7398455]
- Buhrmester D, Furman W. Perceptions of sibling relationships during middle childhood and adolescence. *Child Development*. 1990; 61:1387–1398. [PubMed: 2245732]
- Bullock BM, Dishion TJ. Sibling collusion and problem behavior in early adolescence: Toward a process model for family mutuality. *Journal of Abnormal Child Psychology*. 2002; 30:143–153. [PubMed: 12002395]

- Coldwell J, Pike A, Dunn J. Maternal differential treatment and child adjustment: A multi-informant approach. *Social Development*. 2008; 17:596–612.
- Compton K, Snyder J, Schrepferman L, Bank L, Shortt JW. The contribution of parents and siblings to antisocial and depressive behavior in adolescents: A double jeopardy coercion model. *Development and Psychopathology*. 2003; 15:163–182. [PubMed: 12848440]
- Conger K, Conger RD. Differential parenting and change in sibling differences in delinquency. *Journal of Family Psychology*. 1994; 8:287–302.
- Criss MM, Shaw DS. Sibling relationships as contexts for delinquency training in low-income families. *Journal of Family Psychology*. 2005; 19:592–600. [PubMed: 16402874]
- Deater-Deckard K, Dunn J, Lussier G. Sibling relationships and social-emotional adjustment in different family contexts. *Social Development*. 2002; 11:571–590.
- Downey DB. When bigger is not better: Family size parental resources and children's educational performance. *American Sociological Review*. 1995; 60:746–761.
- Downey DB. Number of siblings and intellectual development: The resource dilution explanation. *American Psychologist*. 2001; 56:497–504. [PubMed: 11413873]
- Dunn J. Sibling relationships in early childhood. *Child Development*. 1983; 54:787–811.
- Dunn, J. Siblings and socialization. In: Grusec, JE.; Hastings, PD., editors. *Handbook of socialization: Theory and research*. New York: Guilford Press; 2007. p. 309-327.
- Dunn J, Kendrick C. The arrival of a sibling: Changes in patterns of interaction between mother and first-born child. *Journal of Child Psychology and Psychiatry*. 1980; 21:119–132. [PubMed: 7372742]
- East PL. Impact of adolescent childbearing on families and younger siblings: Effects that increase younger siblings' risk for early pregnancy. *Applied Developmental Science*. 1998; 2:62–74.
- East PL, Kiernan E, Chavez G. An evaluation of California's adolescent sibling pregnancy prevention program. *Perspectives on Sexual and Reproductive Health*. 2003; 35:62–70. [PubMed: 12729135]
- East PL, Reyes BT, Horn EJ. Association between adolescent pregnancy and a family history of teenage births. *Perspectives on Sexual and Reproductive Health*. 2007; 29:108–115. [PubMed: 17565624]
- Epstein JA, Griffin KW, Botvin GJ. A social influence model of alcohol use for inner-city adolescents: Family drinking, perceived drinking norms and perceived social benefits of drinking. *Journal of Studies on Alcohol and Drugs*. 2008; 69:397–405. [PubMed: 18432382]
- Fagan AA, Najman JM. Sibling influences on adolescent delinquent behaviour: An Australian longitudinal study. *Journal of Adolescence*. 2003; 26:546–558.
- Fagan AA, Najman JM. The relative contributions of parental and sibling substance use to adolescent tobacco, alcohol, and other drug use. *Journal of Drug Issues*. 2005; 35:869–884.
- Feinberg ME, Hetherington EM. Sibling differentiation in adolescence: Implications for behavioral genetic theory. *Child Development*. 2000; 71:1512–1524. [PubMed: 11194252]
- Feinberg ME, Hetherington EM. Differential parenting as a within-family variable. *Journal of Family Psychology*. 2001; 15:22–37. [PubMed: 11322082]
- Feinberg ME, McHale SM, Crouter AC, Cumsille P. Sibling differentiation: Sibling and parent relationship trajectories in adolescence. *Child Development*. 2003; 74:1261–1274. [PubMed: 14552397]
- Feinberg ME, Solmeyer A, McHale SM. The third rail of family systems: Sibling relationships, mental and behavioral health, and preventive intervention in childhood and adolescence. *Clinical Child and Family Psychology Review*. 2012; 15:43–57. [PubMed: 22105663]
- Galton, F. *English men of science: Their nature and nurture*. London: McMillan; 1874.
- Gamble WC, Modry-Mandell K. Family relations and the adjustment of young children of Mexican descent: Do family cultural values moderate these associations? *Social Development*. 2008; 17:358–379.
- Grotevant H. Sibling constellations and sex-typing of interests in adolescence. *Child Development*. 1978; 49:540–542.
- Hoffman KL, Kiecolt KJ, Edwards JN. Physical violence between siblings: A theoretical and empirical analysis. *Journal of Family Issues*. 2005; 26:1103–1130.

- Howe N, Rinaldi CM, Jennings M, Petrakos H. No! The lambs can stay out because they got cozies! Constructive and destructive sibling conflict, pretend play, and social understanding. *Child Development*. 2002; 73:1460–1473. [PubMed: 12361312]
- Irish DP. Sibling interaction: A neglected aspect in family life research. *Social Forces*. 1964; 42:279–288.
- Jenkins, JM. Sibling relationships in disharmonious homes: Potential difficulties and protective effects. In: Boer, F.; Dunn, J., editors. *Children's sibling relationships: Developmental and clinical issues*. Hillsdale, NJ: Erlbaum; 1992. p. 125-138.
- Kan M, McHale SM, Crouter AC. Interparental incongruence in differential treatment of adolescent siblings: Links with marital quality. *Journal of Marriage and Family*. 2008; 70:466–479.
- Kennedy DE, Kramer L. Improving emotion regulation and sibling relationship quality: The more fun with sisters and brothers program. *Family Relations*. 2008; 57:567–578.
- Killoren SE, Thayer SM, Updegraff KA. Conflict resolution between Mexican origin adolescent siblings. *Journal of Marriage and Family*. 2008; 70:1200–1212. [PubMed: 19750147]
- Kim J, McHale SM, Osgood DW, Crouter AC. Longitudinal course and family correlates of sibling relationships from childhood through adolescence. *Child Development*. 2006; 77:1746–1761. [PubMed: 17107458]
- King, M.; Ruggles, S.; Alexander, JT.; Flood, S.; Genadek, K.; Schroeder, MB.; Trampe, B.; Vick, R. Integrated Public Use Micro-data Series, Current Population Survey: Version 3.0. Minneapolis: University of Minnesota; 2010. [Machine-readable database]
- Knott F, Lewis C, Williams T. Sibling interaction of children with autism: Development over 12 months. *Journal of Autism and Developmental Disorders*. 2007; 37:1987–1995. [PubMed: 17310402]
- Koch H. The relation of certain formal attributes of siblings to attitudes held toward each other and toward their parents. *Monographs of the Society for Research in Child Development*. 1960; 25 (4, Serial No. 78).
- Kowal A, Blinn-Pike L. Sibling influences on adolescents' attitudes toward safe sex practices. *Family Relations*. 2004; 53:377–384.
- Kowal A, Kramer L. Children's understanding of parental differential treatment. *Child Development*. 1997; 68:113–126.
- Kramer, L. Experimental interventions in sibling relations. In: Conger, RD.; Lorenz, FO.; Wickrama, KAS., editors. *Continuity and change in family relations: Theory, methods, and empirical findings*. Mahwah, NJ: Erlbaum; 2004. p. 345-382.
- Kunz J. Parental divorce and children's interpersonal relationships: A meta-analysis. *Journal of Divorce & Remarriage*. 2001; 34:19–47.
- Levy-Wasser N, Katz S. The relationship between attachment style, birth order, and adjustment in children who grow up with a sibling with mental retardation. *British Journal of Developmental Disabilities*. 2004; 50:89–98.
- Mandelco B, Olsen SF, Dyches T, Marshall E. The relationship between family and sibling functioning in families raising a child with a disability. *Journal of Family Nursing*. 2003; 9:365–396.
- Maralani V. The changing relationship between family size and educational attainment over the course of socioeconomic development: Evidence from Indonesia. *Demography*. 2008; 45:693–717. [PubMed: 18939668]
- McGue M, Sharma A, Benson P. Parent and sibling influences on adolescent alcohol use and misuse: Evidence from a U.S. adoption cohort. *Journal of Studies on Alcohol*. 1996; 57:8–18. [PubMed: 8747496]
- McGuire S, Dunn J, Plomin R. Maternal differential treatment of siblings and children's behavioral problems: A longitudinal study. *Development and Psychopathology*. 1995; 7:515–528.
- McHale SM, Bissell J, Kim J. Sibling relationship, family, and genetic factors in sibling similarity in sexual risk. *Journal of Family Psychology*. 2009; 23:562–572. [PubMed: 19685991]
- McHale, SM.; Harris, VS. Children's experiences with disabled and nondisabled siblings: Links with personal adjustment and relationship evaluations. In: Boer, F.; Dunn, J., editors. *Children's sibling relationships: Developmental and clinical issues*. Hillsdale, NJ: Erlbaum; 1992. p. 83-100.

- McHale, SM.; Kim, J.; Whiteman, SD. Sibling relationships in childhood and adolescence. In: Noller, P.; Feeney, JA., editors. *Close relationships: Functions, forms and processes*. New York: Psychology Press; 2006. p. 127-149.
- McHale SM, Updegraff KA, Shanahan L, Crouter AC, Killoren SE. Siblings' differential treatment in Mexican American families. *Journal of Marriage and Family*. 2005; 67:1259–1274. [PubMed: 18414595]
- McHale SM, Whiteman SD, Kim J, Crouter AC. Characteristics and correlates of sibling relationships in two-parent African American families. *Journal of Family Psychology*. 2007; 21:227–235. [PubMed: 17605545]
- McLoyd, VC. Changing demographics in the American population: Implications for research on minority children and adolescents. In: McLoyd, VC.; Steinberg, L., editors. *Studying minority adolescents: Conceptual, methodological, and theoretical issues*. Mahwah, NJ: Erlbaum; 1998. p. 3-28.
- Milvesky A, Levitt MJ. Sibling support in early adolescence: Buffering and compensation across relationships. *European Journal of Developmental Psychology*. 2005; 2:299–320.
- Minuchin P. Families and individual development: Provocations from the field of family therapy. *Child Development*. 1985; 56:289–302. [PubMed: 3886321]
- Noller, P.; Conway, S.; Blakeley-Smith, A. Sibling relationships in adolescent and young adult twin and nontwin siblings: Managing competition and comparison. In: Forgas, JP.; Fitness, J., editors. *Social relationships: Cognitive, affective, and motivational processes*. New York: Psychology Press; 2008. p. 235-252.
- Nuckolls, CW. An introduction to the study of cross-cultural sibling relations. In: Nuckolls, CW., editor. *Siblings in south Asia*. New York: Guilford Press; 1993. p. 19-44.
- O'Connor TG, Hetherington EM, Reiss D. Family systems and adolescent development: Shared and nonshared risk and protective factors in nondivorced and remarried families. *Development and Psychopathology*. 1998; 10:353–375. [PubMed: 9635228]
- Park H. Public policy and the effect of sibship size on educational achievement: A comparative study of 20 countries. *Social Science Research*. 2008; 37:874–887.
- Patterson, GR. Siblings: Fellow travelers in coercive family processes. In: Blanchard, RJ., editor. *Advances in the study of aggression*. New York: Academic Press; 1984. p. 174-214.
- Plomin R, Daniels D. Why are children in the same family so different from one another? *Behavioral and Brain Sciences*. 1987; 10:1–16.
- Rende R, Slomkowski C, Lloyd-Richardson E, Niaura R. Sibling effects on substance use in adolescence: Social contagion and genetic relatedness. *Journal of Family Psychology*. 2005; 19:611–618. [PubMed: 16402876]
- Rodgers JL. What causes birth order – intelligence patterns? The admixture hypothesis, revived. *American Psychologist*. 2001; 56:505–510. [PubMed: 11413874]
- Rodgers JL, Rowe DC, Harris DF. Sibling differences in adolescent sexual behavior: Inferring process models from family composition patterns. *Journal of Marriage and the Family*. 1992; 54:142–152.
- Rowe DC, Gulley BL. Sibling effects on substance use and delinquency. *Criminology*. 1992; 30:217–233.
- Rowe DC, Plomin R. The importance of nonshared (E1) environmental influences in behavioral development. *Developmental Psychology*. 1981; 17:517–531.
- Schachter FF, Shore E, Feldman-Rotman S, Marquis RE, Campbell S. Sibling deidentification. *Developmental Psychology*. 1976; 12:418–427.
- Scholte RHJ, Poelen EAP, Willemsen G, Boomsma DI, Engels RCME. Relative risks of adolescent and young adult alcohol use: The role of drinking fathers, mothers, siblings, and friends. *Addictive Behaviors*. 2008; 33:1–14. [PubMed: 17490824]
- Shanahan L, McHale SM, Crouter AC, Osgood DW. Linkages between parents' differential treatment, youth depressive symptoms, and sibling relationships. *Journal of Marriage and Family*. 2008; 70:480–494.
- Shanahan L, McHale SM, Osgood DW, Crouter AC. Conflict with mothers and fathers from middle childhood through adolescence: Within- and between-family comparisons. *Developmental Psychology*. 2007; 43:539–550. [PubMed: 17484569]

- Sharpe D, Rossiter L. Siblings of children with a chronic illness: A meta-analysis. *Journal of Pediatric Psychology*. 2002; 27:699–710. [PubMed: 12403860]
- Siddiqui A, Ross HS. Mediation as a method of parent intervention in children's disputes. *Journal of Family Psychology*. 2004; 18:147–159. [PubMed: 14992617]
- Slomkowski C, Rende R, Novak S, Lloyd-Richardson E, Niaura R. Sibling effects on smoking in adolescence: Evidence for social influence from a genetically informative design. *Addiction*. 2005; 100:430–438. [PubMed: 15784052]
- Solmeyer, A.; Feinberg, ME.; Sakuma, K.; Hostetler, M.; McHale, SM.; Jones, D. Siblings are Special: A universal program to promote sibling relationships and prevent substance use in early adolescents; Minneapolis, MN. Paper presented at the 72nd Annual Conference of the National Council on Family Relations; 2010 Nov.
- Solmeyer A, Killoren SE, McHale SM, Updegraff KA. Coparenting around siblings' differential treatment in Mexican-origin families. *Journal of Family Psychology*. 2011; 25:251–260. [PubMed: 21480704]
- Steelman LC, Powell B, Werum R, Carter S. Reconsidering the effects of sibling configuration: Recent advances and challenges. *Annual Review of Sociology*. 2002; 28:243–269.
- Stocker CM, Burwell RA, Briggs ML. Sibling conflict in middle childhood predicts children's adjustment in early adolescence. *Journal of Family Psychology*. 2002; 16:50–57. [PubMed: 11915410]
- Stocker CM, Youngblade L. Marital conflict and parental hostility: Links with children's sibling and peer relationships. *Journal of Family Psychology*. 1999; 13:598–609.
- Stoneman Z. Supporting positive sibling relationships during childhood. *Mental Retardation and Developmental Disabilities Research Reviews*. 2001; 7:134–142. [PubMed: 11389569]
- Stoneman Z, Brody GH. Sibling temperaments, conflict, warmth, and role asymmetry. *Child Development*. 1993; 64:1786–1800. [PubMed: 8112119]
- Stoneman Z, Brody GH, Churchill SL, Winn LL. Effects of residential instability on Head Start children and their relationships with older siblings: Influences of child emotionality and conflict between family caregivers. *Child Development*. 1999; 70:1246–1262. [PubMed: 10546343]
- Stormshak E, Bellanti C, Bierman K, The Conduct Problems Prevention Research Group. The quality of sibling relationships and the development of social competence and behavioral control in aggressive children. *Developmental Psychology*. 1996; 32:79–89.
- Strohschein L, Gauthier AH, Campbell R, Kleparchuk C. Parenting as a dynamic process: A test of the resource dilution hypothesis. *Journal of Marriage and Family*. 2008; 70:670–683.
- Sulloway, FJ. *Born to rebel: Birth order, family dynamics, and creative lives*. New York: Pantheon Books; 1996.
- Tucker CJ, Updegraff KA, McHale SM, Crouter AC. Older siblings as socializers of younger siblings' empathy. *Journal of Early Adolescence*. 1999; 19:176–198.
- Updegraff KA, McHale SM, Crouter AC. Adolescents' sibling relationships and friendships: Developmental patterns and relationship associations. *Social Development*. 2002; 11:182–211.
- Updegraff, KA.; McHale, SM.; Killoren, SE.; Rodriguez, SA. Cultural variations in sibling relationships. In: Caspi, J., editor. *Sibling development: Implications for mental health practitioners*. New York: Springer; 2010. p. 83-105.
- Updegraff KA, McHale SM, Whiteman SD, Thayer SM, Delgado MY. Adolescent sibling relationships in Mexican American families: Exploring the role of familism. *Journal of Family Psychology*. 2005; 19:512–522. [PubMed: 16402866]
- U.S. Census Bureau. Facts for features: Cinco de Mayo. 2011. Retrieved from http://www.census.gov/newsroom/releases/pdf/cb11ff-09_cinco.pdf
- Volling BL. Family transitions following the birth of a sibling: An empirical review of changes in the firstborn's adjustment. *Psychological Bulletin*. 2012 Advance online publication.
- Volling BL, Elins JL. Family relationships and children's emotional adjustment as correlates of maternal and paternal differential treatment: A replication with toddler and preschool siblings. *Child Development*. 1998; 69:1640–1656. [PubMed: 9914644]

- Weisner, TS. Comparing sibling relationships across cultures. In: Zukow, PG., editor. *Sibling interaction across cultures: Theoretical and methodological issues*. New York: Springer-Verlag; 1989. p. 11-22.
- Whiteman SD, Bernard JMB, McHale SM. The nature and correlates of sibling influence in two-parent African American families. *Journal of Marriage and Family*. 2010; 72:267–271. [PubMed: 20495684]
- Whiteman SD, Buchanan CM. Mothers' and children's expectations for adolescence: The impact of perceptions of an older sibling's experience. *Journal of Family Psychology*. 2002; 16:157–171. [PubMed: 12085729]
- Whiteman SD, McHale SM, Crouter AC. What parents learn from experience: The first child as a first draft? *Journal of Marriage and Family*. 2003; 65:608–621.
- Whiteman SD, McHale SM, Crouter AC. Competing processes of sibling influence: Observational learning and sibling deidentification. *Social Development*. 2007; 16:642–661.
- Whiting, BB.; Whiting, JW. *Children of six cultures: A psycho-cultural analysis*. Cambridge, MA: Harvard University Press; 1975.
- Widmer ED. Influence of older siblings on initiation of sexual intercourse. *Journal of Marriage and the Family*. 1997; 59:928–938.
- Williams PD, Williams AR, Graff C, Hanson S, Stanton A, Hafeman C, Sanders S. A community-based intervention for siblings and parents of children with chronic illness or disability: The ISEE study. *Journal of Pediatrics*. 2003; 143:386–393. [PubMed: 14517525]
- Windle M. Parental, sibling, and peer influences on adolescent substance use and alcohol problems. *Applied Developmental Science*. 2000; 4:98–110.
- Youngblade LM, Dunn J. Individual differences in young children's pretend play with mother and sibling: Links to relationships and understanding of other people's feelings and beliefs. *Child Development*. 1995; 66:1472–1492. [PubMed: 7555225]
- Zajonc RB, Markus GB. Birth order and intellectual development. *Psychological Review*. 1975; 82:74–88.