Sibling Relationship Development and Sharing Behaviors in Early Childhood

by

Emma E. A. Beyers Carlson

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Psychology)
in the University of Michigan
2018

Doctoral Committee:

Professor Brenda L. Volling, Chair
Professor Toni C. Antonucci
Professor Sheryl L. Olson
Assistant Professor Sarita Yardi Schoenebeck

Emma E. A. Beyers Carlson

ebcarlso@umich.edu

ORCID iD: 0000-0002-7080-7657

DEDICATION

To my mother, whose strength I carry in my bones and to my father, who gave me the courage to seek my answers.

ACKNOWLEDGEMENTS

The process of moving through a doctoral program is filled with both deep joy and intense challenge. I am fortunate to have gone on this journey with a rich support network who supported, motivated, and believed in me. First, I am truly grateful to have worked with two inspiring advisors: Brenda Volling and Toni Antonucci. Both expected the highest standards from me and gave me the confidence to meet them. Thank you, Brenda, for believing in my potential from the very beginning and continuously pushing me to become a better researcher, writer, and developmental psychologist. Over the last five years, I have learned so much from you about strength and courage. I will always be grateful for the time and care you took to guide my academic development. Next, thank you, Toni, for your brilliant insights into my research and for your open hospitality over the last few years. You have taught me how to gracefully and effectively navigate the complex world of academia. I deeply appreciate the energy and time you invested in me and I will always be grateful that I could be a part of your research group and learn from your tutelage.

Next, I must thank my committee members: Sheryl Olson and Sarita Yardi Schoenebeck. Thank you, Sherri, for the deep kindness you have shown me in every one of our interactions. From the moment I first had you as a professor, I knew that I wanted to learn more from your profound wisdom. Teaching with you was a great honor and I will always remember your thoughtfulness toward all who come into contact with you. Thank you, Sarita, for taking a chance on an unknown Psychology student and helping me make my dream a reality through

your insightful and practical feedback. I never would have been able to complete my third beloved study without you.

I am grateful to have had the opportunity to participate in two amazing research groups: the Child Development and Family Relationships group and the Life Course Development group. You became my academic community, my safety net, and my true social support. I am very thankful. My academic sister wives--Patty Kuo and Paige Safyer-- you both were my true saving grace in graduate school. I could not have done it without your support, kindness, and knowledge. Lauren Rosenberg, your thoughtful friendship, calm spirit, and amazing sense of humor have been such a blessing to me. You really got me through. Lauren Bader, Ju-Hyun Song, Joyce Lee, and Yeonjee Bae, thank you for your encouragement and companionship. You made our lab an amazing place to belong. Lauren Tighe and Jasmine Manalel, what would I have done without you two in all those LCD meetings? I treasure all of our conference memories.

I will always be thankful to the friends I made these last five years that made the hard times bearable and the good times even more wonderful. My 2013 cohort-- Amira Halawah, Arianna Gard, Jasmine Manalel, Fernanda Cross, Kimberly Brink, Lauren Tighe, Margaret Echelbarger, Neelima Wagley, Nkemka Anyiwo, Sammy Ahmed, and Tyler Hein—thank you for always being a source of support, a place for commiseration, and a true delight. My Biostats friends-- Nick Seewald, Julie Strominger, Evan Reynolds, Riley Reynolds, Allison Furgal, Joe Furgal, Lauren Beesley, Krithika Suresh, Marco Benedetti, Jeremy Quick—thank you for all the nights at Bill's, our ridiculous Stats-themed parties, the numerous amazing weddings, and the general belonging you gave me. I came to Michigan without family here and you gave me one. Amanda Hoskins and Diane Flasch, our dinners together are some of my favorite memories. You both are such amazing, strong, powerful women and I treasure our friendship.

I thank also those mentors who started me on my academic journey, Carole Young, Gretchen Wrobel, and Adam Johnson. Carole, working with you was what spurred my academic dreams. You are an amazing teacher, mentor, and friend. Thank you for all you invested in me. Gretchen, you taught me so much about family research, unique methodologies, and how to empower in other people. And Adam, thank you for opening my eyes to all the possibilities around me. You made me believe in them. I miss you and your brilliant kindness every day.

I must also thank my friends and family who have been with me from the very beginning. Kassandra Slizewski, Lwam Rafel, Mackenzie Maltby, Casie Cook, and Sarah Zuber, you are shining flames of goodness in my life. Jennica Butler, my other sister, you are one of the most enduring, supportive, and important relationships in my life. Ken and Carolyn Carlson, Christopher Wurpts, and Cassie Andersen, thank you for being wonderful in-laws and a constant source of delight and support. Ingrid Wurpts, you were my lifeline in this process. You are one of the greatest blessing of my life. Seth and Hannah Beyers, you two are the best siblings I could ever hope to imagine. I thought of our relationships every step of this dissertation. Thank you also to my parents, Dan and Twyla Beyers. There is no way to adequately thank you for giving me a life full of sunshine, joy, and unfailing love. This dissertation is dedicated to you.

Finally, I am beyond grateful for my beloved husband, Jedidiah Carlson. Jed, you are my everything bagel, my light in the darkness, my peaceful moments, and my unflagging champion. You always show up, always follow through, and always persevere. You are the best man I've ever known and this dissertation would simply not exist without you.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

The focus of this dissertation is on early sibling relationships, an oft neglected topic in child development research. The first study focuses on early sibling sharing behavior and its relationship with children's moral development. Next, the focus widens to incorporate a broader family ecology, specifically parenting and marital quality. Finally, Study 3 addresses the very beginnings of sibling relationships by focusing on mothers having their second child and their concerns.

Study 1 examined sharing behaviors between toddlers and their older siblings, and relations between sharing and conscience development from 18 to 36 months of age. There was no stability of individual differences in older and younger siblings' sharing behaviors across all three timepoints, suggesting that young children's individual sibling sharing behaviors may not follow a linear developmental trajectory in early childhood. Instead of bidirectional relations between older and young siblings' sharing behaviors over time, older siblings' sharing at 18 months predicted younger siblings' sharing at 24 months, suggesting that older siblings tend to play a more dominant role in dyadic interactions. Both older and younger siblings' moral regulation directly predicted older and younger siblings' sharing at 24 months, respectively, indicating that sibling sharing behaviors may be consequences of their internalization of moral regulation.

Study 2 investigated the associations among interparental relationship quality, parenting discipline strategies, and sharing behaviors in both older and younger siblings during early childhood. Inductive discipline as reported by both fathers and mothers at 24 months did not

predict older and younger sibling sharing one year later. Relations between study variables, however, did indicate relationship spillover instead of compensation, between positive interparental relationship quality and parental inductive discipline strategies. Fathers' discipline strategies were neither more vulnerable to negative interparental relationship quality, nor were they uniquely supported by positive interparental relationship quality. Instead, mothers appeared to be most supported in their parenting strategies by positive interparental relationship quality.

Study 3 isolated predominant topics expressed on the BabyCenter internet website during the transition to the second child (both pre- and post-birth), using Latent Dirichlet Allocation (LDA) and qualitative analysis. The findings suggest that topics discussed by second-time mothers in the BabyCenter groups coincide with topics expressed by mothers isolated in the previous qualitative literature decades earlier. Further, topics expressed online during the transition to the second child (both pre- and post-birth) indicate that, similar to previous research from decades earlier, second-time mothers in the current sample were still concerned about many of the same topics, such as if they could love their second child as much as their first or whether they would receive the support they desired from friends and family. This research suggests that second-time motherhood is a transition that requires unique suggestions and interventions. Findings from these three studies indicate that overall children are distinctly influenced by their sibling relationships and that their prosocial and moral development occurs in a broader context beyond that of the mother-child dyad.

CHAPTER 1

INTRODUCTION

Developmental psychology, as a discipline, has had a long history of focusing primarily on the individual and an individual's adjustment over time. In their developmental models, theorists such as Bronfenbrenner and Sameroff have moved to place the individual in context, but retain a focus on self-contained individual outcomes. Far from developing in a vacuum, however, children develop within family systems that consist of multiple subsystems (Cox & Paley, 2003; Minuchin, 1988). Though the parent-child and parent-parent subsystems are most often studied within the context of children's social development, the sibling subsystem is often unnoticed. Nearly 80% of children in the United States have at least one sibling (U.S. Census, 2009), and young siblings spend a large portion of time together, so much so that by middle childhood, they often spend more time with each other than with their parents (McHale & Crouter, 1996). Such findings suggest that sibling relationships are salient developmental environments for most U.S. children. Furthermore, though sibling relationships share similarities with other significant relationships in early childhood, such as the parent-child relationship (e.g., strong emotional bonds) and peer relationships (i.e., interaction with others of the same age), they also comprise unique components that create distinctive circumstances. Sibling relationships, though emotionally intimate, are often characterized by ambivalence (Furman & Buhrmester, 1985; Dunn, 1988; Dunn, 2002) and, unlike peer relationships, often include age gaps, offering contexts for learning leadership skills as well as what it means to follow others' leads (Sroufe et al., 2004; Cox, 2010). Further, sibling ties are not easily broken and often are one of the longest

enduring relationships in the lifecourse (Bedford & Paula, 2001; Cox, 2010). As such, it is crucial to consider how siblings affect individual development. The overall purpose of this dissertation was to take a family systems perspective to more closely investigate the sibling relationship in early childhood, with a specific interest in socioemotional development in early childhood.

Theoretical Framework: Family Systems Theory

The overarching theoretical framework of this dissertation is family systems theory, which argues that the family is an organized system of interdependent and reciprocal relationships and behaviors (Cox & Paley, 1997, 2003). Broadly defined, this theory argues that the family system is characterized by three distinct features: 1) wholeness and order (i.e., the whole of the system is greater than its parts and cannot be fully conceptualized independent of the system context), 2) adaptive self-organization (i.e., the family system can organically grow and adjust in response to changes in the environment), and 3) hierarchal structure (i.e., members of this system are separated by permeable boundaries into various subsystems that are also individual systems, such as the parent-child, parent-parent, and/or older sibling-younger sibling relationships: Cox & Paley, 2003; Minuchin, 1988; Sameroff, 1994). As such, each member, or subsystem, of the family is influenced and affected by the others' behaviors, actions, and attitudes (Steinglass, 1987). Because children's development is affected both directly and indirectly by these different family relationships (Cox & Paley, 2003; Minuchin, 1985), it is necessary to investigate each subsystem to elucidate the influence of the family as a whole. Therefore, I chose to focus mostly on one of the most overlooked family subsystem, the sibling relationship, as the central thread of this dissertation. I planned to examine the sibling subsystem

by conducting several studies designed to assess the individuals and subsystems in the family involved in development of sibling relationships and sharing behavior in early childhood.

Siblings and the Development of Prosocial Behaviors in Early Childhood

Prosocial behavior (i.e., deliberate behavior intended to benefit another) is often considered to be one of the most meaningful foundations for human relationships (Eisenberg, Fabes, & Spinrad, 2006; Staub, 1979). Prosocial children tend to be well-adjusted and have better peer relationships than children low in prosocial behavior (e.g., Clark & Ladd, 2000). Prosocial behavior is an umbrella term, however, and is comprised of multiple distinct behaviors, such as helping, sharing, and cooperation. Unlike other prosocial behaviors such as helping or cooperation, spontaneous sharing is theorized to be uniquely other-oriented because it often costs the child resources and requires the child to independently decide to share with another person as opposed to simple compliance with another's request (Eisenberg-Berg & Hand, 1979). Further, in early childhood, sharing is a defining skill in determining social competence and acceptance (Tiedemann and Johnston, 1992), which regularly prompts positive peer responses and serves as a successful approach for entering and maintaining peer relationships (Day, Fox, Shores, Lindeman, & Stowitschek, 1983; Strain, 1985).

Sharing also appears to be highly valued by parents, particularly for families with two or more children, as indicated by the multitude of popular media devoted to the subject (e.g., Heap, 2014; Henkes, 2001; Lerner, 2006; Mayer, 2012; Schwarz, 2017), and eventually benefits children's social relationships both within and outside the family. Prior studies have not fully explored how children learn to share and develop sharing behaviors, indicating a clear need for further investigation. As such, one of the novel contributions of this dissertation will be the presentation of a new method to assess sibling sharing, the Fishing Game Task. This

observational task creates a naturalistic context to measure older and younger siblings' self-focused and other-focused behaviors, both essential components of sharing.

Because the earliest social development occurs in the family (Tiedemann & Johnston, 1992), it seems logical that children's sharing behaviors develop within the family. In early childhood, the sibling relationship is emotionally intimate, intense, and is often characterized by ambivalence, with high levels of rivalry and conflict as well as emotional warmth (Dunn, 1988; Dunn, 2002; Furman & Buhrmester, 1985). This powerful bond between two familiar and well-acquainted children provides distinct opportunities for development not provided by other close or familial relationships (Jenkins & Dunn, 2009) and is a context that fosters social capabilities (Dunn & Munn, 1986; Zukow, 1989). Indeed, children with siblings engage in sharing from an early age and do so with a highly familiar sibling, instead of only an unfamiliar or hypothetical peer (Hastings, Utendale, & Sullivan, 2007), indicating that the dyadic sibling relationship may lend important insight into how children develop sharing behaviors early in life.

Further, sibling sharing, an experience that utilizes both the relationship between the two siblings and their understanding and implementation of fairness, may also be important to other aspects of their moral development, such as the internalization of conscience. Recent work has conceptualized the growth of a conscience, the mechanism internalized by children to control impulses or desires, as a necessary component of moral development (Kochanska, 1993, 1994; Thompson, Meyer, & McGinley, 2006). Conscience consists of both affective discomfort (i.e., emotions such as anxiety, remorse, or guilt the child feels after misbehaving) and moral regulation (i.e., ability to practice self-restraint in the face of temptation and perform socially acceptable behaviors when requested; Kochanska, 1993, 1994), components that capture, respectively, the moral emotion and moral conduct dimensions of conscience. Previous work on

the relational influences on conscience development in early childhood has focused on the influence of parent-child interaction on children's conscience development in early childhood. Yet, there is no reason that siblings cannot fulfill some of the necessary prerequisites for the development of conscience through daily interactions with a brother or sister.

Siblings and the Wider Family Ecology

It is not enough, however, to only understand the dyadic influence of one sibling upon the other. Though one sibling may have a unique influence on the sharing of the other, family systems theory argues that their relationship exists within a larger family system (Cox & Paley, 2003). As such, a perspective that considers each of these subsystems and how they interact is also needed to understand the mechanisms involved in the development of sibling sharing behaviors. The quality of the parent-child relationship has been consistently stressed as important for children's early prosocial development (e.g., Asbury, Dunn, Pike, & Plomin, 2003; Bryant & Crockenberg, 1980). For instance, parental inductions, a form of verbal discipline in which the parent explains the reasons requiring the child to change their behavior (Hoffman, 1970), have been consistently associated with children's prosocial behaviors (Eisenberg, Fabes, and Spinrad, 2006). Further, previous work suggests that this type of discipline promotes conscience development because it focuses the child's attention on consequences of their behavior for others and promotes empathy but does not disrupt learning (Hoffman, 2000). Though the link between parental induction and sharing behaviors (as opposed to empathy, helping, and/or prosocial responsiveness) is non-existent, work on similar sensitive and complex parenting strategies indicate that parental sensitivity is important for children's early sharing behaviors (Brownell et al., 2013; Van Berkel et al., 2015). Because parental inductions also require parental sensitivity, it is possible that they, too, may uniquely predict sharing among siblings, indicating that the

parent-child subsystem, not surprisingly, is also important for understanding the development of sharing in early childhood. As is the case with the sibling subsystem, the parenting subsystem also exists within a larger family system that can be affected both directly and indirectly by the other subsystems. It is not surprising, therefore, that the interparental relationship is a significant determinant of parenting (Belsky, 1984). Thus, the quality of the interparental relationship (e.g., positive or negative) has important implications for the parenting relationship, either by spillover (Erel & Burman, 1995; Katz & Woodin, 2002; Krishnakumar & Buehler, 2000) or compensatory processes (Erel & Burman, 1995; Nelson et al., 2009), which may, in turn, affect aspects of children's prosocial development, such as sharing.

The Earliest Beginnings of the Sibling Relationship

Although the dyadic- and family-level perspectives provide insight into the development of sibling behavior, such behavior only occurs within the context of an existing sibling relationship. Because there is long-term stability in children's sibling relationships over time (Aldercotte, White, & Hughes, 2016; Dunn, Slomkowski, & Beardsall, 1994), starting as early as the first year, it is important to ascertain how parents think about and prepare for issues surrounding the birth of a second child. Such an examination allows an opportunity to evaluate how parents influence the origin and development of their children's sibling relationship from the very beginning. Previous qualitative work conducted primarily in the 1980s-1990s lends insight into how mothers responded to the transition to the second child (e.g., Dunn & Kendrick, 1982; Richardson, 1983; Walz & Rich, 1983; Young, Boyle, & Colletti, 1983). Second-time mothers were less likely to focus on their capability to care for an infant, striking a significant difference from concerns often expressed by first-time mothers. Instead, having already cared for their first child, second-time mothers worried about changes in the family dynamic, including the

relationship with their first child, family logistics (e.g., maternity leave, added work load created by caring for two children), their older child's adjustment to their new sibling role, and their ability to effectively parent two children at the same time.

There has been very little qualitative research in the decades since this research on parents' concerns and motivations as they make the transition to the second child, despite the normality of this change in family structure. It is currently unclear if parents today express the same concerns expressed by mothers in the 1980's and 1990's, or whether "millennial" parents are focused on entirely other issues, particularly with the rapid development in social media and access to parenting information on the internet. Because many parents have begun to turn to the online world as a social outlet to discuss various topics surrounding parenting (Yardi Schoenebeck, 2013), online communities for parents provide data-rich arenas to investigate parenting and family issues, including siblings, using a large and more diverse population of parents.

Description of Dissertation Studies

This set of dissertation studies investigated how the different individuals and subsystems in the family contribute to development of sibling relationships, with a focus on sharing behavior in early childhood. Starting with the sibling subsystem (see Figure 1.1 for a conceptual model of the two-parent two-child family system that guides this dissertation), Study 1 focused on the dyadic influence of siblings on each other's sharing behaviors and then related sharing to conscience development in early childhood. This chapter used a dual development framework to model bidirectional relations among older and younger siblings' sharing behaviors, across three time points (18, 24, and 36 months), which allowed us to test predictions regarding the direction, progression, and influence of older and younger siblings' sharing behaviors. By including

indicators of conscience, specifically both siblings' affective discomfort and moral regulation at each timepoint, the findings of this study could begin to elucidate whether and when sibling sharing behaviors predicted and were predicted by conscience development in early childhood.

Moving to a full family-systems approach, Study 2 tested a longitudinal family process model in which parental induction predicted sibling sharing behaviors in early childhood, while also examining how interparental relationship quality may indirectly predict sibling sharing, either through spillover or compensation in the parents' discipline strategies. Because parental inductions are associated with several other prosocial behaviors and engage children to think about emotions and behaviors, I hypothesized that parental inductive discipline focused on the child at 24 months would positively predict more sharing at 36 months. Further, I tested two competing hypotheses for how the interparental relationship and the parent-child relationship interact. The spillover hypothesis postulates that emotions in the interparental relationship can spillover into the parent-child relationship and vice versa (Erel & Burman, 1995) and the compensatory hypothesis states that deficiencies in one family subsystem (e.g., interparental relationship) are compensated by another (e.g., parent-child relationship: Erel & Burman; Nelson et al., 2009). Of the two, the spillover hypothesis is the most substantiated (e.g., Cowan & Cowan, 2004, Katz & Woodin, 2002; McCoy, Cummings, and Davies, 2009), so I hypothesized that more positive interparental relationship quality would be more predictive of more inductive discipline strategies. A third hypothesis pertaining specifically to fathers and marital relationships, is the fathering-vulnerability hypothesis, which states that interparental conflict has a stronger impact on father-child relationships than it does for mothers (Cummings, Goeke-Morey, & Raymond, 2004) due to a less clearly-defined fathering role (Cummings, Merrilees, & George, 2010). Though empirical support for this hypothesis is mixed, I also hypothesized that,

because fathers may be uniquely vulnerable to conflict or receptive to support, the type of interparental relationship would more strongly affect their discipline strategies than mothers' discipline. Findings were expected to shed light on how the various subsystems in the family interacted to predict sibling sharing.

Finally, the third paper took a broader computational approach to evaluate how mothers think about and prepare for the impending birth of their second child. Such an examination moves beyond the dyadic- and family-level perspectives and allows the chance to investigate how parents influence the foundation and early development of their children's sibling relationship from the start. The goal of Study 3 was to characterize the topics mothers discuss online while expecting their second child. Due to our interest in mothers' concerns around the transition to the second child, we focused on second-time parenting specific Groups (i.e., discussion boards) located on the American website, BabyCenter. Investigating these different groups of second time mothers allows a unique opportunity to assess topics discussed by a contemporary cohort of women both while preparing to give birth to their second baby and after their baby was born, as well as the initiation of the transition of the first child into an older sibling. Findings were expected to clarify the nature of the topical categories expressed by mothers online during this time period (both pre- and post-birth) and if these topics coincided with previous research from decades earlier.

Overall, findings from this dissertation were expected to contribute to and advance understanding of sibling relationships in early childhood. Further, this dissertation research contributes to our understanding of how the various individuals and subsystems in the family system interact and predict sibling relationship development and sharing behaviors during a formative developmental period of childhood.

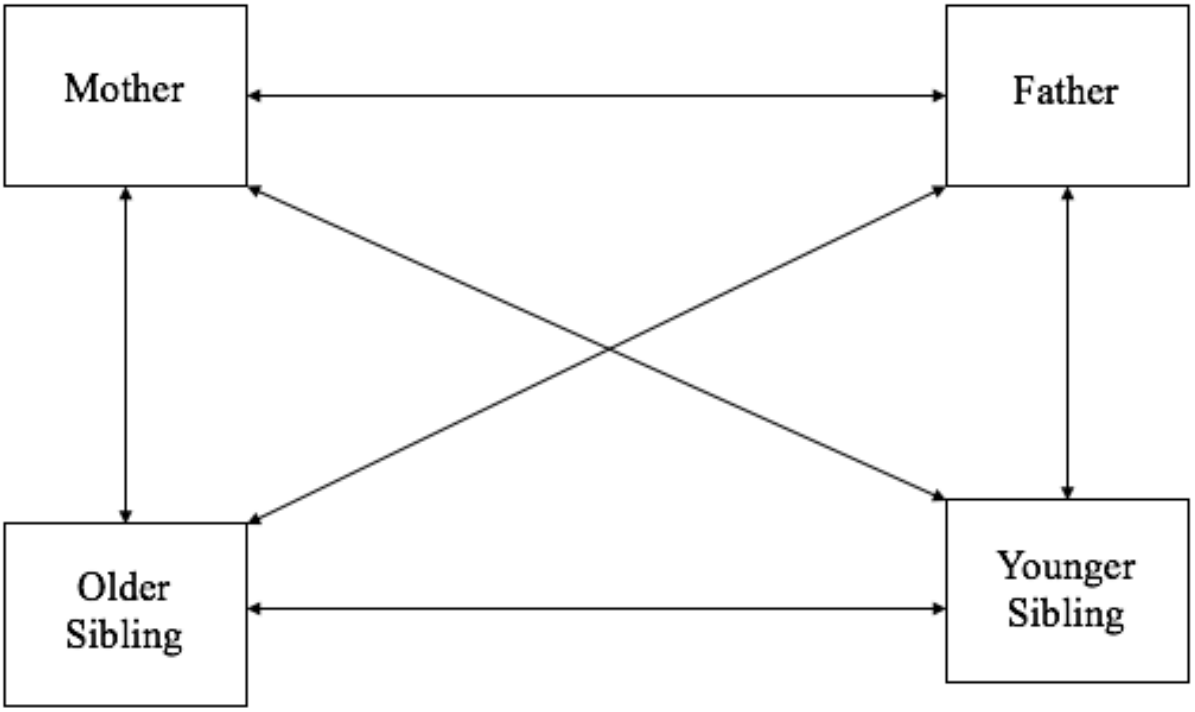

Figure 1.1. Conceptual model of a two-parent two-child family system that guides this dissertation.

References

Aldercotte, A., White, N., & Hughes, C. (2016). Sibling and peer relationships in early childhood. In L. Balter, C.S. Tamis-Lemonda (Eds.), *Child psychology: A handbook of contemporary issues* (pp. 141-165). New York, NY: Routledge.

Asbury, K., Dunn, J. F., Pike, A., & Plomin, R. (2003). Nonshared environmental influences on individual differences in early behavioral development: A monozygotic twin differences study. *Child Development*, *74*(3), 933-943.

Bedford, V. H., & Paula, S. A. (2001). Variations on sibling intimacy in old age. *Generations, 25*(2), 34-41.

Belsky, J. (1984). The determinants of parenting: A process model. *Child Development*, *55*(1) 83-96.

Brownell, C. A., Svetlova, M., Anderson, R., Nichols, S. R., & Drummond, J. (2013). Socialization of early prosocial behavior: Parents' talk about emotions is associated with sharing and helping in toddlers. *Infancy*, *18*(1), 91-119.

Bryant, B. K., & Crockenberg, S. B. (1980). Correlates and dimensions of prosocial behavior: A study of female siblings with their mothers. *Child Development*, *51*(2), 529-544.

Chernyak, N., & Kushnir, T. (2013). Giving preschoolers choice increases sharing behavior. *Psychological Science*, *24*(10), 1971-1979.

Chernyak, N., & Sobel, D. M. (2016). Equal but not always fair: Value-laden sharing in preschool-aged children. *Social Development*, *25*(2), 340-351.

Clark, K. E., & Ladd, G. W. (2000). Connectedness and autonomy support in parent-child relationships: Links to children's socioemotional orientation and peer relationships. *Developmental Psychology, 36*(4), 485–498.

Cowan, P.A., & Cowan, C.P. (2004). From family rela-tionships to peer rejection to antisocial behavior inmiddle childhood. In J.S. Kupersmidt, & K.A. Dodge,(Eds), Children's peer relations: From development to intervention (pp (pp. 159–177). Washington, DC: American Psychological Association.

Cox, M. J. (2010). Family systems and sibling relationships. *Child Development Perspectives*, *4*(2), 95-96.

Cox, M. J., & Paley, B. (1997). Families as systems. *Annual review of psychology*, *48*(1), 243-267.

Cox, M. J., & Paley, B. (2003). Understanding families as systems. *Current Directions in Psychological Science*, *12*(5), 193-196.

Cummings, E. M., Goeke-Morey, M. C., & Raymond, J. (2004). Fathers in family context: Effects of marital quality and marital conflict. In M. E. Lamb (Ed.), The role of the father in child development (4th ed., pp. 196-221). Hoboken, NJ: Wiley

Cummings, M., Merrilees, C. E., & George, M. W. (2010). Fathers, marriages, and families: Revisiting and updating the framework for fathering in family context. In *The role of the father in child development* (5th ed.) (pp. 154–176). Hoboken, NJ, US: John Wiley & Sons Inc.

Day, R. M., Fox, J. J., Shores, R. E., Lindeman, D. P., & Stowitschek, J. J. (1983). The social competence intervention project: Developing educational procedures for teaching social interaction skills to handicapped children. *Behavioral Disorders*, *8*(2), 120-127.

Dunn, J. (1988). *The beginnings of social understanding*. Cambridge, MA: Harvard University Press.

Dunn, J. (2002). Sibling relationships. In P. K. Smith & C. H. Hart (Eds.), *Blackwell handbooks of developmental psychology. Blackwell handbook of childhood social development* (pp. 223-237). Malden, MA: Blackwell Publishing.

Dunn, J., & Kendrick, C. (1982). *Siblings: Love, envy, & understanding.* Cambridge, MA: Harvard University Press.

Dunn, J., & Munn, P. (1986). Sibling quarrels and maternal intervention: Individual differences in understanding and aggression. *Journal of Child Psychology and Psychiatry*, *27*(5), 583-595.

Dunn, J., Slomkowski, C., & Beardsall, L. (1994). Sibling relationships from the preschool period through middle childhood and early adolescence. *Developmental Psychology*, *30*(3), 315-324.

Eisenberg, N., Fabes, R. A., & Spinrad, T. L. (2006). Prosocial development. In Damon, W. & Lerner, R. (Eds.), *Handbook of child psychology* (pp. 646-718). Hoboken, N.J. : John Wiley & Sons.

Eisenberg-Berg N., & Hand, M. (1979) The relationship of preschoolers' reasoning about prosocial moral conflicts to prosocial behavior. *Child Development, 50*(20), 356–363.

Erel, O., & Burman, B. (1995). Interrelatedness of marital relations and parent-child relations: a meta-analytic review. *Psychological Bulletin*, *118*(1), 108-132.

Furman, W., & Buhrmester, D. (1985). Children's perceptions of the personal relationships in their social networks. *Developmental Psychology, 21*(6), 1016-1024.

Hastings, P. D., Utendale, W. T., & Sullivan, C. (2007). The Socialization of Prosocial Development. In J. E. Grusec & P. D. Hastings (Eds.), *Handbook of socialization: Theory and research* (pp. 638-664). New York, NY, US: Guilford Press.

Heap, S. (2014). *Mine!* Somerville, MA: Candlewick Press.

Henkes, K. (2001). *Sheila Rae's peppermint stick.* New York: Greenwillow Books.

Hoffman, M. L. (1970). Moral development. In P. H. Mussen (Ed.), *Carmichael's manual of child development* (Vol. 2, pp. 261–359). New York: Wiley.

Jenkins, J., & Dunn, J. (2009). Siblings within families: Levels of analysis and patterns of influence. New directions for child and adolescent development, 2009(126), 79-93.

Katz, L. F., & Woodin, E. M. (2002). Hostility, hostile detachment, and conflict engagement in marriages: Effects on child and family functioning. *Child Development*, *73*(2), 636-652.

Kochanska, G. (1993). Toward a synthesis of parental socialization and child temperament in early development of conscience. *Child Development, 64*(2), 325–347.

Kochanska, G. (1994). Beyond cognition: Expanding the search for the early roots of internalization, and conscience. *Developmental Psychology, 30*(1), 20–22.

Krishnakumar, A., & Buehler, C. (2000). Interparental conflict and parenting behaviors: A meta-analytic review. *Family Relations*, *49*(1), 25-44.

Lerner, C. (2006). *When toddlers won't share with siblings.* Retrieved from https://www.parents.com/parenting/dynamics/sibling-rivalry/when-toddlers-wont-share-with-siblings/

Mayer, M. (2012). *I am sharing (reprint edition).* New York: Sterling Children's Books.

McCoy, K., Cummings, E. M., & Davies, P. T. (2009). Constructive and destructive marital conflict, emotional security and children's prosocial behavior. *Journal of Child Psychology and Psychiatry*, *50*(3), 270-279.

McHale, S. M., & Crouter, A. C. (1996). The family contexts of children's sibling relationships. In G. H. Brody (Ed.), *Advances in applied developmental psychology, 10. Sibling relationships: Their causes and consequences* (pp. 173-195). Westport, CT, US: Ablex Publishing.

Minuchin, P. (1985). Families and individual development: Provocations from the field of family therapy. *Child Development*, *56*(2), 289–302.

Minuchin, P. (1988). Relationships within the family: A systems perspective on development. In R. A. Hinde & J. Stevenson-Hinde (Eds.), *Relationships within families: Mutual influences*, (7-26).Oxford: Claredon Press.

Nelson, J. A., O'Brien, M., Blankson, A. N., Calkins, S. D., & Keane, S. P. (2009). Family stress and parental responses to children's negative emotions: Tests of the spillover, crossover, and compensatory hypotheses. *Journal of Family Psychology*, *23*(5), 671-679.

Richardson, P. (1983). Women's perceptions of change in relationships shared with children during pregnancy. *Maternal-Child Nursing Journal*, *12*(2), 75-88.

Sameroff, A. (1994). Developmental systems and family functioning. In R. D. Parke & S. G. Kellam (Eds.), *Exploring family relationships with other social contexts. Family research consortium: Advances in family research* (199–214). Hillsdale, NJ: Erlbaum.

Schwarz, N. (2017). *10 Sharing rules every sibling should know*. Retrieved from https://imperfectfamilies.com/10-sharing-rules-every-sibling-know/

Staub, E. (1979). Positive social behavior and morality: Vol. 2. *Socialization and Development*. New York: Academic Press.

Steinglass, P. (1987). A systems view of family interaction and psychopathology. In T. Jacob (Ed.), *Family interaction and psychopathology* (25-65). Boston, MA: Springer.

Tiedemann, G. L., & Johnston, C. (1992). Evaluation of a parent training program to promote sharing between young siblings. *Behavior Therapy*, *23*(2), 299-318.

Sroufe, L. A., Egeland, B., Carlson, E., & Collins, W. A. (2005). Placing Early Attachment Experiences in Developmental Context: The Minnesota Longitudinal Study. In K. E. Grossmann, K. Grossmann, & E. Waters (Eds.), *Attachment from infancy to adulthood: The major longitudinal studies* (pp. 48-70). New York, NY, US: Guilford Publications.

Strain, P. S. (1985). Programmatic research on peers as intervention agents for socially isolate classmates. In *Children's peer relations: Issues in assessment and intervention* (pp. 193-205). Springer, New York, NY.

Thompson, R. A., Meyer, S., & McGinley, M. (2006). Understanding values in relationships: The development of conscience. In M. Killen & J. G. Smetana (Eds.), *Handbook of moral development* (pp. 267-297). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.

U.S. Census Bureau. (2009). America's families and living arrangements: 2009. Retrieved from http://www.census.gov/population/www/socd

van Berkel, S. R., Groeneveld, M. G., Mesman, J., Endendijk, J. J., Hallers-Haalboom, E. T., van der Pol, L. D., & Bakermans-Kranenburg, M. J. (2015). Parental sensitivity towards toddlers and infant siblings predicting toddler sharing and compliance. *Journal of Child and Family Studies*, *24*(8), 2270-2279.

Walz, B. L., & Rich, O. J. (1983). Maternal tasks of taking-on a second child in the postpartum period. *Maternal-Child Nursing Journal 12*(3), 185-216.

Yardi Schoenebeck, S. (2013, June). The Secret Life of Online Moms: Anonymity and Disinhibition on YouBeMom. com. In *ICWSM*.

Young, P. C., Boyle, K., & Colletti, R. B. (1983). Maternal reaction to the birth of a second child: Another side of sibling rivalry. *Child Psychiatry & Human Development*, *14*(1), 43-48.

Zukow, P. G. (1989). Sibling interaction across cultures: theoretical and methodological issues. NY, New York: Springer-Verlag.

CHAPTER II

(STUDY 1) SHARING BEHAVIORS AND EARLY CONSCIENCE DEVELOPMENT: A FOCUS ON SIBLINGS

Sibling relationships are both important and unique. In early childhood, the sibling relationship is emotionally intimate, intense, and is often characterized by ambivalence, with high levels of rivalry and conflict as well as emotional warmth (Furman & Buhrmester, 1985; Dunn, 1988; Dunn, 2002). Young siblings also spend a large portion of time together, so much so that by middle childhood, they often spend more time with each other than with their parents (McHale & Crouter, 1996). This powerful bond between two highly familiar children provides distinctive opportunities for development not provided by other close or familial relationships (Jenkins & Dunn, 2009), and fosters children's social capabilities (Dunn & Munn, 1986; Zukow, 1989). Several studies have shown stability in prosocial behaviors for both siblings in the relationship (Abramovitch, Corter, Pepler, & Stanhope, 1986; Dunn & Munn, 1986). Less is known about how siblings influence some aspects of early moral development, such as children's conscience, i.e., the internalization of moral standards of what is right and wrong. Sibling sharing may provide children with opportunities to understand others and the rules that govern social behavior, e.g., it is "right' to share and "wrong" not to share. Because sharing is an especially other-oriented behavior (Eisenberg-Berg & Hand, 1979) that requires both the promotion of other-focused positive behaviors and the inhibition of self-focused negative behaviors, an

examination of sharing between siblings may provide insights into the development of young children's conscience. Therefore, the primary goal of this study was to examine sharing behaviors between toddlers and their older siblings when toddlers were 18, 24 and 36 months of age, and relations between sharing and conscience development for both siblings.

Siblings and Prosocial Development

The distinct nature of sibling relationships, in terms of both quality and frequency, may help account for its important role in the development of children's social behaviors and social understanding, including prosocial behaviors (Dunn & Munn, 1986; Eisenberg, Fabes, & Spinrad, 2006). Children as young as one to two years old demonstrate prosocial behavior (e.g., helping, giving toys) toward their siblings (Dunn & Kendrick, 1982). Indeed, the sibling relationship appears to be a unique context for the development of prosocial behavior (Dunn & Munn, 1986), such that children in supportive sibling relationships may focus more on others' needs and feelings and be less preoccupied with their own negative emotions, which may promote prosocial understanding (Sawyer et al., 2002). Further, cooperative play and cooperative social fantasy play were frequently displayed by young children with very friendly older siblings (Dunn, 1988). Therefore, it seems likely that some dimensions of prosocial behavior are specifically influenced by interactions with siblings that are independent of the parent-child relationship.

Prior work has found that older and younger siblings' prosocial behaviors (e.g., cooperation, helping, giving or sharing an object) are often correlated in early childhood (Abramovitch, Corter, Pepler, & Stanhope, 1986; Dunn & Munn, 1986; Kojima, 2000). Kojima (2000) found that older (2-8 years) and younger (1-4 years) siblings' prosocial behaviors were positively related, indicating reciprocity in the sibling relationship. In a study of older (6-9 years)

and younger (5 years) siblings, Abramovitch and colleagues (1986) also found that frequent prosocial behavior by one sibling was associated with frequent prosocial behavior by the other sibling. In contrast, in a longitudinal study of young siblings, Dunn and Munn (1986) found that though 18-month-old younger siblings were capable of comforting, sharing, and helping their siblings, there was little relation between older and younger siblings' prosocial behaviors. Younger siblings' cooperative behavior, however, was positively correlated with older siblings' giving and cooperative behaviors six months later when the younger sibling was 24 months old, indicating that the reciprocity of prosocial behavior in sibling relationships may emerge with age as children mature and become active contributors to interaction dynamics. These results suggest that though prosocial behavior between older and younger siblings is related in early childhood, younger siblings may learn prosocial behaviors from their older siblings and reciprocate in kind as they develop. Much of the previous work, however, has measured prosocial behavior as a whole, combining multiple components of prosocial behavior (e.g., cooperation, sharing, helping, teaching) together. It is, therefore, unclear whether there is developing reciprocity in specific behaviors, such as sharing, over time. The first aim was to examine the stability of individual differences in older and younger siblings sharing in early childhood (18, 24, and 36 months). We hypothesized that both older and younger siblings would display stability of individual differences in their sibling sharing behaviors over time.

Ordinal position in the family structure may also influence the chances and expectations for prosocial behavior in young children (Eisenberg, Fabes, & Spinrad, 2006). There is most often an age gap between sibling dyads, and as such, these relationships involve two children with asymmetry between their skills and competencies (Hughes, McHarg, & White, 2018; Stoneman, Brody & MacKinnon, 1984). Consequently, younger siblings often mimic behaviors

displayed by their older sibling, making it plausible that younger siblings develop prosocial behavior through goal alignment or contagion (Azmitia & Hesser, 1993; McHale, Updegraff, & Whiteman, 2012; Hughes, McHarg, & White, 2018). In early childhood (2.5-6 years), older siblings were more likely to display prosocial behaviors toward their younger siblings (Dunn & Munn, 1986) and tend to play a more dominant role in dyadic interactions or assume teaching positions with their younger siblings as they age into middle childhood (6-9 years) (Abramovitch, Corter, Pepler, & Stanhope, 1986; Brody, Stoneman, MacKinnon, & MacKinnon, 1985). In a reciprocal role, toddler-aged younger siblings (18-24 months) were more likely to exhibit greater rates of acquiescence and modeling (Dunn & Munn, 1986) and by middle childhood, female younger siblings often assume learner roles with their older siblings (Brody, Stoneman, MacKinnon, & MacKinnon, 1985). Abramovitch and colleagues (Abramovitch et al., 1986) found that seven-year-old firstborns were significantly more likely to act prosocially than their five-year-old secondborn siblings, even when controlling for age, though secondborns were more likely to respond positively to their older siblings' prosocial behaviors. Further, White and colleagues (White, Ensor, Marks, Jacobs, & Hughes, 2014) examined the predictive links among children's sharing with siblings, friends, and peers from ages 3 and 6 years and found that older siblings shared more than younger siblings at the first timepoint, but by age 6, younger children shared to the same degree as their older sibling. Such research indicates that in early childhood, younger siblings may be too young to display prosocial behaviors on their own, but learn from interactions with their older sibling and reciprocate as they age. As such, our second aim was to ascertain if there were bidirectional relations between older and younger siblings' sharing behaviors over time. We hypothesized that there would be reciprocation between older and

younger siblings' sharing in early childhood and that these relations would become stronger over time.

Sharing between Young Siblings

Early work by Damon (1975; 1980) on distributive justice (i.e., sharing and distribution) indicates that sharing is a concept that children begin to grasp very early on, with indications that even very young children (2 years and older) understand rudimentary concepts of sharing. Damon suggested that children follow a developmental progression of moral judgments. In early childhood, concepts of distribution are self-focused and center on the child's own desires. By elementary age, however, children begin to look outward and center their judgments on equality; focusing on the idea that fairness requires equal distribution for everyone.

Young children have a relatively sophisticated understanding of fairness and sharing. For instance, in a study of 19- and 21-month-olds, Sloane, Baillargeon, and Premack (2012) presented the children with third-party tasks, in which the child watched an experimenter distribute goods between two recipients. Whereas 19-month-olds expected equality as opposed to inequality when an experimenter divided two items, 21-month-old toddlers expected that two people who both worked to complete a task (i.e., putting away toys) would be equally rewarded for their efforts (i.e., given a sticker) by the experimenter, indicating that context-specific expectations regarding fairness may develop during the second year of life. Further work by Baumard, Mascaro, and Chevallier (2012) indicated that by age 3, children not only expected fairness and equality, but could also apply those concepts when needed; they were able to take an individual's contributions into account and distribute tokens (i.e., cookies) fairly when asked by the experimenter (Baumard, Mascaro, & Chevallier; 2012).

Despite this understanding of equality and fairness, young children often have a self-focused bias regarding resource allocation which can create a gap between what children believe about standards of fairness for others and how children practically engage in sharing behavior (Birch & Billman, 1986; Eisenberg-Berg & Hand, 1979; Smith, Blake, & Harris, 2013). In one study, 3- to 8-year olds endorsed sharing equality for both themselves and others, but failed to engage personally in equal sharing behaviors until ages 7 to 8 (Smith, Blake, and Harris, 2013). When reflecting on predicted sharing (i.e., how they thought they would share and how they thought others would share with them) versus actual sharing behavior, younger children focused on their own desires, whereas older children discussed social norms and the concept of fairness, thereby lending some support for traditional views of distributive justice. Further, unlike other prosocial behaviors like helping or cooperation, Eisenberg-Berg and Hand (1979) theorized that spontaneous sharing is uniquely other-oriented because to share often costs the child personal resources and requires the child to independently and intentionally decide to share with another person as opposed to simply complying with another's request. Therefore, sharing requires two distinct, yet interrelated, components: (a) the *promotion* of other-focused positive behaviors (e.g., cooperation to ensure equality) and (b) the *inhibition* of self-focused negative behaviors (e.g., taking desired resources regardless of equality).

The inhibition of self-focused behaviors appears to be particularly difficult for young children when in the presence of an attractive resource. Compared to older children, young children more often choose to allocate appealing prizes, such as stickers, to favor themselves in standardized sharing paradigms (Benenson, Pascoe & Radmore, 2007; Blake & Rand, 2010). Because previous work asked children to distribute resources with an experimenter, hypothetical peer, or inanimate object (e.g., toy dog or a puppet) as a means of assessing sharing (e.g., Blake

& McAuliffe, 2011; Blasi, 1983; Chernyak & Kushnir, 2013; Chernyak & Sobel, 2016; Smith, Blake & Harris, 2013), it remains unclear how children share specifically with their sibling. Children with siblings share from an early age, but not necessarily with highly familiar others (Hastings, Utendale, & Sullivan, 2007). It is uncertain what influence the presence of an attractive resource, a condition that research suggests may increase self-focused behavior, would have on sharing within the sibling context as many studies have utilized free-play paradigms to assess sharing in siblings (e.g., White et al., 2014).

Few sibling sharing tasks that utilize an attractive resource are available. In one of the only studies to examine sibling sharing in a standardized paradigm, specifically between Dutch preschool children (2.5-4.6 years) and their younger siblings (12-24 months), Van Berkel, van der Pol, Groeneveld, Hallers-Haalboom, Endendijk, and Bakermans-Kranenburg (2015) gave older siblings an attractive resource of a box of raisins (a common treat in the Netherlands) and were instructed to share with their younger siblings. The number of raisins shared within the first minute (without parental interference or encouragement by the parent) were counted and if the older child took a raisin back from the younger sibling, that amount was subtracted from the total score. Preschool siblings' sharing was stable one year later and increased with age, but was not related to other sibling characteristics such as gender or children's externalizing behavior. Because the researchers did not include the younger siblings' sharing behaviors, reciprocity of sharing between older and younger siblings and how this develops over time could not be examined. Further, common food resources such as raisins may not increase the desire to act in self-focused manner as would other more valuable resources such as prizes or gifts. Thus, there is a clear need for longitudinal investigations into the relations between both older and younger siblings' sharing behaviors and their influence on conscience development in early childhood,

using sharing paradigms that utilize an attractive resource and balance the focus on the self with focus on the other. In the current study, we used a novel means of assessing reciprocity in sibling sharing with a Fishing Game, in which children were instructed to take turns catching fish in order to win prizes. Further, this task was conducted when toddlers were 18, 24, and 36 months so there were repeated measures of sibling sharing for older and young siblings across a significant developmental period in which sharing and social understanding develop.

Siblings and Conscience Development

Early childhood is a time of increased social and moral understanding (Turiel, 2006; Warneken & Tomasello, 2006) and by the age of 2 or 3 years, young children display increased awareness of fairness, empathy, and sympathy for others (Hay & Cook, 2007; Sloane, Baillargeon & Premack; 2012; Warneken & Tomasello, 2009). Children of this age begin to understand how to manipulate situations and upset others, including their siblings (Dunn, 1988), and sibling relationship quality predicts certain aspects of moral development. For example, older siblings (6 to 8 years) with friendlier, more positive relationships with their younger siblings had higher moral orientation scores (Dunn, Brown, & Maguire, 1995). It follows that sibling sharing, an experience that utilizes both the relationship between the two siblings and their understanding and implementation of fairness, may also be important for other aspects of moral development, such as the internalization of conscience, the mechanism internalized by children to control impulses or desires, is a necessary component of moral development (Kochanska, 1993, 1994; Thompson, Mayer, & McGinley, 2006). Children's early conscience has been proposed to be the single most influential factor for the promotion of adaptive functioning and the inhibition of destructive behavior or antisocial behavior problems (Kochanska, Koenig, Barry, Kim & Yoon, 2010). Conscience consists of both affective

discomfort (i.e., emotional reactions to acts of transgression) and moral regulation (i.e., the need to control antisocial and destructive tendencies within oneself; Kochanska, 1993). Most prior work on conscience development in early childhood has focused on parent-child relationships, and found that conscience is promoted by sensitive, warm parenting that allows for children's autonomy and avoids power-assertion (e.g., Grusec & Goodnow, 1994; Hoffman, 1983; Kochanska, 1997; Kochanska & Thompson, 1997), through recurrent shared discourse about children's emotional experience and the causes of feelings during personally meaningful social situations (Brown & Dunn, 1996; Dunn, Brown, & Maguire, 1995; Kochanksa, 1997; Laible, 2004), internalization of both parents' rules (Kochanska et al., 2010), and early attachment security (Kochanska, 1995; Kochanska et al., 2004). Because most children grow up with siblings, spend significant time with their siblings, and interact in a manner that may contribute to early social understanding, it is puzzling why sibling socialization has not been considered in the development of conscience. Thus, the final aim of the current study was to examine the bidirectional and reciprocal relations between sibling sharing for both older and younger siblings and conscience development over early childhood from 18 to 36 months. We hypothesized that there would be reciprocal relations between sibling sharing for both older and younger siblings and their respective conscience development that increased in strength over time. Throughout the study, we refer to the firstborns as the older siblings and the secondborns as the younger siblings.

Method

Participants

Participants for this study were 145 families, comprised of mothers, fathers, older siblings, and younger siblings participating in a longitudinal study of changes in child and family

functioning during early childhood. Families had previously participated in a longitudinal investigation of children's adjustment and family relationship functioning following the birth of a sibling (Volling et al., 2017) which consisted home visits, often done first, and lab visits which were generally conducted 2 – 4 weeks later. Families were recontacted to participate in follow-up assessments, which consisted of the same format as the original investigation, when the younger siblings were 18, 24, and 36 months of age. The initial study recruited 241 two-parent families expecting their second infant, and included five timepoints of data collection (prenatal in the last trimester of pregnancy with the second child) and 1, 4, 8, and 12 months after the birth. By the 12 month timepoint, only 203 families had continued to participate. The 203 families who participated in the fifth timepoint (when the younger siblings were 12 months of age) of the initial study were recontacted to participate in the follow-up study. Of these, 155 families participated in the 18-month follow-up, 140 participated at 24 months, and 135 at 36 months. Attrition was usually due to one of the following reasons: families moved out of the area, they could not be reached, or they declined to participate. Parents who participated in the follow-up phase starting at 18 months, did not differ demographically from the 241 families initially recruited for the first phase of the longitudinal investigation.

Of the 155 families who provided data at the 18-month timepoint, 145 families participated in the sibling sharing task which was the final task during the observational lab visit. Because the lab visit was generally conducted after the home visit, some families did not participate in the second visit. Families who did not participate in the sibling sharing task at the 18-month timepoint had significantly more older siblings who were boys than the families who did participate in the sibling sharing task χ^2 (1, N = 145) = 5.67, $p < .05$, but otherwise did not differ demographically (i.e., family income, parents' race/ethnicity, years of marriage, parent's

age, or younger siblings' gender). At 24 months, 116 families participated in the sibling sharing task in the study and at 36 months, 106 families participated in the sibling sharing task. Attrition for the sibling sharing task was generally due to inability to make contact, because families did not have enough time to continue further participation in the study, video playback error, or because the sibling sharing task was the last task of the lab visit, families occasionally left before the sibling sharing task due to children's fatigue or emotional state.

At the 18-month timepoint, families were primarily European American (86.5% of mothers; 86.5% of fathers) with 13.6% of mothers and fathers representing other racial and ethnic groups. The mean age of fathers was 34.91 years (*SD* = 4.65) and the mean age of mothers was 34.03 years (*SD* =3.84). Most families earned $60,000 - $99,999 (38.7%), with most mothers (87.1%) and fathers (79.4%) having a Bachelor's degree or higher. The mean age of the older siblings when the younger siblings were 18 months was 49.34 months (*SD*= 10.28); 43.9% of the older siblings and 54.8% of the younger siblings were boys. The mean age space between the siblings was 31 months (*SD* = 10.00). Thirty-six of the sibling dyads were both boys, 37 were both girls, 50 sibling dyads were comprised of an older sister and a younger brother, and 32 were comprised of an older brother and a younger sister. We ran repeated measures ANOVAs to investigate if the composition of the sibling dyad affected older and younger siblings' sharing. Results indicated that there were no significant mean differences between same-sex and different-sex dyads for older siblings' sharing ($F(2, 194) = 3.04$, $p = 0.65$) or younger siblings' sharing ($F(2, 194) = .394$, $p = 0.68$).

Procedures

At each timepoint, parents completed questionnaires on child, parent, and family functioning and families participated in an initial home visit, followed approximately two to four

weeks later by a visit to the university laboratory for further assessments of children's self-regulation, social understanding, and sibling interaction. For the current analyses, information was obtained from mothers' and fathers' reports of conscience development for the older and younger siblings at 18, 24, and 36 months, as well as observational data from the lab-based Fishing Game task to assess older and younger siblings' sharing at each of the three timepoints. Parents completed an informed consent, were informed of confidentiality, and were paid for $100 for participation at each of the timepoints. The study was approved by the University's Institutional Review Board-Medical School.

Measures

Sibling sharing in the Fishing Game. During the 18-, 24-, and 36-month visits, both siblings were observed during a Fishing Game task. Children were asked to take turns catching ten fish, each with a metal tip by the mouth, with a single magnetic fishing rod from an inflatable pool, and were told they would win one prize for every fish caught. One parent was present in the room and was instructed to sit nearby, fill out questionnaires, and not intervene in the task unless they deemed it necessary (e.g., to intervene in conflicts or prevent aggression). The experimenter was also present and provided reminders when necessary (e.g., physical struggles over the pole). Children were given as much time as needed to complete the task. At the end of the task, the experimenter counted how many fish each sibling had caught. Both children were given five prizes, regardless of the number caught. The task started with the experimenter handing the fishing pole to the older sibling and instructing both siblings to "take turns" and ended when all ten fish had been caught from the pool; average length was 4 minutes and 49 seconds (SD = 133 seconds). All sessions were video-recorded and later coded. The Fishing

Game was created for the current study to assess sibling sharing when an attractive resource was present, as a way to challenge the self- versus other-focus of early moral development.

Fishing Game sharing task coding. The global coding system was designed specifically for this study and measured both self-focused and other-focused behaviors during the sharing task. The first author and a team of eight trained undergraduate students watched the Fishing Game, several times if necessary, and used global codes (i.e., one code for each behavior for the entire task). Inter-rater reliability was assessed using two-way mixed, consistency, single-measures intraclass correlations (ICC) and Cohen's kappa coefficients (κ). *Cooperation* was coded on a 7 point Likert scale for each sibling (1 = *no evidence of cooperation during task* to 7 = *highly cooperative interaction for entire task*), and assessed the extent to which the child was involved with cooperative or helping behaviors during the task (e.g., helping put the fish on the hook for the other sibling, making it easier for the other sibling to catch the fish by placing the fish closer, offering assistance: ICC for older sibling = .80 at 18 months, .83 at 24 months, and .74 at 36 months; ICC for younger sibling = .75 at 18 months, .67 at 24 months, and .67 at 36 months).

Turn-taking behaviors were coded on a seven-point Likert scale for each sibling [1 = *No evidence of turn-taking during the task due to active attempts to keep pole for self, disinterest in task, or no option to take turns (e.g.,* actively trying to keep the pole for themselves) to 7 = *turn-taking present for entire task with no conflict* (e.g., at end of own turn, gives up the pole willingly and without prompting)], and measured the extent to which each child was involved in turn-taking behaviors throughout the task (ICC for older sibling = .80 at 18 months, .85 at 24 months, and .74 at 36 months; ICC for younger sibling = .80 at 18 months, .71 at 24 months, and .80 at 36 months).

Older sibling management of younger sibling was coded on a seven-point Likert scale for the older sibling only (1 = *no evidence of management during task* to 7 = *high levels of management for entire task*). This code assessed the extent to which the older sibling attempted to dictate the activity of the younger sibling in some way (e.g., older sibling requests or suggests that younger sibling perform or not perform a behavior, or perform an activity in a certain way, and younger sibling responds: ICC for older sibling = .76 at 18 months, .76 at 24 months, and .69 at 36 months).

Cheating was coded based on whether the child had more than five fish in their basket at the end of the task, with more than five fish indicating cheating, given that if siblings had shared and the fish were distributed equally, each sibling should end the task with five of the ten fish. Each child received a cheating score based on how many fish above five were in their basket at the completion of the game: 0 = *five or less fish, no cheating*; 1 = *six fish, cheating; 2 = 7 fish, cheating; 3 = 8 fish, cheating; 4 = 9 fish, cheating, and 5 = 10 fish, cheating*: κ for older sibling = .85 at 18 months, .82 at 24 months, and .90 at 36 months; κ for younger sibling = .94 at 18 months, .77 at 24 months, and .87 at 36 months).

Stealing was coded as a count based on whether there was any evidence of stealing fish during the entire task from the other sibling during the task or acquiring fish through another means other than through turn-taking (e.g., taking fish directly out of the pool with hands and placing in their basket, taking fish out of the other sibling's basket and putting it in their own basket). Scoring reflected how many of the fish in the child's basket at the end of the task had been stolen.; 0= *no stolen fish in basket* to 10 = *ten stolen fish in basket:* κ for older sibling = .80 at 18 months, .52 at 24 months, and .57 at 36 months; κ for younger sibling = .65 at 18 months, .54 at 24 months, and .77 at 36 months).

Experimenter intervention was also coded to take into consideration if, and how many times, the experimenter had to remind the siblings to take turns throughout the task, 18 months: $M = 0.76$, $SD = 1.57$; 24 months: $M = 0.43$, $SD = 0.89$; 36 months: $M = 0.18$, $SD = 0.60$ (ICC = .98 at 18 months, .91 at 24 months, and .98 at 36 months).

To address the hypothesis that older siblings played a more dominant role in their sharing interactions, we ran paired samples *t*-tests to compare cooperation and helping, turn-taking, cheating and stealing for the older (OS) and younger (YS) siblings. There were significant differences in cooperation at 18 months $t(144)=9.06$, $p < 0.001$, ($M_{OS}= 3.50$, $SD_{OS} = 1.76$; $M_{YS}=1.19$, $SD_{YS} = 0.50$) 24 months $t(123) = 9.76$, $p < 0.001$, ($M_{OS}= 3.73$, $SD_{OS} = 2.13$; $M_{YS} = 1.59$, $SD_{YS} =1.00$) and 36 months $t(115) = 6.81$, $p < 0.001$ ($M_{OS}= 2.57$, $SD_{OS} = 1.59$; $M_{YS} = 1.56$, $SD_{YS} = 0.73$); turn-taking at 18 months $t(144)=11.66$, $p < 0.001$ ($M_{OS} = 3.21$, $SD_{OS} = 2.00$; $M_{YS}=1.54$, $SD_{YS} = 0.87$); 24 months $t(123)= 15.73$, $p < 0.001$ ($M_{OS} = 5.90$, $SD_{OS} = 1.92$; $M_{YS} = 2.37$, $SD_{YS} = 1.06$); and 36 months $t(115) = 7.33$, $p < 0.001$ ($M_{OS} = 5.82$, $SD_{OS} = 1.51$; $M_{YS} = 4.75$, $SD_{YS} = 1.73$), and cheating at 18 months $t(144)=10.63$, $p < 0.001$ ($M_{OS} = 2.17$, $SD_{OS} = 2.08$; $M_{YS} = 0.42$, $SD_{YS} = 0.62$) and 24 months $t(123)= 5.60$, $p < 0.001$, ($M_{OS} = 1.10$, $SD_{OS} = 1.70$; $M_{YS} = 0.27$, $SD_{YS} = 0.55$).

Children's conscience development. Both mothers and fathers completed the *My Child* Questionnaire (Kochanska, DeVet, Goldman, Murray, & Putnam, 1994) at 18, 24, and 36 months for both older and younger siblings in order to assess different dimensions of children's conscience. The questionnaire consisted of 88 items rated on a seven-point scale (1= extremely untrue to 7 = extremely true) and yielded eight subscales: (a) *Guilt, Remorse/Other Emotional Reactions After Transgression* (e.g., "child likely to feel responsible whenever anything goes wrong"; $\alpha = .83$-$.88$); (b) *Concern Over Good Feelings With Parent After Wrongdoing* (e.g.

"after having done something naughty, child asks to be forgiven"; α= .85-.86); (c) *Confession* (e.g., "child may confess to doing something naughty even if unlikely to be found out"; α= .73-.83), (d) *Apology* (e.g., "child will spontaneously say sorry after having done something wrong"; α= .83- .87); (e), *Reparation/Amends* (e.g., "child is eager to make amends for doing something naughty"; α= .79- .84), (f) *Corrections Occasioned By Others' Transgressions* (e.g., "child is likely to scold another child who violated a house rule"; α= .83- .87); (g) *Internalized Conduct* (e.g., "child will spontaneously pick up toys, even without being asked,"; α= .88-.89); and (h) *Empathic, Prosocial Response to Another's Distress* (e.g., "child will try to comfort or reassure another in distress"; α=.80 - .84). These eight subscales were further composited into two larger indicators of conscience as suggested by Kochanska and colleagues (1994): *affective discomfort* (i.e., guilt, apology, concern about good feelings, and empathy) and *active moral regulation* (i.e., confession, reparation/amends, internalized conduct, and concern about other's wrongdoing). These indicators capture, respectively, the moral emotion and moral conduct dimensions of conscience. The correlations between mothers' and fathers' reports of *older sibling affective discomfort*, 18 months: $r = .46$, $p < .001$; 24 months: $r = .41$, $p < .001$; 36 months: $r = .54$, $p < .001$, *older sibling moral regulation*, 18 months: $r = .40$, $p < .001$; 24 months: $r = .48$, $p < .001$; 36 months: $r = .46$, $p < .001$, *younger sibling affective discomfort*, 18 months: $r = .33$, $p < .001$; 24 months: $r = .45$, $p < .001$; 36 months: $r = .41$, $p < .001$, and *younger sibling moral regulation*, 18 months: $r = .41$, $p < .001$; 24 months: $r = .48$, $p < .001$; 36 months: $r = .38$, $p < .001$ were significant and were averaged across parents to create more robust composites and reduce single reporter bias.

To address the hypothesis that older siblings might have more advanced conscience development, we ran paired sample t-tests to affective discomfort and moral regulation for the

older and younger sibling. There were significant differences in affective discomfort at 18 months $t(142) = 18.67$, $p < 0.001$, (M_{OS}= 4.64, SD_{OS} = 0.55 ; M_{YS}= 3.71, SD_{YS} = 0.54); 24 months $t(116) = 14.28$, $p < 0.001$, (M_{OS}= 4.70, SD_{OS} = 0.54; M_{YS} = 3.85, SD_{YS} = 0.61) and 36 months $t(108) = 8.83$, $p < 0.001$ (M_{OS}= 4.81, SD_{OS} = 0.59; M_{YS} = 4.30, SD_{YS} = 0.53) and moral regulation at 18 months $t(142)=18.95$, $p < 0.001$ (M_{OS} = 4.52, SD_{OS} = 0.50; M_{YS}=3.57, SD_{YS} = 0.55); 24 months $t(116)= 12.85$, $p < 0.001$ (M_{OS} = 4.54, SD_{OS} = 0.53; M_{YS} = 3.78, SD_{YS} = 0.58); and 36 months $t(108) = 9.40$, $p < 0.001$ (M_{OS} = 4.56, SD_{OS} = 0.53; M_{YS} = 3.97, SD_{YS} = .59).

Descriptive statistics and correlations for study variables are presented in Table 2.1.

Data Reduction

Sibling sharing composites. Correlations among the variables coded from the Fishing Game indicated other-focused sharing behaviors (OS: Cooperation and Helping, Turn-Taking, and Older Sibling Management of the Younger Sibling; YS: Cooperation and Helping, Turn-Taking) and self-focused sharing behaviors (OS & YS: Cheating and Stealing) tended to be significantly correlated together. Therefore, two sharing composites, one for each sibling were further created from the different sibling sharing behavioral codes. To create these composites, we first reverse coded cheating (5 = *five or less fish, no cheating*; 4 = *six fish, cheating; 3 = 7 fish, cheating; 2 = 8 fish, cheating; 1 = 9 fish, cheating, and 0 = 10 fish)* and stealing (10 = *no stolen fish in basket* to 0 = *ten stolen fish in basket*). We then standardized each code and then summed older siblings' *sharing* (i.e., cooperation, turn-taking, older sibling management of younger sibling, reverse coded cheating and reverse coded stealing) and *younger siblings' sharing* (i.e., cooperation, turn-taking, reverse coded cheating and reverse coded stealing). High scores indicated higher levels of sharing with little evidence of cheating or stealing.

Control variables. Several control variables were also included in analyses based on

their prior associations with sibling sharing behaviors and conscience development. Preliminary analyses indicated that older siblings' age was significantly correlated with older siblings' sharing at 18 months $r = 0$ .40, $p < .01$, 24 months $r = .36$, $p < .01$, and 36 months $r = 0.30$, $p <$ .01, younger siblings' sharing at 36 months $r = 0.22$, $p < .05$, and parent reports of older siblings' affective discomfort at 18 months $r = 0.27$, $p < .01$ and 36 months $r = 0.20$, $p < .05$. Older siblings' gender was significantly correlated with older siblings' sharing at 18 months $r = -0.33$, $p < .01$, 24 months $r = -0.19$, $p < .05$, and 36 months $r = -0.32$, $p < .01$, and parent reports of older siblings' affective discomfort at 18 months $r = -0.19$, $p < .05$, 24 months $r = -0.19$, $p < .05$ and 36 months $r = -0.21$, $p < .05$. Younger's sibling age was significantly correlated with parent reports of younger siblings' affective discomfort at 24 months $r = -0.24$, $p < .01$. Finally, the experimenter tally at 36 months was significantly correlated with younger siblings' sharing at 36 months $r = -0.28$, $p < .01$. Therefore, these variables were added into the models as covariates. Because the study timepoints were based on younger siblings' age, we did not add younger siblings' age as a separate covariate.

Results

Data Analysis Overview

After examining correlations among study variables, we built path analyses in steps (i.e. nested) to test for the longitudinal relations among older and younger siblings' sharing behaviors and conscience development. The analysis and model building was conducted in two stages in order to address the study aims. Figure 2.1 shows the proposed relations among variables in stage one. To examine the stability of individual differences in older and younger siblings sharing in early childhood (Aim 1) and to ascertain if there were bidirectional relations between older and younger siblings' sharing behaviors over time (Aim 2), we first established the best-

fitting model that estimates the paths between older and younger siblings' sharing behaviors. Because several studies have shown stable individual differences in prosocial behaviors over time (Abramovitch, Corter, Pepler, & Stanhope, 1986; Dunn & Munn, 1986), the first model estimated stability paths (autoregressive paths) between the repeated measures of older and younger siblings' sharing; Model 1, *sharing stability model*. This model assumed within-variable stability over time and reciprocal relations between older and younger siblings' sharing within-time point. Because older siblings often play a more dominant role (teacher, helper, manager) in sibling interactions (Abramovitch et al., 1986; Azmitia & Hesser, 1993; Brody et al., 1985; Dunn & Munn, 1986; Stoneman, Brody, & MacKinnon, 1984), the second model ascertained if older siblings' sharing behaviors affected the younger siblings' sharing behaviors over time (Model 2; *older sibling influence model*). The final model, *the bidirectional model*, tested the full cross-lag paths by adding the effects of younger siblings' sharing on older siblings' sharing to Model 2.

Once the best-fitting model describing bidirectional and reciprocal sibling influence was established, the second stage of analyses built upon this model and added the concurrent and cross-lagged paths between sibling sharing and each siblings' conscience development at 18, 24, and 36 months, which is depicted in Figure 2.2. Here, the first paths added were the autoregressive paths for older and younger siblings' conscience (i.e., affective discomfort and moral regulation) across 18, 24, and 36 months (*conscience stability*). The next model, *sharing predicts conscience,* added paths between sharing at one time to conscience at the following time for both siblings, whereas the alternative model, *conscience predicts sharing*, estimated paths between conscience at one point in time predicting sharing at the subsequent time. Finally, the full model including both directional paths between sharing and conscience for both siblings was tested, the *dual development* model.

Path analyses were conducted using Mplus (version 7.4; Muthén & Muthén, 1998-2017) to estimate the models. All the outcome variables were deemed continuous so we used the maximum likelihood (ML) estimator. No indicators were skewed or kurtotic enough to affect model fit or require transformations. Model fit was evaluated using multiple fit indices, including the root mean squared error of approximation (RMSEA; best < .05), comparative fit index (CFI; best > .95), the Tucker-Lewis Index (TLI, best > .95), as suggested by Kline (2016). To compare nested models for model fit, we used both the Akaike Information Criterion (AIC; Akaike, 1974) and the chi-square difference statistic ($\Delta\chi^2$), with the smaller AIC preferred. If the equal-fit hypothesis for chi-square statistic is rejected, this supports the retention of newly added paths to the nested model (Kline, 2016). The chi-square test of significance is reported but was not used to assess model fit because it has been shown to be highly sensitive to sample size (Kline, 2011).

Missing data. Older and younger siblings' sharing had approximately 20% and 2% missing data at 24 and 36 months, respectively. Parent reports of older siblings' affective discomfort and moral regulation had approximately 18% and 24% missing data at 24 months and 36 months respectively. Parent reports of younger sibling affective discomfort and moral regulation, however, had approximately 19% and 24% missing data at 24 months and 36 months respectively. Little's Missing Completely At Random (MCAR) test was used to analyze the missing data pattern, and was not significant, indicating that data were missing at random. Therefore, missing data were handled using multiple imputation, a statistical approach that generates multiple (e.g., 50) filled in data sets as a means of estimating parameters. This approach has strong theoretical foundations, employs statistical corrections that adjust for the imputation of missing data points, and is favored by many methodologists as an explicit imputation approach that puts missing data handling at the forefront by generating one or more

filled-in data sets as opposed to implicit imputation (i.e., FIML) strategies which temporarily impute missing values during the estimation process (Enders, 2013). Both generally produce similar parameter estimates and standard errors (Collins, Schafer, & Kam, 2001). The Mplus' "impute" command was used to generate 50 imputed data sets, with the assumption that more imputations improve statistical power (Graham et al., 2007). Imputed values of the current data set compare reasonably well to observed values so imputed values are presented.

Testing Models of Sharing and Conscience Development

Stage 1 modeling. Fit indices for the three models of sibling influence can be found in Table 2.2. For Model 1, s*haring stability,* model estimation converged normally and the model had acceptable fit to the data. Model 2, *older sibling influence,* added paths from older siblings' sharing to younger siblings' sharing over time, and converged normally with good model fit. The AIC indicated a preference for the *older sibling influence* model, AIC = 4098.12, over the *sharing stability* model, AIC = 4104.85. Similarly, the chi-square difference statistic demonstrated that the *older sibling influence* model was significantly better than *sharing stability* model, $\Delta\chi^2(2) = 6.58$, $p < .05$.

Model 3 tested the *bidirectional sharing model*, in which paths for the younger siblings' sharing predicting older siblings' sharing were added. The model converged normally and had good fit to the data (see Table 2.2). The AIC fit comparisons did not indicate that the *bidirectional sharing* model, AIC = 4098.36, was a better fit over the *older sibling influence*, AIC = 4098.105, which was confirmed with the Chi-square difference statistic, $\Delta\chi^2(2) = 2.15$, *ns.* Therefore, the *older sibling influence* model was used in stage 2 modeling adding relations with conscience.

Stage 2 modeling. Models were run separately with affective discomfort and moral regulation as indicators of conscience. Model fit indices using affective discomfort were poor or did not converge so only models for moral regulation are presented. For Model 4, the c*onscience stability* model*,* estimation converged normally and the model had acceptable fit to the data. Model 5, *sharing predicts conscience* model, also converged normally and the model had relatively good fit to the data (see Table 2.2). Though the AIC comparing the *conscience stability* model and the *sharing predicts conscience* model suggested a preference for the *sharing predicts conscience* model, AIC = 5049.45 versus AIC = 5055.15, the chi-square difference statistic demonstrated that the *sharing predicts conscience* model was not significantly better than the *conscience stability* model, $\Delta\chi^2(6) = 11.01$, *ns.*

Model 6, c*onscience predicts sharing,* converged normally and had good fit. The AIC comparing the *conscience stability* model and the *conscience predicts sharing* model suggested a preference for the *conscience predicts sharing model*, AIC = 5037.98 versus AIC = 5055.15, and the chi-square difference statistic demonstrated that *the conscience predicts sharing* model was significantly better than the *conscience stability* model, $\Delta\chi^2(6) = 19.24$, $p < .01$.

Finally, we compared the *conscience predicts sharing* model to the *dual development* model. The *dual development* model converged normally and had good fit (see Table 2.2). AIC comparisons suggested a preference for the *conscience predicts sharing* model, AIC = 5037.98, over *the dual development* model, AIC = 5039.212, as did the chi-square difference statistic, $\Delta\chi^2(4) = 4.23$, *ns.* Therefore, the *conscience predicts sharing* model was thus chosen as the final model reflecting both stability and bidirectional relations between sibling sharing and children's development of conscience.

Structural model results. Effect size estimates of the final *conscience predicts sharing* model are presented as standardized coefficients (β) in Figure 2.3. Older siblings' sharing was stable from 18 to 24 months, but not from 24 to 36 months. Consistent with the *older sibling influence* model, older siblings' sharing at 18 months predicted younger siblings' sharing at 24 months, but not from 24 to 36 months. Further, there was evidence of reciprocity between older and younger siblings' sharing at both 24 and 36 months, but not at the earlier 18-month timepoint. In addition, there was significant stability in moral regulation from 18 to 24 and 24 to 36 months for both older and younger siblings. Older siblings' moral regulation at 18 months directly predicted older siblings' sharing at 24 months, and younger siblings' moral regulation at 18 months predicted younger siblings' sharing at 24 months, even though there was no evidence of concurrent associations between moral regulation and sharing at any of the three. Older and younger siblings' moral regulation was correlated at 18 months but at no other timepoints.

Covariates. Older siblings' age significantly predicted older siblings' sharing at 18 months (β= .36, $p < .001$) and 24 months (β = .17, $p < .05$) and older siblings' gender (0 = female and 1 = male) predicted older siblings' sharing behaviors at 18 months (β=-.25, $p < .001$) and 36 months (β= -.22, $p < .05$), with older sibling girls sharing more than boys. Experimenter intervention also predicted younger siblings' sharing at 36 months (β= -.22, $p < .05$), and more frequent reminders were negatively association with the younger siblings' sharing at 36 months.

Discussion

The major goal of this investigation was to examine sharing behaviors between toddler-aged younger siblings and their older siblings, and associations between sharing and conscience development from 18 to 36 months of age. The current investigation made significant contributions to the development of sharing in early childhood in a number of ways. First, we

introduced a new paradigm, the Fishing Game, to assess sharing between young siblings. Unlike earlier studies of sharing, this short observational task created a naturalistic, lab-based environment to measure both older and younger siblings' self-focused and other-focused behaviors, both essential components of sharing. This task allowed us to investigate the direction and potential reciprocity of sibling sharing. In addition, we examined several different models of influence between the sharing behaviors of older and younger siblings during a period of rapid development in children's moral development and the internalization of standards of behavior. We now have a better sense of the development of sibling sharing between young children. The findings revealed stronger evidence for reciprocal relations between siblings within time rather than longitudinal, bidirectional relations over time. Finally, we examined whether sharing was related to young children's development of conscience, specifically, aspects of affective discomfort (e.g. feelings of guilt and remorse after wrong-doing) and moral regulation (e.g., internalizing standards of behavior).

Older and Younger Siblings' Sharing in Early Childhood

The findings revealed a nuanced picture of sibling sharing in early childhood and provided some support for inter-relations among older and younger siblings' sharing behaviors and both children's conscience development over time. The first aim of the current study was to examine the stability of individual differences in older and younger siblings sharing across time (18, 24, and 36 months). Though, we hypothesized that both older and younger siblings would display stability of individual differences in their sibling sharing behaviors over time, there was very little stability in individual differences in older and younger siblings' sharing behaviors across 18 to 36 months (i.e., only older siblings' sharing at 18 months predicted their sharing at 24 months), at least as assessed using the Fishing Game. Because previous work has found

stability in preschool-aged older siblings' sharing over time (van Berkel et al., 2015), it could be that the Fishing Game was too brief a task to truly capture the stability of older sibling sharing across a 12-month period (i.e., 24-36 months). Further, very little is known about the stability of younger siblings' behaviors in early childhood. This work, however, provides some of the first evidence that younger siblings may not display stability in their sharing behaviors across time, perhaps due to rapid development they experience as they age from 18 to 36 months. We suggest future research examine the possible instability of younger siblings sharing in early childhood.

Older Sibling Influence

Consistent with previous research suggesting that older siblings play a more dominant role in both prosocial and antagonistic sibling interactions (Abramovitch et al., 1986; Azmitia & Hesser, 1993; Brody, Stoneman, MacKinnon, & MacKinnon, 1985; Dunn & Munn, 1986), we found greater support for an *older sibling influence* model in which older siblings' sharing at 18 months predicted the younger siblings' sharing at 24 months, but a similar pattern did not emerge from 24 to 36 months. Younger siblings' sharing at one point in time did not appear to influence whether or not older siblings shared at a subsequent timepoint. These findings indicate that perhaps due to the immaturity of their younger sibling, how older siblings interact with their younger siblings (e.g., promotes positive behaviors or exhibits negative behaviors) at 18 months old may be particularly important. At 18 months, younger siblings generally cannot comprehend the task or their required behaviors without their older siblings' assistance and look to them for guidance and modeling of the correct social behavior. By 24 months, however, younger siblings may have developed enough to socially engage and use the skills modeled by their older sibling, and by 36 months, younger siblings may be independent enough to actively make their own choices, regardless of their older siblings' behaviors.

Thus, for very young 18-month-old siblings who may still be learning how to share with another, having an older sibling as a model for sharing may set the stage for sharing 6 months later. Sharing between siblings at both 24 and 36 months was intercorrelated, however, indicating that sharing between siblings at each of these points in time was reciprocated (i.e., if one sibling shared and took turns during the Fishing Game, the other sibling was also more likely to do so). These results suggest that though younger siblings do not directly influence their older siblings' sharing behaviors, dual development is indeed occurring. Dunn (1988) reported that as children age, they become able to pursue their own interests in more sophisticated ways. This may be one reason why there are tighter links between the older and younger siblings as they get older, in addition to greater cooperation and appreciated for a shared set of goals for distributing resources equally. This explanation of reciprocated influence was further supported by the lack of stability among younger siblings' sharing across any of the three timepoints, as well as for the older siblings from 24 to 36 months. Still, there were no reciprocated relations between older and younger siblings at 18 months, quite possibly because younger siblings were simply too young to truly understand how to play the game at 18 months and behaved erratically. Whereas, by 24 months, they may have begun to learn from their older siblings' behaviors and begun to model them (Azmitia & Hesser, 1993; McHale, Updegraff, & Whiteman, 2012; Hughes, McHarg, & White, 2018). Finally, by 36 months, the younger siblings also may have understood the rules and outcomes of the task and were developed enough to independently endorse (Smith, Blake & Harris, 2013), expect, and apply concepts of fairness and equality to the Fishing Game Task (Baumard, Mascaro, & Chevallier; 2012).

Consistent with previous research suggesting that older siblings play a more dominant role in both prosocial and antagonistic sibling interactions (Abramovitch et al., 1986; Azmitia &

Hesser, 1993; Brody, Stoneman, MacKinnon, & MacKinnon, 1985; Dunn & Munn, 1986), the current results provide some support for the older siblings' influence as older sibling sharing at 18 months did indeed predict younger siblings' sharing at 24 months, perhaps through modeling positive sharing behaviors in their more dominant role as teacher, leader and manager of social interaction. It is possible that reciprocal bidirectional relations between older and younger siblings' sharing behaviors become more prominent beyond early childhood and children develop more individual agency (White et al., 2014). Future studies should examine this dynamic in the preschool years and beyond to determine whether a reciprocal dual development pattern of sibling sharing emerges beyond the toddler and preschool years.

Sibling Sharing and Conscience Development

The final aim of the current study was to examine the bidirectional and reciprocal relations between sibling sharing for both older and younger siblings and conscience development over early childhood from 18 to 36 months. Recall that Kochanska (1993; 1994) conceptualized conscience as affective discomfort (i.e., emotional reactions such as empathic concern, anxiety, or guilt toward acts of transgression) and moral regulation (i.e., the need to control antisocial and destructive tendencies within oneself and employ self-restraint). Prosocial behaviors describe a wide range of behaviors, cognitions and affective states that are intended to help others, but what predicts the individual components of helping, sympathy, cooperation, or sharing may be quite distinct, even though all of these are often composited into a variable labeled "prosocial behaviors." Therefore, though behaviors such as empathy and helping are closely linked to affective discomfort (e.g., Eisenberg, Fabes, & Spinrad, 2006; Miller et al., 1989), our results provide evidence that sharing may be more closely related to the moral regulation dimension of conscience as opposed to the affective discomfort dimension.

Considering that sharing is behaviorally-based and requires both the promotion of other-focused positive behaviors and the inhibition of self-focused negative behaviors, these results are not surprising.

Further, we hypothesized that there would be reciprocal relations between sibling sharing for both older and younger siblings and their respective conscience development that increased in strength over time. Instead of bidirectional relations, the results revealed that both older and younger siblings' moral regulation at 18 months directly predicted older and younger siblings' sharing at 24 months. Recall that sharing requires the *promotion* of other-focused positive behaviors and the *inhibition* of self-focused negative behaviors. Because the results of the current study indicated that moral regulation predicts sibling sharing, sharing with a sibling, (i.e., using other-focused behaviors and restraining self-focused behaviors) may be reflective of children's internalization of the behavioral component of conscience development. Further, sharing with siblings might provide children with a context in which they can reinforce behaviors inherent to moral regulation, such as controlling the antisocial and destructive tendencies within oneself (Kochanska, 1993).

Consistent with previous work that suggests early childhood is a time of increased social and moral understanding, (Turiel, 2006), as well as an understanding of how to manipulate situations and upset others, including their siblings (Dunn, 1988), the current study found that though individual differences in both older and younger siblings' moral regulation were highly stable over time, older and younger siblings' moral regulation at 18 months only predicted their respective sibling sharing behaviors at 24 months. These results suggest that sharing may be an indicator of internalized conscience development in children and substantiate our previous argument that 18- to 24-month time period might represent a developmental period of growth

and change for children's burgeoning prosocial and moral behavior. Older siblings with better internalized moral regulation may be better equipped to promote positive other-focused behaviors to their developmentally immature younger siblings. Similarly, younger siblings with better internalized moral regulation at 18 months may be better able to inhibit their self-focused behaviors so that they can learn and imitate their older siblings' positive behaviors by 24 months. Overall, these findings suggest that sibling sharing behaviors in the presence of an attractive resource may be consequences of their internalization of moral regulation. Because most U.S. children grow up with siblings, spend substantial time with their siblings, and interact in a manner that may contribute to early social and moral development (Abramovitch et al., 1986; Dunn, Brown, & Maguire., 1995; McHale & Crouter, 1996; U.S. Census, 2009), understanding how sibling interactions may serve as a context for the developing internalization of conscience is deserving of further scrutiny.

Strengths and Limitations

One of the strengths of the current study was its longitudinal three-wave design to investigate a dual development model that assessed sibling sharing and the development of children's conscience during the early period of childhood when there is rapid growth in the development of an internalization of standards and an understanding of right and wrong. Sharing may be a significant indicator of children's internalized moral regulation and may provide a context for young children in which to learn about the self in relation to others. By engaging in other-focused positive behaviors and the inhibiting self-focused negative behaviors during sibling sharing interactions, children may reinforce behaviors characteristic of their developing moral regulation. Another strength of the current study was the inclusion of both mothers' and fathers' reports to assess children's conscience development in order to create more robust

composites and reduce the likelihood of single-reporter bias. Finally, sharing was measured through direct observations of siblings engaged in the Fishing Game task, a task that requires children to take turns and cooperate in order to distribute resources equitably in relation to self and other. This paradigm provided a naturalistic lab-based context that can demonstrate the promotion of both positive other-focused behaviors and the inhibition of negative self-focused behaviors. Further, the only other study that has examined the influence of siblings on sharing behavior utilized a food-based paradigm and focused solely on the older child (van Berkel et al., 2015). In contrast, the current study's use of the Fishing Game with both siblings allowed an opportunity to test a reciprocal longitudinal model of older and younger siblings' sharing behaviors to examine how they related to their respective conscience development. Although used for the first time in this study, findings provide initial evidence that sharing behaviors observed in the Fishing Game are related to children's moral regulation, as both older and younger siblings at 24 months shared more in the Fishing Game when they had higher scores on moral regulation. Due to the novelty of this task, however, we suggest that future work replicate findings using both similar and different measures of sharing.

Despite these strengths, the current study also had several limitations. Participants were primarily European American, well-educated, and middle-class two-parent heterosexual families, which may constrain the generalizability of the findings to children from different socioeconomic or cultural circumstances. It is important that future research continue to investigate sibling sharing using more diverse populations, with respect to SES, race and ethnicity, and family composition. Second, although the use of a novel method to measure sharing, the Fishing Game Task, was a strength of the current study, it also presents limitations. Though this sharing paradigm created a naturalistic lab-based environment to measure sibling

sharing, it is brief, (M = 4 minutes and 49 seconds) and may not have provided a sufficient sampling of behavior. Further, the task was lab-based and may not reflect children's naturalistic behavior in the home. Thus, future research will need to take into consideration the length and ecological validity of sharing methodology when examining sibling sharing in early childhood.

Conclusion

In summary, the present study examined sharing behaviors between toddler-aged younger siblings and their older siblings, and the relations between sharing and conscience development from 18 to 36 months of age. Although individual differences in sibling sharing behaviors were not stable over this early childhood period, there was considerable reciprocity between siblings at both 24 and 36 months. As such, sharing may be greatly influenced by the immediate situational dynamics of a context requiring turn-taking and cooperation rather than a stable individual characteristic, at least in the toddler and preschool years. Stronger support for an older sibling influence model indicates that older siblings even in the early years of childhood, are important managers of social interactions with their younger siblings and socialization agents. Uncovering the longitudinal effects of sibling dynamics with respect to sharing reminds us that family influences involve more than parental socialization, but also, the role of older siblings as they manage, direct, and organize social interactions that can either undermine or promote the conscience development of their younger siblings. Sibling sharing for both children was also predicted by their respective moral regulation, suggesting that sharing may be an indicator of internalized conscience development in children. Clearly, there is a need for future research investigating siblings and the development of prosocial and moral development in the early years of childhood.

Table 2.1

Descriptive Statistics and Correlations Between Study Variables

		1	2	3	4	5	6	7	8	9
18 months										
1. Sibling Sharing		**0.15**	0.08	0.03	.50**	0.01	-0.05	.30**	0.08	0.02
2. Parent-reported Affective Discomfort		0.12	**.42****	.63**	0.08	.82**	.60**	.20*	.82**	.59**
3. Parent-reported Moral Regulation		0.02	.81**	**.36****	.22*	.50**	.82**	0.14	.49**	.70**
24 months										
4. Sibling Sharing		0.13	0.08	0.14	**.38****	0.10	0.16	.23*	0.08	0.11
5. Parent-reported Affective Discomfort		0.07	.63**	.60**	0.13	**.37****	.64**	0.10	.84**	.57**
6. Parent-reported Moral Regulation		-0.03	.56**	.72**	0.10	.75**	**.33****	-0.02	.52**	.750**
36 months										
7. Sibling Sharing		0.074	0.02	-0.03	0.06	-0.07	0.01	**.40****	0.16	0.07
8. Parent-reported Affective Discomfort		-0.00	.58**	.50**	.20*	.62**	.48**	0.04	**.44****	.69**
9. Parent-reported Moral Regulation		-0.12	.51**	.64**	0.19	.61**	.71**	0.04	.72**	**.72****
Older Sibling	*M*	0	4.64	3.71	0	4.69	3.85	0	4.80	4.30
	SD	3.71	0.55	0.54	3.54	0.53	0.61	2.83	0.59	0.53
Younger Sibling	*M*	0	4.52	3.57	0	4.53	3.78	0	4.55	3.97
	SD	1.77	0.50	0.55	2.49	0.53	0.580	2.45	0.53	0.58

Note. All variables are reported for both older and younger siblings; *r*s for the older sibling are presented above the diagonal, *r*s for the younger sibling are presented below the diagonal, and cross-sibling correlations are reported in the diagonal and underlined.

*$p < .05$.

**$p < .01$.

Table 2.2

Model Fit Indices and Comparisons

	Model						
Model fit index	1	2	3	4	5	6	7
Chi-square test of model fit	26.87	20.29	18.14	104.25	100.12	91.89	87.66
$\chi^2 df$	22	20	18	80	76	76	72
p	*ns*	*ns*	*ns*	<.05	< .05	*ns*	*ns*
Root-mean-square error approximation (RMSEA)	.039	.01	.01	.05	.05	.04	.04
90% CIs	.00, .08	.00, .07	.00, .07	.01, .07	.01, .07	.00, .06	.00, .06
Comparative fit index (CFI)	.96	.99	.99	.95	.95	.97	.97
Tucker-Lewis index (TLI)	.92	.99	.99	.93	.93	.95	.95
Model Comparison		2 vs 1	3 vs 1		5 vs 4	6 vs 4	6 vs 7
AIC	4104.85	4098.12	4098.36	5048.05	5049.45	5037.98	5039.22
$\Delta\chi^2$		6.58	2.15		4.13	19.24	4.23
Δdf		2	2		4	6	4
p		< .05	*ns*		*ns*	< .05	*ns*

Note. *ns* = non-significant. Model 1 = Sharing stability. Model 2 = Older sibling influence. Model 3 = Bidirectional sharing. Model 4 = Conscience stability. Model 5 = Sharing predicts conscience. Model 6 = Conscience predicts sharing. Model 7 = Dual development.

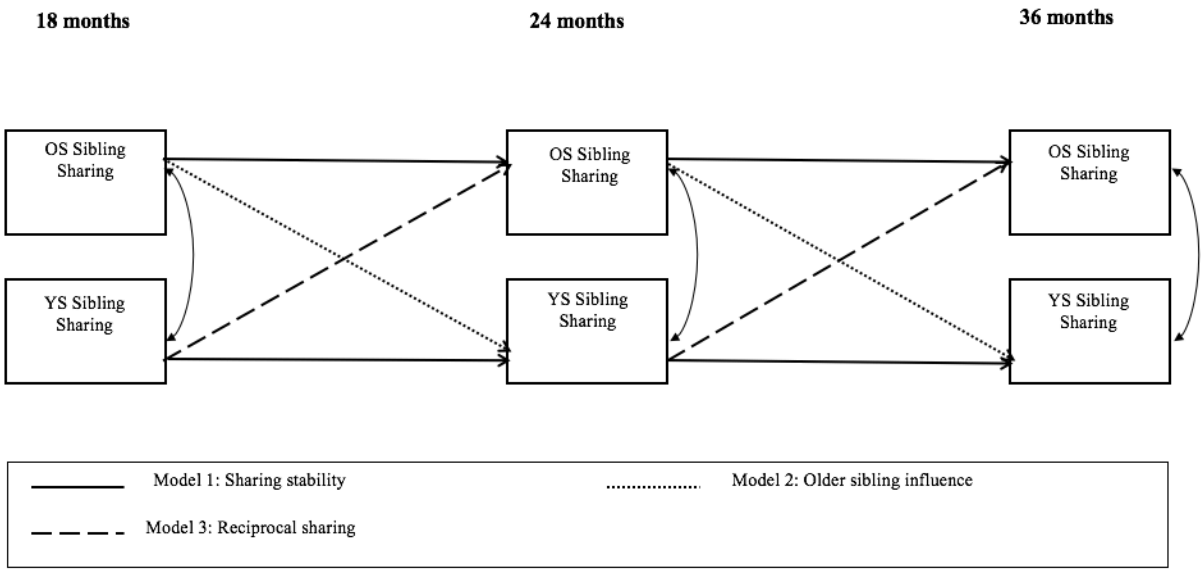

Figure 2.1. The hypothesized cross-lagged models of longitudinal relations between older and younger siblings' sharing over time. Model 1, *the stability model*, indicated by solid lines show the stability paths (autoregressive paths) for older and younger siblings' sharing across time. Model 2, *older sibling influence*, indicated by dotted lines, shows stability paths and unidirectional paths from older siblings' sharing to younger siblings' sharing behavior over time. Model 3, bidirectional model, indicated by dashed lines, added the paths from the younger siblings' sharing to older siblings' sharing to represent a cross-lagged model of reciprocal influence over time. Each model controlled for the older siblings' age, older and younger siblings' gender, and the frequency of experimenter intervention during the task.

Note. OS = older sibling, YS = younger sibling.

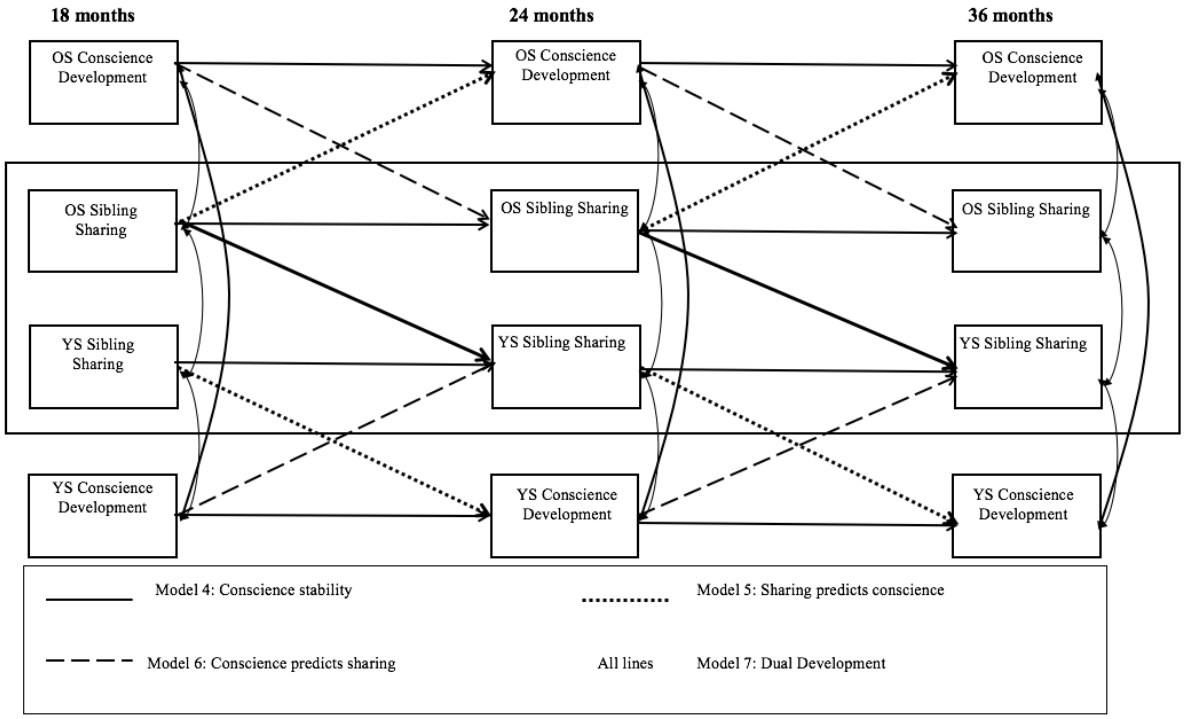

Figure 2.2. The hypothesized models of longitudinal relations among older and younger siblings' sharing and conscience development over time in Stage 2 modeling, which built on the older sibling influence model (seen in the rectangle in the middle of the figure). Model 4, the conscience stability model, added autoregressive paths for older and younger siblings' conscience. Model 5 (sharing predicts conscience), indicated by dotted lines, added the unidirectional paths from sharing to conscience for both siblings. Model 6 (conscience predicts sharing), indicated by dashed lines, tested the unidirectional paths from conscience to sharing for both siblings. Model 7, dual development, included all paths shown. All models controlled for older siblings' age, older and younger siblings' gender, and the frequency of experimenter intervention.

Note. OS = older sibling, YS = younger sibling.

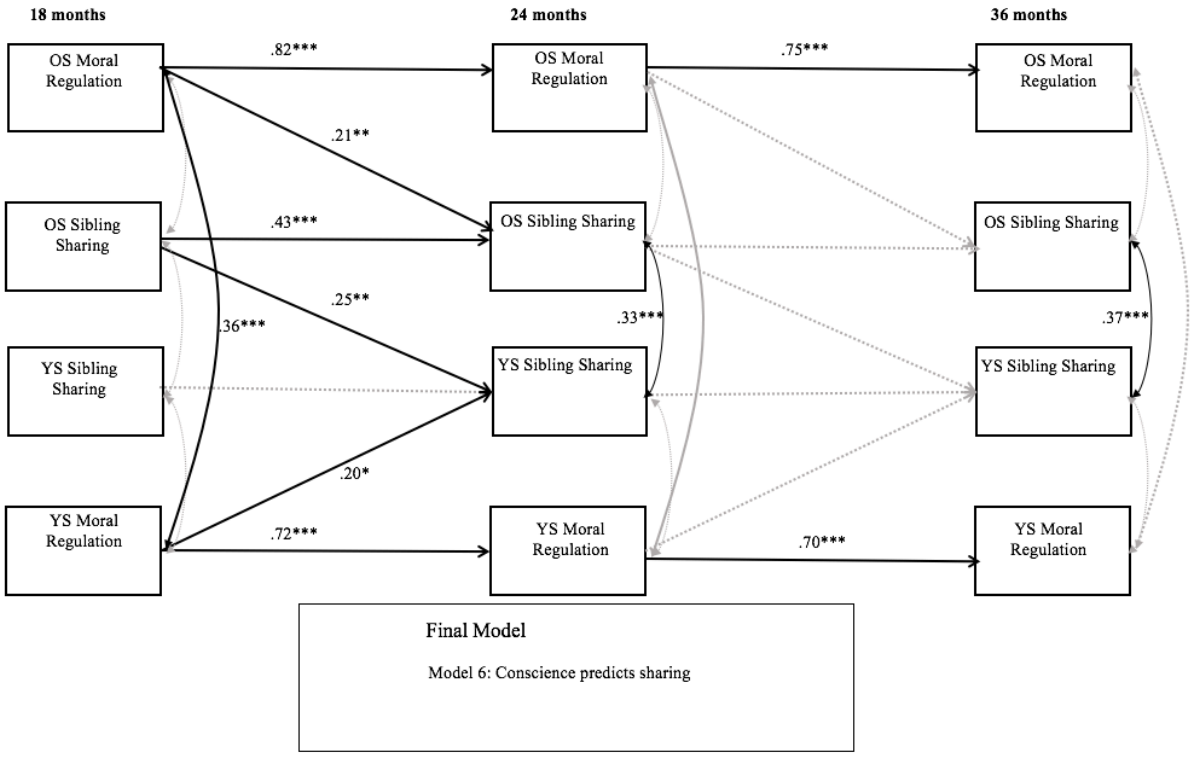

Figure 2.3. Final model (Model 6: *Conscience predicts sharing*) in which there are stability paths, unidirectional paths from older siblings' sharing behaviors to younger siblings' sharing behavior over time, and unidirectional paths from older and younger sibling conscience development to older and younger siblings' sharing. These models control for older siblings' age, older and younger siblings' gender, and the experimenter tally.

Note. OS = older sibling, YS = younger sibling. Significant paths are shown in solid black lines. **p* < .05. ***p* < .01. ****p* < .001.

References

Abramovitch, R., Corter, C., Pepler, D. J., & Stanhope, L. (1986). Sibling and peer interaction: A final follow-up and a comparison. *Child development*, 217-229.

Asbury, K., Dunn, J. F., Pike, A., & Plomin, R. (2003). Nonshared environmental influences on individual differences in early behavioral development: A monozygotic twin differences study. *Child Development*, *74*(3), 933-943.

Azmitia, M., & Hesser, J. (1993). Why siblings are important agents of cognitive development: A comparison of siblings and peers. *Child Development*, *64*(2), 430-444.

Bar-Tal, D., Nadler, A., & Blechman, N. (1980). The relationship between Israeli children's helping behavior and their perception of parents' socialization practices. *Journal of Social Psychology*, *111*(2), 159-167.

Baumard, N., Mascaro, O., & Chevallier, C. (2012). Preschoolers are able to take merit into account when distributing goods. *Developmental Psychology*, *48*(2), 492-498.

Blake, P. R., & McAuliffe, K. (2011). "I had so much it didn't seem fair": Eight-year-olds reject two forms of inequity. *Cognition*, *120*(2), 215-224.

Belsky, J. (1981). Early human experience: A family perspective. *Developmental Psychology*, *17*(1), 3-23.

Belsky, J. (1984). The determinants of parenting: A process model. *Child Development*, *55*(1) 83-96.

Belsky, J., Rovine, M. J., & Fish, M. (1989). The developing family system. In M. Gunnar & E. Thelen (Eds.), *Minnesota symposia on child psychology: Vol. 22. Systems and development* (pp. 119–166). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Birch, L. L., & Billman, J. (1986). Preschool children's food sharing with friends and acquaintances. *Child Development*, 387-395.

Braiker, H. B., & Kelley, H. H. (1979). Conflict in the development of close relationships. In R. L. Burgess & T. L. Huston (Eds.), *Social exchange in developing relationships* (pp. 135-168). New York: Academic.

Brody, G. H., Stoneman, Z., MacKinnon, C. E., & MacKinnon, R. (1985). Role relationships and behavior between preschool-aged and school-aged sibling pairs. *Developmental Psychology*, *21*(1), 124-129.

Brownell, C. A., Svetlova, M., Anderson, R., Nichols, S. R., & Drummond, J. (2013). Socialization of early prosocial behavior: Parents' talk about emotions is associated with sharing and helping in toddlers. *Infancy*, *18*(1), 91-119.

Bryant, B. K., & Crockenberg, S. B. (1980). Correlates and dimensions of prosocial behavior: A study of female siblings with their mothers. *Child Development*, *51*(2), 529-544.

Clark, K. E., & Ladd, G. W. (2000). Connectedness and autonomy support in parent-child relationships: Links to children's socioemotional orientation and peer relationships. *Developmental Psychology, 36*(4), 485–498.

Collins, L. M., Schafer, J. L., & Kam, C. M. (2001). A comparison of inclusive and restrictive strategies in modern missing data procedures. *Psychological Methods*, *6*(4), 330.

Cowan, P.A., & Cowan, C.P. (2004). From family relationships to peer rejection to antisocial behavior in middle childhood. In J.S. Kupersmidt, & K.A. Dodge, (Eds), Children's peer relations: From development to intervention (pp (pp. 159–177). Washington, DC: American Psychological Association.

Cox, M. J., & Paley, B. (2003). Understanding families as systems. *Current Directions in*

Psychological Science, *12*(5), 193-196.
Cummings, E. M., Goeke-Morey, M. C., & Raymond, J. (2004). Fathers in family context: Effects of marital quality and marital conflict. In M. E. Lamb (Ed.), The role of the father in child development (4th ed., pp. 196-221). Hoboken, NJ: Wiley
Cummings, M., Merrilees, C. E., & George, M. W. (2010). Fathers, marriages, and families: Revisiting and updating the framework for fathering in family context. In *The role of the father in child development* (5th ed.) (pp. 154–176). Hoboken, NJ, US: John Wiley & Sons Inc.
Damon, W. (1975). Early conceptions of positive justice as related to the development of logical operations. *Child Development*, 301-312.
Damon, W. (1980). Patterns of change in children's social reasoning: A two-year longitudinal study. *Child Development*, 1010-1017.
Davies, P. T., Sturge-Apple, M. L., Woitach, M. J., & Cummings, M. (2009). A process analysis of the transmission of distress from interparental conflict to parenting: Adult relationship security as an explanatory mechanism. *Developmental Psychology, 45*(6), 1761–1773.
Denham, S. A., Renwick-DeBardi, S., & Hewes, S. (1994). Emotional communication between mothers and preschoolers: Relations with emotional competence. *Merrill-Palmer Quarterly*, *40*(4), 488–508.
Dunn, J. (1988). *The beginnings of social understanding*. Cambridge, MA: Harvard University Press.
Dunn, J. (2002). Sibling relationships. In P. K. Smith & C. H. Hart (Eds.), *Blackwell handbooks of developmental psychology. Blackwell handbook of childhood social development* (pp. 223-237). Malden, MA: Blackwell Publishing.
Dunn, J., Brown, J. R., & Maguire, M. (1995). The development of children's moral sensibility: Individual differences and emotion understanding. *Developmental psychology*, *31*(4), 649-659.
Dunn, J., & Kendrick, C. (1982). *Siblings: Love, envy, & understanding*. Cambridge, MA: Harvard University Press.
Dunn, J., & Munn, P. (1986). Sibling quarrels and maternal intervention: Individual differences in understanding and aggression. *Journal of Child Psychology and Psychiatry*, *27*(5), 583-595.
Eisenberg-Berg N, Hand M (1979) The relationship of preschoolers' reasoning about prosocial moral conflicts to prosocial behavior. *Child Development, 50*(20), 356–363.
Eisenberg, N., Fabes, R. A., & Spinrad, T. L. (2006). Prosocial development. In Damon, W. & Lerner, R. (Eds.), *Handbook of child psychology* (pp. 646-718). Hoboken, N.J.: John Wiley & Sons.
Enders, C. K. (2013). Dealing with missing data in developmental research. *Child Development Perspectives*, *7*(1), 27-31.
Erel, O., & Burman, B. (1995). Interrelatedness of marital relations and parent-child relations: a meta-analytic review. *Psychological Bulletin*, *118*(1), 108-132.
Furman, W., & Buhrmester, D. (1985). Children's perceptions of the personal relationships in their social networks. *Developmental Psychology, 21*(6), 1016-1024.
Graham, J. W., Olchowski, A. E., & Gilreath, T. D. (2007). How many imputations are really needed? Some practical clarifications of multiple imputation theory. *Prevention Science*, *8*(3), 206-213.

Goldberg, W. A., & Easterbrooks, M. (1984). Role of marital quality in toddler development. *Developmental Psychology, 20*(3), 504-514.

Grusec, J. E., & Goodnow, J. J. (1994). Impact of parental discipline methods on the child's internalization of values: A reconceptualization of current points of view. *Developmental Psychology*, *30*(1), 4-19.

Hastings, P. D., Utendale, W. T., & Sullivan, C. (2007). The Socialization of Prosocial Development. In J. E. Grusec & P. D. Hastings (Eds.), *Handbook of socialization: Theory and research* (pp. 638-664). New York, NY, US: Guilford Press.

Hay, D. F., & Cook, K. V. (2007). The transformation of prosocial behavior from infancy to childhood. In C. A. Brownell & C. B. Kopp (Eds.), Socioemotional Development in the Toddler Years (pp. 100-131). New York: The Guilford Press.

Hughes, C., McHarg, G., & White, N. (2018). Sibling influences on prosocial behavior. *Current opinion in psychology*, *20*, 96-101.

Hoffman, M. L. (1970). Moral development. In P. H. Mussen (Ed.), *Carmichael's manual of child development* (Vol. 2, pp. 261–359). New York: Wiley.

Hoffman, M. L. (1975). Altruistic behavior and the parent-child relationship. *Journal of Personality and Social Psychology, 31*(5), 937–943.

Hoffman, M.L. (1983). Affective and cognitive processes in moral internalization: An information processing approach. In E.T. Higgins, D. Ruble, & W. Hartup (Eds.), *Social Cognition and Social Development: A Socio-Cultural Perspective*. New York: Cambridge University Press, 236-274.

Hoffman, M. L. (2000). Empathy and moral development: Implications for caring and justice. New York: Cambridge University Press.

Janssens, J. M. A. M., & Gerris, J. R. M. (1992). Child rearing, empathy and prosocial development. In J. M. A. M. Janssens &J. R. M. Gerris (Eds.), *Child rearing: Influence on prosocial and moral development* (pp. 57–75). Amsterdam: Swets & Zeitlinger.

Jenkins, J., & Dunn, J. (2009). Siblings within families: Levels of analysis and patterns of influence. New directions for child and adolescent development, 2009(126), 79-93.

Katz, L. F., & Woodin, E. M. (2002). Hostility, hostile detachment, and conflict engagement in marriages: Effects on child and family functioning. *Child Development*, *73*(2), 636-652.

Kiang, L., Moreno, A. J., & Robinson, J. L. (2004). Maternal preconceptions about parenting predict child temperament, maternal sensitivity, and children's empathy. *Developmental Psychology*, *40*(6), 1081-1092.

Kline, R.B. (2011). Convergence of structural equation modeling and multilevel modeling. In Williams, M. & Vogt, W. P. (Eds.) *The SAGE handbook of innovation in social research methods* (pp. 562 -589). Thousand Oaks, CA: SAGE Publications Ltd.

Kline, R. B. (2016). *Principles and practice of structural equation modeling* (Fourth Ed). New York, NY: Guilford Press.

Kochanska, G. (1993). Toward a synthesis of parental socialization and child temperament in early development of conscience. *Child Development, 64*(2), 325–347.

Kochanska, G. (1994). Beyond cognition: Expanding the search for the early roots of internalization, and conscience. *Developmental Psychology, 30*(1), 20–22.

Kochanska, G. (1997). Multiple pathways to conscience for children with different temperaments: from toddlerhood to age 5. *Developmental Psychology*, *33*(2), 228.

Kochanska, G., Aksan, N., Knaack, A., & Rhines, H. M. (2004). Maternal parenting and children's conscience: Early security as moderator. *Child development*, *75*(4), 1229-1242.

Kochanska, G., DeVet, K., Goldman, M., Murray, K., & Putnam, S. P. (1994). Maternal reports of conscience development and temperament in young children. *Child development*, *65*(3), 852-868.

Kochanska, G., Forman, D. R., & Coy, K. C. (1999). Implications of the mother-child relationship in infancy for socialization in the second year of life. *Infant Behavior and Development*, *22*(2), 249-265.

Kochanska, G., Koenig, J. L., Barry, R. A., Kim, S., & Yoon, J. E. (2010). Children's conscience during toddler and preschool years, moral self, and a competent, adaptive developmental trajectory. *Developmental Psychology*, *46*(5), 1320-1332.

Kochanska, G., & Thompson, R. A. (1997). The emergence and development of conscience in toddlerhood and early childhood. In J. E. Grusec & L. Kuczynski (Eds.), *Parenting and children's internalization of values: A handbook of contemporary theory* (pp. 53-77). Hoboken, NJ, US: John Wiley & Sons Inc.

Krevans, J., & Gibbs, J. C. (1996). Parents' use of inductive discipline: Relations to children's empathy and prosocial behavior. *Child Development, 67*(6), 3263–3277.

Krishnakumar, A., & Buehler, C. (2000). Interparental conflict and parenting behaviors: A meta-analytic review. *Family Relations*, *49*(1), 25-44.

Laible, D. (2004). Mother-child discourse in two contexts: links with child temperament, attachment security, and socioemotional competence. *Developmental psychology*, *40*(6), 979-992.

Margolin, G. (1981). The reciprocal relationship between marital and child problems. In J. R Vincent (Ed.), *Advances in family intervention, assessment, and theory*, Vol. 2 (pp. 131-182). Greenwich, CT: JAI Press

McCoy, K., Cummings, E. M., & Davies, P. T. (2009). Constructive and destructive marital conflict, emotional security and children's prosocial behavior. *Journal of Child Psychology and Psychiatry*, *50*(3), 270-279.

McHale, S. M., & Crouter, A. C. (1996). The family contexts of children's sibling relationships. In G. H. Brody (Ed.), *Advances in applied developmental psychology, 10. Sibling relationships: Their causes and consequences* (pp. 173-195). Westport, CT, US: Ablex Publishing.

McHale, S. M., Updegraff, K. A., & Whiteman, S. D. (2012). Sibling Relationships and Influences in Childhood and Adolescence. *Journal of Marriage and the Family*, *74*(5), 913–930.

Miller, P. A., Eisenberg, N., Fabes, R. A., Shell, R., & Gular, S. (1989). Mothers' emotional arousal as a moderator in the socialization of children's empathy. *New Directions for Child and Adolescent Development*, *1989*(44), 65-83.

Muthén, L.K. and Muthén, B.O. (1998-2017). Mplus User's Guide. Eighth Edition. Los Angeles, CA: Muthén & Muthén.

Muthén, L. K., & Muthén, B. O. (2006). MPlus user's guide. Los Angeles, CA: Muthén & Muthén.

Nelson, J. A., O'Brien, M., Blankson, A. N., Calkins, S. D., & Keane, S. P. (2009). Family stress and parental responses to children's negative emotions: Tests of the spillover, crossover, and compensatory hypotheses. *Journal of Family Psychology*, *23*(5), 671-679.

Perozynski, L., & Kramer, L. (1999). Parental beliefs about managing sibling conflict. *Developmental Psychology, 35*(2) , 489-499.

Ponnet, K., Mortelmans, D., Wouters, E., Van Leeuwen, K., Bastaits, K., & Pasteels, I. (2013). Parenting stress and marital relationship as determinants of mothers' and fathers' parenting. *Personal Relationships, 20*(2), 259–276.

Sawyer, K. S., Denham, S., Denham, S., Blair, K., Blair, K., & Levitas, J. (2002). The contribution of older siblings' reactions to emotions to preschoolers' emotional and social competence. *Marriage & Family Review*, *34*(3-4), 182-212.

Sloane, S., Baillargeon, R., & Premack, D. (2012). Do infants have a sense of fairness?. *Psychological Science*, *23*(2), 196-204.

Smith, C. E., Blake, P. R., & Harris, P. L. (2013). I should but I won't: Why young children endorse norms of fair sharing but do not follow them. *PloS one*, *8*(3), e59510.

Stanhope, L., Bell, R. Q., & Parker-Cohen, N. Y. (1987). Temperament and helping behavior in preschool children. *Developmental Psychology, 23*(3), 347–353.

Staub, E. (1979). Positive social behavior and morality: Vol. 2. *Socialization and Development*. New York: Academic Press.

Stevenson, M. M., Fabricius, W. V., Cookston, J. T., Parke, R. D., Coltrane, S., Braver, S. L., & Saenz, D. S. (2014). Marital problems, maternal gatekeeping attitudes, and father–child relationships in adolescence. *Developmental Psychology, 50*(4), 1208–1218.

Stevenson, M. M., Volling, B. L., & Gonzalez, R. (2018). An examination of father vulnerability and coercive family process after the birth of a sibling: A spillover cascade model. *Development and psychopathology*, 1-14

Stoneman, Z., Brody, G. H., & MacKinnon, C. (1984). Naturalistic observations of children's activities and roles while playing with their siblings and friends. *Child Development*, 617-627.

Thompson, R. A., Meyer, S., & McGinley, M. (2006). Understanding values in relationships: The development of conscience. In M. Killen & J. G. Smetana (Eds.), *Handbook of moral development* (pp. 267-297). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.

Turiel, E. (2007). The Development of Morality. In Damon, W. Lerner, R. M. & Eisenberg, N. (Eds.). *Handbook of Child Psychology* (pp. 789-857). Hoboken, NJ: John Wiley & Sons, Inc.

van Berkel, S. R., Van der Pol, L. D., Groeneveld, M. G., Hallers-Haalboom, E. T., Endendijk, J. J., Mesman, J., & Bakermans-Kranenburg, M. J. (2014). To share or not to share: Parental, sibling, and situational influences on sharing with a younger sibling. *International Journal of Behavioral Development*, *39*(3), 235-241.

Volling, B.L, Gonzalez, R., Oh, W., & Yu, T., Rosenberg, L., Song, J., Thomason, E., Kuo, P.,Beyers-Carlson, E., Safyer, P., & Stevenson, M. Changes in firstborn children's adjustment across the transition to siblinghood: *Developmental trajectories of children's adjustment across the transition to siblinghood: Pre-birth predictors and sibling outcomes at one year*. Wiley.

Volling, B. L., Mahoney, A., & Rauer, A. J. (2009). Sanctification of parenting, moral socialization, and young children's conscience development. *Psychology of Religion and Spirituality*, *1*(1), 53-68.

Volling, B. L., Oh, W., Gonzalez, R., Kuo, P. X., & Yu, T. (2015). Patterns of marital

relationship change across the transition from one child to two. *Couple and Family Psychology: Research and Practice*, *4*(3), 177-197.

Warneken, F., & Tomasello, M. (2006). Altruistic helping in human infants and young chimpanzees. *Science*, *311*(5765), 1301-1303.

Warneken, F., & Tomasello, M. (2009). The roots of human altruism. British Journal of Psychology, 100(3), 455-471.

White, N., Ensor, R., Marks, A., Jacobs, L., & Hughes, C. (2014). “It's Mine!” Does sharing with siblings at age 3 predict sharing with siblings, friends, and unfamiliar peers at age 6?. *Early Education and Development*, *25*(2), 185-201.

Whiteside-Mansell, L., Bradley, R. H., Owen, M. T., Randolph, S. M., & Cauce, A. M. (2003). Parenting and children's behavior at 36 months: Equivalence between African American and European American mother-child dyads. *Parenting: Science and Practice*, *3*(3), 197-234.

Zahn-Waxler, C., Radke-Yarrow, M., & King, R. A. (1979). Child rearing and children’s prosocial initiations toward victims of distress. Child Development, 50(2), 319–330.

Zahn-Waxler, C., Schiro, K., Robinson, J. L., Emde, R. N., & Schmitz, S. (2001). Empathy and prosocial patterns in young MZ and DZ twins: Development and genetic and environmental influences. In R. N. Emde & J. K. Hewitt (Eds.), *Infancy to early childhood: Genetic and environmental influences on developmental change* (pp. 141–162). New York: Oxford University Press.

Zukow, P. G. (1989). Sibling interaction across cultures: theoretical and methodological issues. NY, New York: Springer-Verlag.

CHAPTER III

(STUDY 2) INTERPARENTAL RELATIONSHIP QUALITY, MATERNAL AND PATERNAL INDUCTIVE DISCIPLINE, AND SIBLING SHARING IN EARLY CHILDHOOD

Prosocial behavior (i.e., intentional behavior intended to benefit another) is often considered to be one of the most significant foundations for human relationships (Eisenberg, Fabes, & Spinrad, 2006; Staub, 1979). Prosocial children are well-adjusted and have better peer relationships than children low in prosocial behavior (e.g., Clark & Ladd, 2000). Several studies have shown a connection between child-focused parent-child discipline strategies and the development of prosocial behaviors such as empathy and helping (e.g., Janssens & Gerris, 1992; Stanhope, Bell, & Parker-Cohen, 1987; Whiteside-Mansell et al., 2003), but less is known regarding their influence on the development of early prosocial sibling behaviors such as sharing, helping, and cooperating with others (Eisenberg-Berg & Hand, 1979). Further, because children develop within family systems that may consist of parent-child, partner-partner, and/or older sibling-younger sibling relationships (Cox & Paley, 2003), the linkage between the interparental and parent-child relationships has been examined extensively in research on child development (e.g., Belsky, 1981; Belsky, 1984, Erel & Burman, 1995; Margolin, 1981; McCoy, Cummings, & Davies, 2009). Indeed, because both mothers and fathers interact within the same parenting subsystem (Cox & Paley, 2003) and the interparental relationship is a significant determinant of parenting (Belsky, 1984), the quality of the interparental relationship (e.g., positive or negative) has important implications for the parenting relationship (either by spillover or compensation),

which may, in turn, affect aspects of children's prosocial development, such as sibling sharing. The purpose of the current investigation was to evaluate the associations among interparental relationship quality, parental inductive discipline, and sharing behaviors in both older and younger siblings during early childhood.

Parent-Child Relationship

The quality of the parent-child relationship has been stressed as an important determinant of children's early prosocial development (e.g., Asbury, Dunn, Pike, & Plomin, 2003; Bryant & Crockenberg, 1980). The development of prosocial behavior starts in infancy, and it is likely that the social environment plays an increasingly larger role in prosocial behaviors in early childhood (Farrant, Devine, Maybery, & Fletcher, 2012; Kochanska, Forman, & Coy, 1999). Positive parent-child socialization in particular has been associated with children's prosocial behaviors (e.g., Knafo & Plomin, 2006; McGrath, Zook & Weber-Roehl, 2001) Warm parenting and early secure attachment supports prosocial behavior by providing a compassionate model for children and by increasing children's willingness, as opposed to resistance, to attend to parental messages (Hoffman, 1970; Kochanska et al., 2010; Staub, 1979). Maternal emotional availability and responsive caregiving have been consistently linked to toddlers' empathic prosocial responses to others' distress (e.g., Clark & Ladd, 2000; Farrant et al., 2012; Kiang, Moreno, & Robinson, 2004; Kochanska, Forman, & Coy, 1999; Zahn-Waxler, Radke-Yarrow, & King, 1979). Such work indicates that the parent-child context is highly significant in the development of prosocial behaviors in early childhood.

In addition to warm and responsive parenting, parental inductive discipline predicts the development of children's prosocial behavior. Parental induction, a form of verbal discipline in which the parent explains the reasons why children are required to change their behavior

(Hoffman, 1970), promotes conscience development because it focuses children's attention on the consequences of their behavior for others and promotes empathy (Hoffman, 2000). Such a method is less likely to be seen by children as an arbitrary punishment. Hoffman (2000) argues that it is thereby less likely to induce parent-child conflict. The use of responsive rather than harsh parenting was positively associated with empathy and cooperation in toddlers (Whiteside-Mansell et al., 2003). In a review of the development of prosocial behavior, Eisenberg, Fabes, and Spinrad (2006) argued there was consistent support for the association between parental induction and children's prosocial behaviors, though significant findings are often isolated to one dimension of prosocial behavior (e.g., helping). Inductive discipline is also positively related to children's social competency with peers and an understanding of others' internal states and feelings (e.g., Hart, DeWolf, Wozniak & Burts, 1992; Hoffman, 1975; Krevans & Gibbs, 1996; Stanhope, Bell, & Parker-Cohen, 1987) and fewer externalizing problems (Kerr, Lopez, Olson, & Sameroff, 2004). The tone used by parents when delivering inductive discipline may moderate the efficacy of this type of discipline strategy, particularly when such discipline is used with young children (Eisenberg, Fabes & Spinrad, 2006). Maternal use of affectively-charged inductions with firm guidelines for behavior was positively associated with prosocial behavior in early childhood (Zahn-Waxler, Radke-Yarrow & King, 1979). Maternal inductions regarding distressed peers (e.g.., "She is sad because you wouldn't let her play with you") were positively associated to children's sad reactions when viewing others in pain (Miller et al., 1989), whereas inductive discipline accompanied by anger or that prompted guilt predicted less parent-directed prosocial behaviors (Denham, Renwick-DeBardi, & Hewes, 1994). Overall, there is sufficient evidence supporting mothers' use of inductive discipline and children's prosocial behavior, predominantly empathy and helping behavior.

Less is known about the role of parental emotion socialization and inductive discipline when investigating early sharing behaviors. Sharing, especially spontaneous sharing, is theorized to be a particularly other-oriented behavior because it reflects a cost to the child (Eisenberg-Hand & Hand, 1979) and is considered to be a central tenet of social development within the family context (Knafo & Plomin, 2006; Kochanska & Aksan, 2006). Because sharing involves the balance between self- and other-focus, parental socialization undoubtedly plays some part in whether children will focus on others and share, or focus on self and act selfishly. Toddlers (18- and 24- month olds) shared more readily with an assistant experimenter when their parents asked them more often to label and explain emotions (Brownell et al., 2013), which lends credence to the reasoning that when children discussed and explained emotions with their parents, they were more likely to care about others' emotions (Dunn, 1988; Nelson, 2007; Thompson, 2006). Further, parental sensitivity appears to be important for children's early sharing behaviors with siblings, which is the focus of this investigation. Specifically, van Berkel and colleagues (van Berkel, et al., 2015a) observed preschoolers' (2.5-4.6 years) sharing with their younger siblings (12-24 months) during a cross-sectional home visit in which children were asked to share a box of raisins. Importantly, the researchers also included observations of both fathers' and mothers' sensitivity during a free play task. Preschoolers with sensitive fathers shared more with their sibling, but only when the father was less sensitive toward their younger sibling. Similar findings did not emerge when examining maternal influence, indicating that fathers might be uniquely important for early sibling sharing. In a longitudinal study of the same preschoolers (3 years old) and their younger siblings (12 months) one year later, however, van Berkel and colleagues (van Berkel, et al., 2015b) found that though children shared more with their younger sibling when their father was present, parental sensitivity was not related to sharing, suggesting that specific

parental determinants of sibling sharing remain to be elucidated. Collectively, these studies suggest that warm, sensitive parent-child interactions that focus children to attend to the emotions of others fosters early sharing, particularly among young siblings. Parental inductive discipline also engages children to think about emotions and behaviors and may be an important contributor to sharing as well. The first aim of the current study was to examine if inductive discipline as reported by both fathers and mothers when younger siblings were 24 months of age would predict older and younger siblings' sharing one year later (36 months).

Interaction between the Interparental and Parenting Subsystems

The interparental relationship is a significant determinant of parenting (Belsky, 1984). Two hypotheses have been put forward on how the parent-child and parent-parent subsystems interact. The first is the spillover hypothesis—that is, emotions in the interparental relationship can spillover into the parent-child relationship and vice versa (e.g., Almeida, Wethington, & Chandler, 1999; Erel & Burman, 1995), such that interparental conflict may spillover and give rise to negative parenting practices (Cox et al., 2001; Krishnakumar & Buehler, 2000). In support of this hypothesis, Katz and Woodin (2002) found that destructive interparental conflict was associated with negative parenting practices (e.g., power-assertive discipline, less efficacy in the coparenting relationship), resulting in adverse child outcomes. Inversely, others have found high levels of marital relationship quality was associated with a warm parent-child relationship (Fauchier & Margolin, 2004). Similarly, constructive marital conflict predicted positive parenting practices (e.g., consistent discipline), which, in turn, were positively related to children's social competence (Cowan & Cowan, 2004) or directly related to children's prosocial behaviors (McCoy, Cummings, & Davies, 2009).

The compensatory hypothesis on the other hand states that deficiencies in one family subsystem (e.g., conflict in the interparental relationship) are compensated by active attempts to improve another (e.g., increased involvement in the parent-child relationship: Belsky, Youngblade, Rovine & Volling, 1991; Erel & Burman; Nelson et al., 2009; Goldberg & Easterbrooks, 1984). Parents in a stressful conflictual relationship may increase the amount of time and energy they spend parenting to avoid the stress of interparental conflict. Though some support exists for this hypothesis (e.g., Belsky, Youngblade, Rovine & Volling, 1991; Kouros et al., 2014), there is currently more support for the spillover than the compensatory hypothesis (e.g., the meta-analysis by Erel & Burman, 1995; Hakvoort et al., 2010; Nelson et al., 2009; Pedro, Ribeiro, & Shelton, 2012).

Though the spillover process affects both mothers and fathers, fathers may be uniquely vulnerable. The fathering-vulnerability hypothesis states that interparental conflict has a stronger impact on father-child relationships than it does on mothers (Cummings, Goeke-Morey, & Raymond, 2004), due to a less clearly-defined fathering role (Cummings, Merrilees, & George, 2010). Empirical support for this hypothesis is mixed, some studies have found that fathers are uniquely susceptible to the effects of interparental conflict (Davies, Sturge-Apple, Woitach, & Cummings, 2009; Stevenson et al., 2014) and engage in more harsh and punitive discipline (Krishnakumar & Buehler, 2000; Stevenson et al., 2018), whereas others have found no difference between mothers and fathers (Erel & Burman, 1995; Stevenson, Volling, & Gonzalez, in press; Ponnet et al., 2013). Therefore, the second aim of the current study was to test the extent to which inductive parental discipline by both mothers and fathers was related to interparental relationship quality. A third and final aim was to then determine if interparental

relationship quality at 18 months and inductive parental discipline was associated with sibling sharing at 36 months.

The Current Study

Although studies have examined the associations among parenting practices, interparental relationships, and children's development, few studies have considered how inductive discipline predicts sibling sharing behavior, and even fewer have included information from mothers and fathers. The current longitudinal study provided a unique opportunity to explore this issue further. The study, initially started with the birth of a second child, followed two-parent families longitudinally (See Volling et al., 2017), including when second-born children were 18, 24, and 36 months old. At each timepoint, observational assessments of sibling sharing were obtained. Parent reports of interparental relationship quality and their use of inductive discipline practices in response to sibling conflict were also assessed. Figure 3.1 displays the proposed model, in which interparental relationship quality at 18 months predicts parental inductive discipline (mothers and fathers with older and younger siblings) at 24 months, which in turn predicts sibling sharing behaviors at 36 months. There were three aims to the current study. The first was to examine relations between inductive discipline at 24 months and the older and younger siblings' sharing one year later (36 months). Because parental inductions are associated with several other prosocial behaviors and engage children to think about emotions and behaviors, we hypothesized that high parental inductive discipline at 24 months would predict more sharing at 36 months. The second aim of the current study was to determine if inductive parental discipline by both mothers and fathers was related to interparental relationship quality. We hypothesized that more positive interparental relationship quality would be more predictive of more inductive discipline strategies. We also hypothesized that, because fathers may be uniquely vulnerable to

conflict or receptive to support, the type of interparental relationship would more strongly affect their inductive discipline. A third and final aim was to examine the extent to which inductive discipline indirectly affected the relations between interparental relationship quality and sibling sharing. We hypothesized that more positive interparental relationship quality would spill over into more inductive discipline strategies which would, in turn, predict more sibling sharing. Throughout the study, we refer to the firstborns as the older siblings and the secondborns as the younger siblings.

Method

Participants

Participants for this study were 145 families (each consisting of a mother, father, older sibling, and younger sibling), participating in a longitudinal study of changes in child and family functioning during early childhood. Families had previously participated in a longitudinal investigation of children's adjustment and family relationship functioning following the birth of a sibling (Volling et al., 2017) of home visits, often done first, and lab visits which were generally conducted 2 – 4 weeks later. Families were recontacted to participate in follow-up assessments, which consisted of the same format as the original investigation, when the younger siblings were 18, 24, and 36 months of age. The original study recruited 241 two-parent families expecting their second child, and included five timepoints of data collection (prenatal in the last trimester of pregnancy with the second baby) and 1, 4, 8, and 12 months after the birth. By the 12 month timepoint, only 203 families had continued to participate. The 203 families who participated in the fifth timepoint (when the younger siblings were 12 months of age) of the initial study were recontacted to participate in the follow-up study. Of these, 155 families participated in the 18-month follow-up, 140 participated at 24 months, and 135 at 36 months.

Attrition was generally due to one of the following reasons: families relocated out of the area, they could not be reached to participate, or they declined to continue participation. Parents who participated in the follow-up phase starting at 18 months, did not differ demographically from the 241 families initially recruited for the first phase of the longitudinal investigation.

Of the 155 families who provided data at the 18-month timepoint, 145 families participated in the sibling sharing task, which was the concluding task of the observational lab visit. Because the lab visit was usually conducted after the home visit, some families did not participate in the second lab visit. Families who did not participate in the sibling sharing task at the 18-month timepoint had significantly more older siblings who were boys than the families who did participate in the sibling sharing task χ^2 (1, N = 145) = 5.67, $p < .05$, but otherwise did not differ demographically (i.e., family income, parents' race/ethnicity, years of marriage, parent's age, or younger siblings' gender). At 24 months, 116 families participated in the sibling sharing task in the study and at 36 months, 106 families participated in the sibling sharing task. Attrition for the sibling sharing task was generally due to failure to make contact, because families did not have enough time to continue to participate, video playback error, or because the sibling sharing task was the last task of the lab visit, families occasionally left before the sibling sharing task due to children's exhaustion or emotional state.

At the 18-month timepoint, families were primarily European American (86.5% of mothers; 86.5% of fathers) with 13.6% of mothers and fathers representing other racial and ethnic groups. The mean age of fathers was 34.91 years (SD = 4.65) and the mean age of mothers was 34.03 years (SD =3.84). Most families earned $60,000 - $99,999 (38.7%), with most mothers (87.1%) and fathers (79.4%) having a Bachelor's degree or higher. The mean age of the older siblings when the younger siblings were 18 months was 49.34 months (SD= 10.28);

43.9% of the older siblings and 54.8% of the younger siblings were boys. The mean age space between the siblings was 31 months (*SD* = 10.00). Thirty-seven of the sibling dyads were both girls, 36 were both girls, 50 sibling dyads were comprised of an older sister and a younger brother, and 32 were comprised of an older brother and a younger sister.

Procedures

At each timepoint, parents completed questionnaires on child, parent, and family functioning. Families participated in an initial home visit, followed approximately two to four weeks later by a visit to the university laboratory for further evaluations of children's self-regulation, social understanding, and sibling interaction. For the current analyses, information was obtained from mothers' and fathers' reports on interparental relationship quality at 18 months, parental inductive discipline at 24 months, and observational data from a fishing game at 18 and 36 months to assess sibling sharing. Parents completed an informed consent, were informed of confidentiality, and were paid for $100 for their participation at each of the study timepoints. The study was approved by the University's Institutional Review Board-Medical School.

Measures

Interparental relationship quality. Mothers and fathers independently completed the Braiker & Kelley Intimate Relationship Scale to assess perceptions of interparental relationship quality (IRQ) at 24 months (BKIRS: Belsky, Rovine, & Fish, 1989; Braiker & Kelley, 1979). The BKIRS consists of 25 items rated on a nine-point Likert scale and contains four subscales: *love* (i.e., the degree to which two persons make attributions of love and belonging, as well as the degree of interdependence; mothers: $\alpha = .87$; fathers: $\alpha = .84$), *conflict* (i.e., frequency and intensity of arguments, feelings of anger and resentment, frequency of anger and frustration

displays; mothers: α = .74; fathers: α = .69), *ambivalence* (i.e., confusion about feelings regarding relationship with partner and uncertainty of future of relationship; mothers: α = .77; fathers: α = .70), and *maintenance* (i.e., communication behaviors to maximize rewards and reduce costs from the relationship; mothers: α = .76; fathers: α = .70). As in previous work (Stevenson, Volling, & Gonzalez, 2018, Volling et al., 2017), we composited love and maintenance into *positive interparental relations* for mothers and fathers, and then averaged across parents to create a dyadic composite of *positive interparental relationship quality.* We also composited conflict and ambivalence into *negative interparental relations* for mothers and fathers and then averaged across parents to create a dyadic composite of *negative interparental relationship quality*.

Parental inductive discipline. Mothers and fathers independently completed the Managing Children's Conflict questionnaire (modified for the current study) to examine the frequency of parents' use of an indicative discipline management strategy for responding to sibling conflict at 24 months (MCC: Perozynski & Kramer, 1999). The MCC consists of 14 items rated on a three-point Likert scale (1 = almost never to 3 = usually) to assess how often they had used each of the possible conflict management strategies in response to misbehavior toward the younger sibling in the past month. The measure yields three scales: *child-centered strategies*, *parental control strategies*, and *passive nonintervention*. For the purposes of this study, we used the *child-centered strategies* scale (e.g., asked the child to explain their side and worked with them to reach a solution; mothers' reports with older child: α = .75; mothers' reports with younger child: α = .71; fathers' reports with older child: α = .71; fathers' reports with younger child: α = .77). Because the child-centered strategies scale closely mirrors behaviors inherent in inductive discipline (e.g., the parent explains the reasons required for

children to change their behavior), we refer to child-centered discipline as inductive discipline throughout the rest of the study.

Sibling sharing in the Fishing Game. At the 18- and 36-month visits, both siblings were observed during a Fishing Game task. Children were asked to take turns catching ten fish, each with a metal magnetic tip by the mouth, with a single magnetic fishing rod from an inflatable pool, and were told they would win one prize for every fish caught. One parent was present in the room and was instructed to sit nearby, complete questionnaires, and not intervene in the task unless they deemed it necessary (e.g., to arbitrate conflicts or prevent aggression). The experimenter was also present and provided reminders when necessary (e.g., physical struggles over the pole). Children were allowed to use as much time as needed to complete the task. At the end of the task, the experimenter counted how many fish each sibling had caught. Both children were given five prizes, regardless of the number caught. The task started with the experimenter handing the fishing pole to the older sibling and instructing both siblings to "take turns" and ended when all ten fish had been caught from the pool; average length was 4 minutes and 49 seconds (*SD* = 133 seconds). All sessions were video-recorded and later coded by the research team. The fishing game was created for the current study to assess sibling sharing when an attractive resource was present, as a way to challenge the self- versus other-focus of early moral development.

Fishing Game sharing task coding. The global coding system was designed specifically for this study and measured both self-focused and other-focused behaviors during the sharing task. The first author and a team of eight trained undergraduate research assistants watched the fishing game, several times if necessary, and used global codes (i.e., one code for each behavior for the entire task). Inter-rater reliability was assessed using two-way mixed, consistency, single-

measures intraclass correlations (ICC) and Cohen's kappa coefficients (κ). *Cooperation* was coded on a 7 point Likert scale for each sibling (1 = *no evidence of cooperation during task* to 7 = *highly cooperative interaction for entire task*), and measured the extent to which the child was involved with cooperative or helping behaviors during the task (e.g., helping put the fish on the hook for the other sibling, making it easier for the other sibling to catch the fish by placing the fish closer, offering assistance: ICC for older sibling = .80 at 18 months and .74 at 36 months; ICC for younger sibling = .75 at 18 months and .67 at 36 months).

Turn-taking behaviors were coded on a seven-point Likert scale for each sibling [1 = *No evidence of turn-taking during the task due to active attempts to keep pole for self, disinterest in task, or no option to take turns (e.g.,* actively trying to keep the pole for themselves) to 7 = *turn-taking present for entire task with no conflict* (e.g., at end of own turn, gives up the pole willingly and without prompting)], and assessed the extent to which each child was involved in turn-taking behaviors throughout the task (ICC for older sibling = .80 at 18 months and .74 at 36 months; ICC for younger sibling = .80 at 18 months and .80 at 36 months).

Older sibling management of younger sibling was coded on a seven-point Likert scale for the older sibling only (1 = *no evidence of management during task* to 7 = *high levels of management for entire task*). This code measured the extent to which the older sibling attempted to dictate the activity of the younger sibling in some way (e.g., older sibling requests or suggests that younger sibling perform or not perform a behavior, or perform an activity in a certain way, and younger sibling responds: ICC for older sibling = .76 at 18 months and .69 at 36 months).

Cheating was coded based on whether the child had more than five fish in their basket at the end of the task, with more than five fish indicating cheating, given that if siblings had shared and the fish were distributed equally, each sibling should end the task with five of the ten fish.

Each child received a cheating score based on how many fish above five were in their basket at the completion of the game: 0 = *five or less fish, no cheating*; 1 = *six fish, cheating; 2 = 7 fish, cheating; 3 = 8 fish, cheating; 4 = 9 fish, cheating, and 5 = 10 fish, cheating*: κ for older sibling = .85 at 18 months and .90 at 36 months; κ for younger sibling = .94 and .87 at 36 months).

Stealing was coded as a count based on whether there was any evidence of stealing fish during the entire task from the other sibling during the task or acquiring fish through another means other than through turn-taking (e.g., taking fish directly out of the pool with hands and placing in their basket, taking fish out of the other sibling's basket and putting it in their own basket). Scoring reflected how many of the fish in the child's basket at the end of the task had been stolen.; 0= *no stolen fish in basket* to 10 = *ten stolen fish in basket:* κ for older sibling = .80 at 18 months and .57 at 36 months; κ for younger sibling = .65 at 18 months and .77 at 36 months).

Experimenter intervention was also coded to take into consideration if, and how many times, the experimenter had to remind the siblings to take turns throughout the task, 18 months: $M = 0.76$, $SD = 1.57$; 24 months: $M = 0.43$, $SD = 0.89$; 36 months: $M = 0.18$, $SD = 0.60$) (ICC = .98 at 18 months and .98 at 36 months).

Descriptive statistics and correlations for study variables are presented in Table 3.1.

Data Reduction

Sibling sharing composites. Correlations among the variables coded from the fishing game indicated other-focused sharing behaviors (OS: Cooperation and Helping, Turn-Taking, and Older Sibling Management of the Younger Sibling; YS: Cooperation and Helping, Turn-Taking) and self-focused sharing behaviors (OS & YS: Cheating and Stealing) tended to be significantly correlated together. Therefore, two sharing composites, one for each sibling were

further created from the different sibling sharing behavioral codes. To create these composites, we first reverse coded cheating (5 = *five or less fish, no cheating*; 4 = *six fish, cheating; 3 = 7 fish, cheating; 2 = 8 fish, cheating; 1 = 9 fish, cheating, and 0 = 10 fish)* and stealing (10 = *no stolen fish in basket* to 0 = *ten stolen fish in basket*). We then standardized each code and then summed older siblings' *sharing* (i.e., cooperation, turn-taking, older sibling management of younger sibling, reverse coded cheating and reverse coded stealing) and *younger siblings' sharing* (i.e., cooperation, turn-taking, reverse coded cheating and reverse coded stealing). High scores indicated higher levels of sharing with little evidence of cheating or stealing.

Control variables. Preliminary analyses indicated that the older siblings' age was significantly correlated with mothers' reports of inductive discipline with the older child at 24 months, $r = -0.32$, $p < .001$, fathers' reports of inductive discipline with the older child at 24 months, $r = -0.24$, $p < .01$, mothers' reports of inductive discipline with the younger child at 24 months, $r = -0.26$, $p < .01$, fathers' reports of inductive discipline with the younger child at 24 months, $r = -0.22$, $p < .01$, older siblings' sharing at 36 months, $r = 0.30$, $p < .01$, and younger siblings' sharing at 36 months, $r = 0.22$, $p < .05$. Older siblings' gender was significantly correlated with mothers' reports of inductive discipline with the older child at 24 months, $r = 0.29$, $p < .01$, fathers' reports of inductive discipline with the older child at 24 months, $r = 0.20$, $p < .05$, and older siblings' sharing at 36 months, $r = -0.32$, $p < .01$. Younger siblings' gender was significantly correlated with fathers' reports of inductive discipline with the younger child at 24 months, $r = -0.18$, $p < .05$. Fathers' education was significantly correlated with fathers' reports of inductive discipline with the older child at 24 months, $r = 0.26$, $p < .01$. Further, mothers' education, and mothers' and fathers' race/ethnicity were also included due to their prior associations with parental inductive discipline. Finally, older and younger sibling sharing at 18

months were also included to make certain any significant paths to older and younger siblings' sharing at 36 months took their initial sharing levels into account. Therefore, these variables were added into the models as covariates. Because the study timepoints were based on the younger siblings' age, we did not add the younger siblings' age as a separate covariate.

Results

In order to investigate the associations between interparental relationship quality, parental inductive discipline, and sharing behaviors for older and younger siblings during early childhood, we tested our conceptual model of longitudinal family processes in which parental inductive discipline indirectly influences the interparental relationship quality and sibling sharing over time (see Figure 3.1 for conceptual model). This model allowed us to evaluate our three aims: 1) examine the relations between inductive discipline at 24 months and the older and younger siblings' sharing one year later (36 months), 2) determine if inductive parental discipline by both mothers and fathers was related to interparental relationship quality, and 3) examine the extent to which inductive discipline indirectly affected the relations between interparental relationship quality and sibling sharing. Because we hypothesized that fathers and mothers might be differentially affected by the quality of the interparental relationship, both mothers' and fathers' discipline was included in each model. Based on preliminarily analyses and prior associations, parents' race/ethnicity, parents' education, older siblings' age, both children's gender, and both children's sharing at 18 months were included as covariates.

Path analyses were done using Mplus (version 7.4; Muthén & Muthén, 1998-2017) to estimate the models. All the outcome variables were deemed continuous, so we used maximum likelihood (ML) estimation. No indicators were skewed or kurtotic enough to affect model fit or require transformations. Model fit was evaluated using multiple fit indices, including the root

mean squared error of approximation (RMSEA; best < .05), comparative fit index (CFI; best > .95), the Tucker-Lewis Index (TLI, best > .95), as suggested by Kline (2016). The chi-square test of significance is reported but was not used to assess model fit because it has been shown to be highly sensitive to sample size (Kline, 2011).

Missing data. The percentage of missing data ranged from 0 for the demographic variables to as a high as approximately 27% for some of the 36 month variables. Little's Missing Completely At Random (MCAR) test was used to analyze the missing data pattern. Interparental positive and negative relationship quality had approximately 19% missing data for both variables. Mother reports of inductive discipline for both children had approximately 15% missing data in both of the two variables. Similarly, father reports of inductive discipline for both children had approximately 16% missing data in both of the two variables. Data were primarily missing due to participant attrition (inability to make contact or because families considered further participation in the study to be too much of a time constraint), approximately 20% from 18- to 24 months and 9% from 24- to 36 months. Little's MCAR test was not significant, indicating that data were missing at random and not systematically biased. Therefore, we dealt the problem of missing data using multiple imputation, including participant demographics and all analysis variables, under the assumption that data were missing at random. This missing data strategy has strong theoretical foundations, adjusts for the fact that missing data points are imputed through statistical corrections, and is supported and advocated for by many methodologists and is an explicit imputation approach (Enders, 2013). Multiple imputations places missing data handling at the forefront by generating one or more filled-in dataset as opposed to implicit imputation (i.e., FIML) strategies which temporarily impute missing values during the estimation process to generate parameter estimates and standard errors. Though these

distinct imputation strategies require different procedural processes, they generally produce similar parameter estimates and standard errors (Collins, Schafer, & Kam, 2001). Therefore, we used Mplus' "impute" command to generate 50 imputed datasets under the guidance that more imputations could improve the power of the analysis (Graham et al., 2007). Our analysis of the imputed values suggested that they compared reasonably well to observed values so imputed values are presented.

Structural Equation Model

The model had acceptable fit to the data and model estimation converged normally (RMSEA = .04, 90% CI = [.00 .07], CFI = .93, TLI = .91). Effect size estimates presented as standardized coefficients (β) for the structural equation model results can be found in Figure 3.2. In the structural model, Figure 3.2 shows that positive interparental relationship quality at 18 months directly predicted mothers' reports of inductive discipline with the older sibling and the younger sibling as well as fathers' reports of inductive discipline with the younger sibling. Negative interparental relationship quality did not predict parental inductive discipline. No paths to sibling sharing were significant, and there were no significant indirect paths.

Covariates. Older siblings' age predicted mother-reported inductive discipline with the older child at 24 months (β = -.16, $p < .05$), indicating that mothers of older firstborns used less inductive discipline. Older siblings' gender (0 = female and 1 = male) predicted older sibling sharing behaviors at 36 months (β = -.19, $p < .05$), indicating that older sisters shared more than older brothers. Finally, fathers' education significantly predicted father-reported inductive discipline with the older child at 24 months (β = -.23, $p < .01$), indicating that less educated fathers utilized more inductive discipline than more educated fathers.

Alternative models. Because we did not find any significant paths from inductive discipline at 24 months to either older or younger sibling sharing at 36 moths, we tested three post-hoc alternative models using cross-sectional data assuming that a better test of the spillover model could be attempted within rather than across timepoints (Model 2; *18-month cross-sectional family process* model, Model 3; *24-month cross-sectional family process* model, and Model 4; *36-month cross-sectional family process* model). Though all alternative models had acceptable fit to the data and model estimation converged normally, none contained significant paths to older and/or younger siblings' sharing at 36 months.

Discussion

Using a longitudinal three-wave design over early childhood at 18, 24, and 36 months, the present study examined associations among interparental relationship quality, parental inductive discipline, and sibling sharing in early childhood. We were specifically interested in testing both the spillover and compensatory hypotheses detailed by Erel and Burman (1995) to explain relations between marital relationship quality and parenting, and in this case, inductive discipline. Further, we wanted to ascertain if mothers' and fathers' inductive discipline would predict sibling sharing which is an early form of prosocial behavior in which children must balance a self- versus other-focus. Our modeling strategy tested a longitudinal family process model in which interparental relationship quality at 18 months predicted mothers' and fathers' inductive discipline with both siblings during sibling conflicts at 24 months, and the older and younger siblings' sharing at 36 months. In some cases, we found support for this longitudinal family process model, and in other cases, our hypotheses were not confirmed. The relevance of these findings to understanding early moral development and family processes is discussed below.

Testing the Spillover and Compensatory Hypotheses

Recall that the spillover hypothesis posits that affect, emotions, or behavior in the interparental relationship can transfer into the parent-child relationship and vice versa (Almeida, Wethington, & Chandler, 1999). Though often referred to in a negative context—where tension or conflict in the interparental relationship is transferred into maladaptive parenting practices that may be characterized by tension or conflict as well (Cox et al., 2001; Erel & Burman, 1995)—spillover can also be positive, in which high interparental relationship quality is transferred into warm, sensitive, and responsive parenting (Fauchier & Margolin, 2004). The competing model is the compensatory hypothesis, which posits that parents compensate for deficiencies in their interparental relationship by actively devoting time and energy to their parenting (Belsky, Youngblade, Rovine & Volling, 1991; Erel & Burman, 1995). After testing these two competing hypotheses in our longitudinal family process model, the current study found support for spillover, rather than compensatory hypothesis, when considering the links between interparental relationship quality and parental inductive discipline. That is, when parents reported that they loved one another and spent time working to maintain the quality of their relationships, both mother and fathers were more likely to use inductive discipline (e.g., discipline that focuses children's attention on the consequences of their behavior for others and promotes empathy) with their children when responding to sibling conflict. These results are consistent with previous work that suggests high interparental relationship quality may be particularly important for positive parenting practices. For example, Fauchier and Margolin (2004) found that high levels of marital relationship quality were associated with a warm parent-child relationship (Fauchier & Margolin, 2004). In addition, work by Cowan and Cowan (2004) revealed that constructive marital conflict predicted positive consistent discipline. Taken together, these results add to a

growing body of literature that supports positive linkages between the interparental relationship and parenting (Cowan & Cowan, 2004; Erel & Burman, 1995; Fauchier & Margolin, 2004; Ponnet et al., 2013), and highlights that there may be particular spillover from positive interparental relationship quality to warm and thoughtful parental discipline practices.

Despite clear and expected support for the findings detailed above, the current study did not support our hypothesis that interparental relationship quality would be more predictive of fathers' inductive discipline than mothers' inductive discipline, as suggested by the father vulnerability hypothesis (Cummings, Goeke-Morey, & Raymond, 2004). Instead, the findings offered stronger evidence that both mothers and fathers engaged in more positive discipline strategies, such as inductive discipline, when they had interparental relationships characterized by high levels of love and relationship maintenance. Raising two young children during early childhood is demanding for any parent, regardless of gender, and our findings indicated that both mothers' and fathers' parenting can benefit when they experience a positive interparental relationship. It should be noted, however, that most of the work on the Father Vulnerability Hypothesis has focused on interparental relationship conflict and negative parenting practices, such as harsh parenting (e.g., Cummings, Goeke-Morey, & Raymond, 2004; Davies, Sturge-Apple, Woitach, & Cummings, 2009; Krishnakumar & Buehler, 2000; Ponnet et al., 2013; Stevenson et al., 2018). Further, Cummings, Merrilees and George (2010) posited that father vulnerability may be limited to specific family processes and/or domains of child adjustment. Therefore, fathers may not be uniquely susceptible to more support from their interparental relationship and as such, testing the father vulnerability hypothesis within the context of a positive parenting discipline strategy like inductive discipline may have given rise to different findings than had we investigated the influence of negative interparental relationship quality and

harsh discipline practices. We suggest future work examine the relations between positive interparental quality and paternal positive parenting practices to verify these findings.

Does Inductive Discipline During Sibling Quarrels Predict Sibling Sharing?

The answer to this question appears to be "no", at least from the present investigation of young siblings observed taking turns and sharing during the Fishing Game task. Specifically, the results did not support relations between inductive discipline in response to sibling conflicts, as reported by both fathers and mothers at 24 months, and older and younger sibling sharing one year later. Though unexpected, these findings still provided relevant insight into the development of sibling sharing and children's prosocial behavior.

Recall that Hoffman (2000) emphasized that parental inductions are a means to promote empathy in young children. Empathy, a concern for others in distress, and children's ability to resist temptation are indicators of children's emerging moral awareness and internalized conscience, the mechanism internalized by children to control impulses or desires (Kochanska, 1993, 1994; Volling, Mahoney, & Rauer, 2009). Kochanska (1993; 1994) conceptualized conscience as including both affective discomfort (i.e., emotional reactions such as empathic concern, anxiety, or guilt toward acts of transgression) and moral regulation (i.e., the need to control antisocial and destructive tendencies within oneself and employ self-restraint). Previous work on parental inductive discipline indicates that it is associated with prosocial behaviors more closely linked to the affective discomfort component of conscience in both typically developing boys and girls, such as empathy and helping (e.g., Eisenberg, Fabes, & Spinrad, 2006; Miller et al., 1989). Previous results looking at sibling sharing using this longitudinal data set (Study 1) found that both older and younger siblings' sharing, as measured in the Fishing Game Task, was significantly related to the older and younger siblings' moral regulation rather than affective

discomfort. Because sharing was more closely related to moral regulation (see Study 1), other parental behaviors not considered here, such as parental sensitivity or parental warmth, may be more important in predicting sharing (van Berkel et al., 2015a).

It is important to note that Kerr, Lopez, Olson and Sameroff (2004) found that parental inductive discipline was predictive of the moral regulation component of conscience in boys at risk for school-aged conduct problems. The current study, however, differs from the Kerr et al. (2004) work in two chief ways. First, Kerr and colleagues (Kerr et al., 2004) looked specifically at the relationships among children's gender differences, parental discipline, and children's moral regulation, and children's externalizing symptoms. In contrast, though the current study controlled for children's gender, it was not a key variable in the analyses. As such, it is unclear if parental inductions would significantly predict sibling sharing if children in the current study had been separated by gender. Second, though both the Kerr et al. (2004) study and the current work used lab-based paradigms, the tasks were quite different. Kerr and colleagues' (Kerr et al., 2004) task measured rule-following and resistance to temptation through a gift delay task in which the experimenter told a child not to peek at a prize while it was being wrapped. Conversely, though the current study did provide rules to the siblings, it looked at a sibling dynamic in which children were told to take turns and examined their promotion of positive behaviors and inhibition of negative behaviors as opposed to how children followed directives given by an adult. As such, it may be that though both rule violations and sharing require moral regulation, parental inductions may not necessarily elicit both equally.

Therefore, it is possible that even though inductions may be predictive of certain types of prosocial behaviors, such as empathy and helping, they may not be particularly useful in predicting sharing. Should we expect inductive discipline to predict all prosocial behaviors?

Prosocial behaviors describe a wide range of behaviors, cognitions and affective states that are intended to help others, but what predicts helping, sympathy, cooperation, or sharing may be quite distinct, even though all of these are often composited into a variable labeled, prosocial behaviors.

Sharing requires both the promotion of other-focused positive behaviors and the inhibition of self-focused negative behaviors. Sharing also requires an understanding of the societal expectations of turn-taking, and that it is "right" to share (focus on others) and "wrong" not to (focus on self). Few studies have focused on sibling sharing. Of those that have examined sibling sharing, paternal sensitivity, as observed during an observational free play task, promoted older preschool siblings sharing toward a younger sibling (van Berkel et al., 2015a). That finding, and the findings of the current study, suggest that parental influences on sibling sharing may be driven by the nature of the parent-child dyad as opposed to the type of parental discipline. The current study has made progress toward providing preliminary answers to some of the open questions on the family influences on sibling sharing. Nevertheless, the exploratory nature of the current work and the fact that few studies currently exist, indicates a striking need for further studies on sharing that can disentangle what it means to share, how it can be assessed both quantitatively and qualitatively, and what parental practices predict it.

Strengths and Limitations

One of the strengths of the current study was the longitudinal three-wave design over the early years of childhood (18 to 36 months), a time when children begin to understand the distinction of self and other, internalize the rules of conduct that govern prosocial behavior, and learn and demonstrate these rules in the company of their role models, such as an older sibling. This longitudinal design provided the opportunity to investigate the associations between

interparental relationship quality, parental inductive discipline, and sharing behaviors during the early childhood period. Second, sibling sharing was measured through direct observations of siblings engaged in the Fishing Game task, a task that requires children to take turns and cooperate in order to distribute resources equitably in relation to self and other. This measure provided a realistic lab-based environment to assess both siblings' promotion of their positive other-focused behaviors and inhibition of their negative self-focused behaviors. Though we did not find any relations between either parent's inductive discipline and older and younger siblings' sharing behaviors, our results lend support to the spillover hypothesis, suggesting that positive parenting practices such as inductive discipline are uniquely predicted by positive interparental relationship quality. Finally, another strength of the current study was the inclusion of both mother and father reports of their inductive discipline with their older and younger children and of interparental relationship quality. Many of the empirical studies on family relations do not utilize father reports, although there is research to suggest that fathers may play a particularly influential role in the development of prosocial behavior (van Berkel et al., 2015a; Volling & Belsky, 1992) and the quality of sibling relationships (Kolak & Volling, 2011; Yaremych & Volling, 2018). Therefore, the use of both parents' reports in current study not only reduced single-reporter bias but also provided insight into the distinct influence fathers may have played in the family system over the early childhood period. Finally, sharing was measured through direct observations of siblings engaged in the Fishing Game task, a task that requires children to take turns and cooperate in order to distribute resources equitably in relation to self and other. This paradigm provided naturalistic lab-based context to demonstrate siblings' sharing behaviors in early childhood.

Despite these strengths, the current study also had several limitations. Participants were primarily European American, well-educated, and middle-class two-parent heterosexual families, which may constrain the generalizability of the findings to families with different socioeconomic or cultural circumstances. It is important, therefore, for future research to investigate interparental relationship spillover to parents' inductive discipline with a more diverse population, with respect to SES, race and ethnicity, and family composition. Second, though we utilized mother and father reports to minimize single-reporter bias, parent reports are never entirely free of subjective interpretation. Future studies, may want to consider utilizing observational measures to assess both parental discipline, as well as other parenting constructs such as parental sensitivity, when examining prosocial sibling behaviors such as sharing (van Berkel et al., 2015a).

Conclusion

In summary, the present study investigated the associations among interparental relationship quality, inductive discipline, and sibling sharing during early childhood. The findings supported a spillover hypothesis in that positive interparental relationship quality at 18 months appeared to promote inductive discipline in response to sibling conflicts at 24 months, for both mothers and fathers. We did not find support, however, for the hypothesis that parental inductions would predict sibling sharing when younger siblings were 3 years old, and recommend strongly that future research attempt to elucidate the manner in which parenting practices promote children's sharing. Children live in an interconnected family system that often includes parent-parent, parent-child, and child-sibling relationships. The current findings remind us that uncovering and understanding those connections is not always straight forward, even though doing so is essential for understanding the family ecology of children's development.

Table 3.1

Descriptive Statistics and Correlations Between Study Variables

		1	2	3	4	5	6	7	8
18 months									
1. Positive IRQ		-							
2. Negative IRQ		-.46**	-						
24 months									
3. Mother-reported child centered discipline with older child		.21*	0.004	-					
4. Mother-reported child centered discipline with younger child		.31**	-0.10	.67**	-				
5. Father-reported child centered discipline with older child		0.15	0.01	.33**	.27**	-			
6. Father-reported child centered discipline with younger child		.25**	-0.12	.26**	.35**	.70**	-		
36 months									
7. Older Sibling Sharing		-0.04	-0.07	-0.18	-0.05	-0.08	-0.06	-	
8. Younger Sibling Sharing		-.20*	-0.05	-0.11	-0.19	-0.04	-0.08	.40**	-
	M	6.60	3.00	2.38	2.06	2.29	1.90	0	0
	SD	0.81	0.92	0.44	0.44	0.43	0.47	2.83	2.45

Note. IRQ = Interparental Relationship Quality.

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

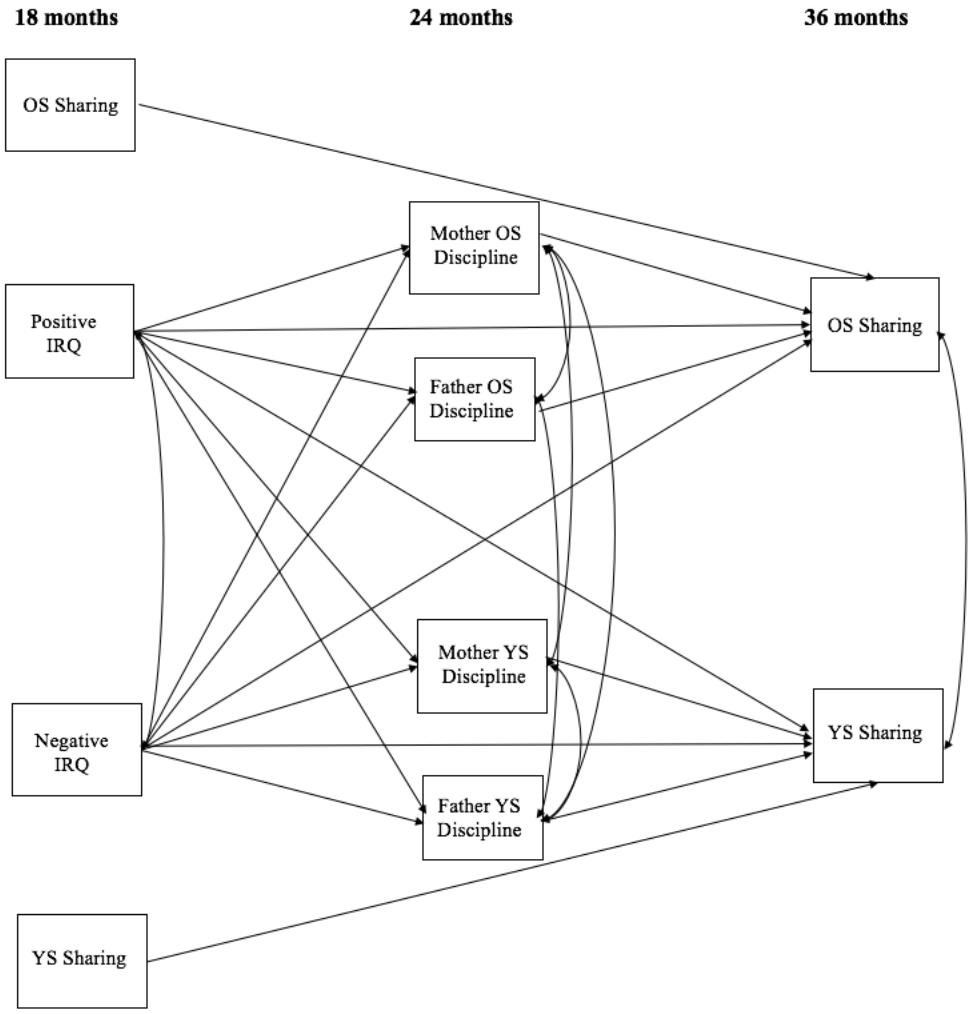

Figure 3.1. The hypothesized conceptual model of relations among interparental quality, parental inductive discipline, and sibling sharing.

Note. OS = older sibling, YS = younger sibling. IRQ = interparental relationship quality.

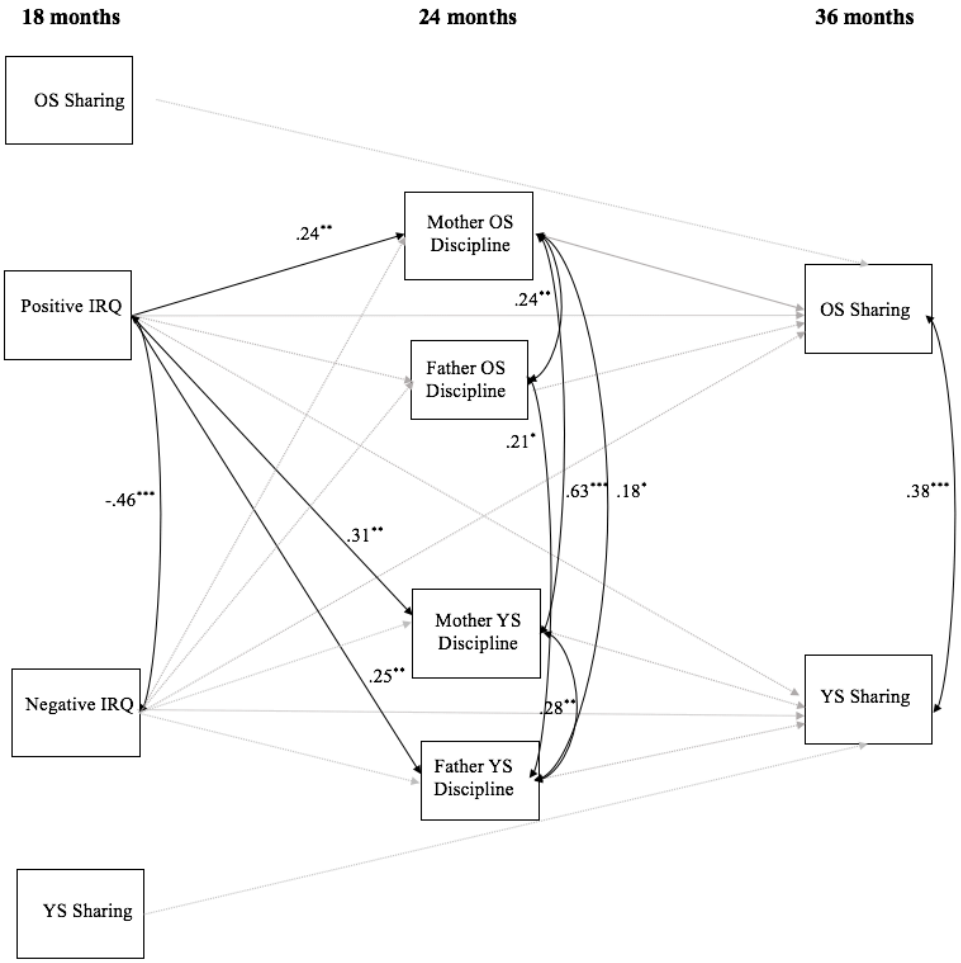

Figure 3.2. Final model in which there are unidirectional paths from positive and negative interparental relationship quality at 18 months to parental inductive discipline at 24 months and older and younger siblings' sharing at 36 months, and unidirectional paths from parental inductive discipline at 24 months to older and younger siblings' sharing at 36 months. It also estimated indirect paths between positive and negative interparental relationship quality at 18 months and older and younger siblings' sharing at 36 months. This model controls for parental race, parental education, older sibling age, older and younger sibling gender, and older and younger sibling sharing at 18 months.

Note. OS = older sibling, YS = younger sibling. IRQ = interparental relationship quality.

*$p < .05$. **$p < .01$. ***$p < .001$.

References

Almeida, D. M., Wethington, E., & Chandler, A. L. (1999). Daily transmission of tensions between marital dyads and parent-child dyads. *Journal of Marriage and the Family*, 49-61.

Asbury, K., Dunn, J. F., Pike, A., & Plomin, R. (2003). Nonshared environmental influences on individual differences in early behavioral development: A monozygotic twin differences study. *Child Development*, *74*(3), 933-943.

Bar-Tal, D., Nadler, A., & Blechman, N. (1980). The relationship between Israeli children's helping behavior and their perception of parents' socialization practices. *Journal of Social Psychology*, *111*(2), 159-167.

Belsky, J. (1981). Early human experience: A family perspective. *Developmental Psychology*, *17*(1), 3-23.

Belsky, J. (1984). The determinants of parenting: A process model. *Child Development*, *55*(1) 83-96.

Belsky, J., Rovine, M. J., & Fish, M. (1989). The developing family system. In M. Gunnar & E. Thelen (Eds.), *Minnesota symposia on child psychology: Vol. 22. Systems and development* (pp. 119–166). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Belsky, J., Youngblade, L., Rovine, M., & Volling, B. (1991). Patterns of marital change and parent-child interaction. *Journal of Marriage and the Family*, 487-498.

Braiker, H. B., & Kelley, H. H. (1979). Conflict in the development of close relationships. In R. L. Burgess & T. L. Huston (Eds.), *Social exchange in developing relationships* (pp. 135-168). New York: Academic.

Brownell, C. A., Svetlova, M., Anderson, R., Nichols, S. R., & Drummond, J. (2013). Socialization of early prosocial behavior: Parents' talk about emotions is associated with sharing and helping in toddlers. *Infancy*, *18*(1), 91-119.

Bryant, B. K., & Crockenberg, S. B. (1980). Correlates and dimensions of prosocial behavior: A study of female siblings with their mothers. *Child Development*, *51*(2), 529-544.

Clark, K. E., & Ladd, G. W. (2000). Connectedness and autonomy support in parent-child relationships: Links to children's socioemotional orientation and peer relationships. *Developmental Psychology, 36*(4), 485–498.

Collins, L. M., Schafer, J. L., & Kam, C. M. (2001). A comparison of inclusive and restrictive strategies in modern missing data procedures. *Psychological Methods*, *6*(4), 330-351.

Cowan, P.A., & Cowan, C.P. (2004). From family relationships to peer rejection to antisocial behavior in middle childhood. In J.S. Kupersmidt, & K.A. Dodge, (Eds), Children's peer relations: From development to intervention (pp (pp. 159–177). Washington, DC: American Psychological Association.

Cox, M. J., & Paley, B. (2003). Understanding families as systems. *Current Directions in Psychological Science*, *12*(5), 193-196.

Cox, M. J., Paley, B., & Harter, K. (2001). Interparental conflict and parent-child relationships. *Interparental conflict and child development: Theory, research, and applications*, 249-272.

Cummings, E. M., Goeke-Morey, M. C., & Raymond, J. (2004). Fathers in family context: Effects of marital quality and marital conflict. In M. E. Lamb (Ed.), The role of the father in child development (4th ed., pp. 196-221). Hoboken, NJ: Wiley

Cummings, M., Merrilees, C. E., & George, M. W. (2010). Fathers, marriages, and families:

Revisiting and updating the framework for fathering in family context. In *The role of the father in child development* (5th ed.) (pp. 154–176). Hoboken, NJ, US: John Wiley & Sons Inc.

Davies, P. T., Sturge-Apple, M. L., Woitach, M. J., & Cummings, M. (2009). A process analysis of the transmission of distress from interparental conflict to parenting: Adult relationship security as an explanatory mechanism. *Developmental Psychology, 45*(6), 1761–1773.

Denham, S. A., Renwick-DeBardi, S., & Hewes, S. (1994). Emotional communication between mothers and preschoolers: Relations with emotional competence. *Merrill-Palmer Quarterly*, *40*(4), 488–508.

Eisenberg-Berg N, Hand M (1979) The relationship of preschoolers' reasoning about prosocial moral conflicts to prosocial behavior. *Child Development, 50*(20), 356–363.

Eisenberg, N., Fabes, R. A., & Spinrad, T. L. (2006). Prosocial development. In Damon, W. & Lerner, R. (Eds.), *Handbook of child psychology* (pp. 646-718). Hoboken, N.J.: John Wiley & Sons.

Enders, C. K. (2013). Dealing with missing data in developmental research. *Child Development Perspectives*, *7*(1), 27-31.

Erel, O., & Burman, B. (1995). Interrelatedness of marital relations and parent-child relations: a meta-analytic review. *Psychological Bulletin*, *118*(1), 108-132.

Farrant, B. M., Devine, T. A., Maybery, M. T., & Fletcher, J. (2012). Empathy, perspective taking and prosocial behaviour: The importance of parenting practices. *Infant and Child Development*, *21*(2), 175-188.

Fauchier, A., & Margolin, G. (2004). Affection and conflict in marital and parent-child relationships. *Journal of Marital and Family Therapy*, *30*(2), 197-211.

Graham, J. W., Olchowski, A. E., & Gilreath, T. D. (2007). How many imputations are really needed? Some practical clarifications of multiple imputation theory. *Prevention Science*, *8*(3), 206-213.

Goldberg, W. A., & Easterbrooks, M. (1984). Role of marital quality in toddler development. *Developmental Psychology, 20*(3), 504-514.

Hart, C. H., DeWolf, D. M., Wozniak, P., & Burts, D. C. (1992). Maternal and paternal disciplinary styles: Relations with preschoolers' playground behavioral orientations and peer status. *Child Development*, *63*(4), 879-892.

Hakvoort, E. M., Bos, H. M., Van Balen, F., & Hermanns, J. M. (2010). Family relationships and the psychosocial adjustment of school-aged children in intact families. *The Journal of Genetic Psychology*, *171*(2), 182-201.

Hoffman, M. L. (1970). Moral development. In P. H. Mussen (Ed.), *Carmichael's manual of child development* (Vol. 2, pp. 261–359). New York: Wiley.

Hoffman, M. L. (1975). Altruistic behavior and the parent-child relationship. *Journal of Personality and Social Psychology, 31*(5), 937–943.

Hoffman, M. L. (2000). Empathy and moral development: Implications for caring and justice. New York: Cambridge University Press.

Janssens, J. M. A. M., & Gerris, J. R. M. (1992). Child rearing, empathy and prosocial development. In J. M. A. M. Janssens &J. R. M. Gerris (Eds.), *Child rearing: Influence on prosocial and moral development* (pp. 57–75). Amsterdam: Swets & Zeitlinger.

Katz, L. F., & Woodin, E. M. (2002). Hostility, hostile detachment, and conflict engagement in marriages: Effects on child and family functioning. *Child Development*, *73*(2), 636-652.

Kiang, L., Moreno, A. J., & Robinson, J. L. (2004). Maternal preconceptions about parenting

predict child temperament, maternal sensitivity, and children's empathy. *Developmental Psychology*, *40*(6), 1081-1092.
Kline, R.B. (2011). Convergence of structural equation modeling and multilevel modeling. In Williams, M. & Vogt, W. P. (Eds.) *The SAGE handbook of innovation in social research methods* (pp. 562 -589). Thousand Oaks, CA: SAGE Publications Ltd.
Kline, R. B. (2016). *Principles and practice of structural equation modeling* (Fourth Ed). New York, NY: Guilford Press.
Knafo, A., & Plomin, R. (2006). Parental discipline and affection and children's prosocial behavior: genetic and environmental links. *Journal of Personality and Social Psychology*, *90*(1), 147-164.
Kochanska, G. (1993). Toward a synthesis of parental socialization and child temperament in early development of conscience. *Child Development, 64*(2), 325–347.
Kochanska, G. (1994). Beyond cognition: Expanding the search for the early roots of internalization, and conscience. *Developmental Psychology, 30*(1), 20–22.
Kochanska, G., & Aksan, N. (2006). Children's conscience and self-regulation. *Journal of Personality*, *74*(6), 1587-1618.
Kochanska, G., Forman, D. R., & Coy, K. C. (1999). Implications of the mother-child relationship in infancy for socialization in the second year of life. *Infant Behavior and Development*, *22*(2), 249-265.
Kochanska, G., Koenig, J. L., Barry, R. A., Kim, S., & Yoon, J. E. (2010). Children's conscience during toddler and preschool years, moral self, and a competent, adaptive developmental trajectory. *Developmental Psychology*, *46*(5), 1320-1332.
Kolak, A. M., & Volling, B. L. (2011). Sibling jealousy in early childhood: Longitudinal links to sibling relationship quality. *Infant and Child Development, 20*(2), 213–226.
Kouros, C. D., Papp, L. M., Goeke-Morey, M. C., & Cummings, E. M. (2014). Spillover between marital quality and parent–child relationship quality: Parental depressive symptoms as moderators. *Journal of Family Psychology*, *28*(3), 315-325.
Krevans, J., & Gibbs, J. C. (1996). Parents' use of inductive discipline: Relations to children's empathy and prosocial behavior. *Child Development, 67*(6), 3263–3277.
Krishnakumar, A., & Buehler, C. (2000). Interparental conflict and parenting behaviors: A meta-analytic review. *Family Relations*, *49*(1), 25-44.
Margolin, G. (1981). The reciprocal relationship between marital and child problems. In J. R Vincent (Ed.), *Advances in family intervention, assessment, and theory*, Vol. 2 (pp. 131-182). Greenwich, CT: JAI Press
McCoy, K., Cummings, E. M., & Davies, P. T. (2009). Constructive and destructive marital conflict, emotional security and children's prosocial behavior. *Journal of Child Psychology and Psychiatry*, *50*(3), 270-279.
Miller, P. A., Eisenberg, N., Fabes, R. A., Shell, R., & Gular, S. (1989). Mothers' emotional arousal as a moderator in the socialization of children's empathy. *New Directions for Child and Adolescent Development*, *1989*(44), 65-83.
Muthén, L.K. and Muthén, B.O. (1998-2017). Mplus User's Guide. Eighth Edition. Los Angeles, CA: Muthén & Muthén.
Muthén, L. K., & Muthén, B. O. (2006). MPlus user's guide. Los Angeles, CA: Muthén & Muthén.
Nelson, J. A., O'Brien, M., Blankson, A. N., Calkins, S. D., & Keane, S. P. (2009). Family stress

and parental responses to children's negative emotions: Tests of the spillover, crossover, and compensatory hypotheses. *Journal of Family Psychology*, *23*(5), 671-679.
Pedro, M. F., Ribeiro, T., & Shelton, K. H. (2012). Marital satisfaction and partners' parenting practices: The mediating role of coparenting behavior. *Journal of Family Psychology*, *26*(4), 509-522.
Perozynski, L., & Kramer, L. (1999). Parental beliefs about managing sibling conflict. *Developmental Psychology, 35*(2) , 489-499.
Ponnet, K., Mortelmans, D., Wouters, E., Van Leeuwen, K., Bastaits, K., & Pasteels, I. (2013). Parenting stress and marital relationship as determinants of mothers' and fathers' parenting. *Personal Relationships, 20*(2), 259–276.
Stanhope, L., Bell, R. Q., & Parker-Cohen, N. Y. (1987). Temperament and helping behavior in preschool children. *Developmental Psychology, 23*(3), 347–353.
Staub, E. (1979). Positive social behavior and morality: Vol. 2. *Socialization and Development*. New York: Academic Press.
Stevenson, M. M., Fabricius, W. V., Cookston, J. T., Parke, R. D., Coltrane, S., Braver, S. L., & Saenz, D. S. (2014). Marital problems, maternal gatekeeping attitudes, and father–child relationships in adolescence. *Developmental Psychology, 50*(4), 1208–1218.
Stevenson, M. M., Volling, B. L., & Gonzalez, R. (2018). An examination of father vulnerability and coercive family process after the birth of a sibling: A spillover cascade model. *Development and Psychopathology*, 1-14.
Thompson, R. A. (2011). Emotion and emotion regulation: Two sides of the developing coin. *Emotion Review*, *3*(1), 53-61.
van Berkel, S. R., Groeneveld, M. G., Mesman, J., Endendijk, J. J., Hallers-Haalboom, E. T., van der Pol, L. D., & Bakermans-Kranenburg, M. J. (2015a). Parental Sensitivity Towards Toddlers and Infant Siblings Predicting Toddler Sharing and Compliance. *Journal of Child and Family Studies*, *24*(8), 2270-2279.
van Berkel, S. R., Van der Pol, L. D., Groeneveld, M. G., Hallers-Haalboom, E. T., Endendijk, J. J., Mesman, J., & Bakermans-Kranenburg, M. J. (2015b). To share or not to share: Parental, sibling, and situational influences on sharing with a younger sibling. *International Journal of Behavioral Development*, *39*(3), 235-241.
Volling, B. L., & Belsky, J. (1992). The contribution of mother-child and father-child relationships to the quality of sibling interaction: A longitudinal study. *Child Development, 63*(5), 1209–1222.
Volling, B.L, Gonzalez, R., Oh, W., & Yu, T., Rosenberg, L., Song, J., Thomason, E., Kuo, P., Beyers-Carlson, E., Safyer, P., & Stevenson, M. (2017). Changes in firstborn children's adjustment across the transition to siblinghood: *Developmental trajectories of children's adjustment across the transition to siblinghood: Pre-birth predictors and sibling outcomes at one year*. Wiley.
Volling, B. L., Mahoney, A., & Rauer, A. J. (2009). Sanctification of parenting, moral socialization, and young children's conscience development. *Psychology of Religion and Spirituality*, *1*(1), 53-68.
Volling, B. L., Oh, W., Gonzalez, R., Kuo, P. X., & Yu, T. (2015). Patterns of marital relationship change across the transition from one child to two. *Couple and Family Psychology: Research and Practice*, *4*(3), 177-197.
Whiteside-Mansell, L., Bradley, R. H., Owen, M. T., Randolph, S. M., & Cauce, A. M. (2003).

Parenting and children's behavior at 36 months: Equivalence between African American and European American mother-child dyads. *Parenting: Science and Practice*, *3*(3), 197-234.

Yaremych, H. E., & Volling, B. L. (2018). Sibling relationships and mothers' and fathers' emotion socialization practices: a within-family perspective. *Early Child Development and Care*, 1-15.

Zahn-Waxler, C., Radke-Yarrow, M., & King, R. A. (1979). Child rearing and children's prosocial initiations toward victims of distress. Child Development, 50(2), 319–330.

Zahn-Waxler, C., Schiro, K., Robinson, J. L., Emde, R. N., & Schmitz, S. (2001). Empathy and prosocial patterns in young MZ and DZ twins: Development and genetic and environmental influences. In R. N. Emde & J. K. Hewitt (Eds.), *Infancy to early childhood: Genetic and environmental influences on developmental change* (pp. 141–162). New York: Oxford University Press.

CHAPTER IV

(STUDY 3) CAN I LOVE MY SECOND CHILD AS MUCH AS MY FIRST? CONCERNS ON BABYCENTER ABOUT THE TRANSITION TO THE SECOND CHILD

As the use of the Internet in society has continued to rise, it has drastically changed the way parents use information and interact with others (Shirky, 2008). Though technology use is increasing, in general (Martin & Robinson, 2007; National Telecommunications and Information Administration (NTIA), 2011), parents are particularly active Internet users (Dworkin, Connell, & Doty, 2013; NTIA, 2011). Thus, many parents are turning to the online world for advice and support (Dworkin, Connell, & Doty, 2013; Sarkadi and Bremberg, 2004), and health information (Danebeck & Plantin, 2008; Plantin & Danebeck, 2009). Further, the online world provides an environment of anonymity and disinhibition, which can create a safe space for parents to explore their own identities and a social outlet to discuss difficult parenting issues without revealing their true identities (Yardi Schoenebeck, 2013).

The transition to the second child is one such topic. Nearly 80% of families in the United States have at least two children, indicating that the birth of a second child is a normative life experience for many U.S. families (U.S. Census, 2009). Though this transition has been studied in real-world settings (e.g., Dunn, Kendrick, & MacNamee, 1981; Stewart, 1990; Volling, 2012; Volling et al., 2017), there has been little empirical investigation into how parents discuss the transition from one to two children in an online setting. Because there are few resources available to parents making the transition from one child to two (Beyers-Carlson & Volling,

2017), soon to be second-time parents may turn to the internet for information on how best to prepare their older child and themselves as the birth of the infant sibling approaches, and after the infant has arrived. Unfortunately, little research exists on the transition to the second child (Volling, 2012) and online information often portrays the transition as traumatic and a time of crisis for older children. As such, it would be useful to learn more about what parents discuss online to learn how best to assist families going through the transition. Therefore, the main goal of the present investigation was to examine what kinds of topics parents discuss online regarding the transition to the second child.

The Transition to the Second Child

The addition of a second child is a transition for both parents and their children, bringing about fluctuations in the parental role and reorganization of family relationships (Volling, 2012). Mothers may experience feelings of guilt and sorrow around the loss of the exclusive dyadic relationship with their firstborn (Young, Boyle, & Colletti, 1983), express concern over the impending disruption that the new child might bring to the family (Richardson, 1983) and worry whether the firstborn will accept the new sibling (Dunn & Kendrick, 1982).

In their qualitative study of 14 mothers during the 6-week postpartum period after the birth of their second child, Walz and Rich (1983) interviewed mothers about two central questions 1) how they adjusted their lives to include second children and 2) how they facilitated their first children's adjustment to siblinghood. They organized mothers' interview responses into several themes that reflected the preparation tasks of second-time motherhood. Mothers expressed worries regarding the loss and reformulation of their exclusive relationship with their first child, how to encourage this child's acceptance of the baby sibling, the logistics of planning family life with two children, and their ability to provide satisfactory emotional support for two

children. Further, Walz and Rich (1983) noted that mothers often mentioned promoting maturity in their firstborn children as a means of surviving the postpartum period. Mothers attempted to foster maturity and independence by encouraging their children to dress themselves, purchasing shirts with phrases like "I'm the big brother", or by explaining the advantages older children enjoy that babies cannot (e.g., going swimming or eating ice cream). Mothers perceived these behaviors as a necessary way to allocate time for themselves and both children after the birth of the new baby.

To further elucidate if these themes capture the typical concerns of mothers to the transition to the second child, we conducted a comprehensive review of the English-language quantitative and qualitative literature that addressed the concerns and motivations mothers experienced during this time period. First, we conducted computer searches of PsycINFO, PubMed, Google Scholar, and Dissertation Abstracts International, using the keywords: *transition to the second child*, *reactions to the birth of the second child*, *maternal concerns*, *maternal perceptions*, *second pregnancy*, *birth of second child*, *multipara*, and *second baby*. We also used options within the various databases, such as "related articles" or "times cited," to find articles that had similar content to the article being examined or cited that article. Second, we utilized the reference sections of all found articles, books, and dissertations as an attempt to retrieve all the literature examining parental reactions to the addition of a second child. From this search, we found 31 published sources addressing mothers' reactions to the transition to the second child both pre- and post-birth, the majority of which addressed pre-birth concerns and were published before the year 2000.

Six theme clusters emerged from the 31 sources. From the sources, we identified 32 unique subthemes expressed by mothers during the transition to the second child. Belsky's

(1984) determinants of parenting process model states that parenting is influenced by multiple factors from "within the individual parent (personality), within the individual child (child characteristics of individuality), and from the broader social context in which the parent-child relationship is embedded-specifically, marital relations, social networks, and occupational experiences of parent" (p. 84). Drawing loosely upon that model, we organized the subthemes into six overarching themes in the following way: 1) Maternal Characteristics, 2) New Baby, 3) Older Sibling Adjustment, 4) Marriage and Family Relationships, 5) Work and Family Life, and 6) Social Support. Because mothers' topics of interest during this time period were the central focus of the current study, organizing our themes this way allowed us to first concentrate on mothers' psychological and physical concerns, then on their concerns regarding members of their immediate family, and finally on their contextual sources of stress and support (see Table 1).

Maternal Characteristics

The first overarching theme identified by the literature related to the mothers' maternal characteristics and can be divided into four subcategories: affect, behavior, cognition, and pregnancy and postpartum concerns.

Affect. Many of the articles found that mothers experienced various types of emotional concerns, such as grief, stress around changing roles, irritability, or inability to cope with the changes (Grace, 1993; Halas 1984; Hiser, 1987; Larsen, 1966; Mercer, 1979; O'Reilly, 2004; Pridham et al., 1982; Richardson, 1983; Richardson, 1986; Rubin, 1967; Rubin, 1976; Walz and Rich, 1983; Young, Boyle, & Colletti, 1983). Next, much of the previous work discovered that mothers had conflicted feelings regarding the fluctuations in the parental role and reorganization of the family relationship. Some mothers expressed feelings of guilt and betrayal of their first children (Balsink, 2001; Halas, 1984; Jenkins, 1976), whereas others grieved the loss of their

exclusive dyadic relationships with their older children and/or felt their relationship required increased maintenance and reorganization (Fisher, 1987; Halas, 1984; Mackey, 1975; Richardson, 1983; Richardson, 1986; Rubin, 1976; Walz and Rich, 1983; Young, Boyle, & Colletti, 1983). Finally, many mothers expressed significant worry and concern over their ability to emotionally care for two children (e.g., worry regarding their capacity to love two children equally) (Halas, 1984; Jenkins, 1976; Mercer, 1979; Mercer, 1995; Walz & Rich, 1983).

Behavior. Mothers in the previous work expressed concern over their parenting behavior and parenting competency. First, mothers were often concerned about their ability to physically care for two children (e.g., organizing caregiving activities to meet the needs of two children without neglecting one or the other) (Fisher, 1987; Halas, 1984; Jenkins, 1976). Some mothers were concerned about their parenting more generally and discussed such things as meeting the needs of their family or the effects of a new baby on their personal and family life (Hiser, 1987; Pridham et al., 1982) and stressed the necessity of readjusting family routines (Larsen, 1966; O'Reilly, 2004). Further, some mothers discussed balancing the positive and negative aspects of the early weeks after the birth (O'Reilly, 2004). For some mothers, the early weeks after the birth were stressful and filled with difficulties (e.g., breastfeeding problems, lack of sleep), whereas other mothers felt that the second delivery was easier and allowed them to recover much more quickly than with their first children. Finally, mothers in several studies discussed their desire and attempts to promote maturity (e.g., encouraging the older child to dress themselves; toilet training) in their firstborns to ease the transition (Fisher, 1987; Walz & Rich, 1983).

Cognitions. Mothers in the previous work thought deeply about adding a new baby to the family. They often spoke of their motivations for having a second child, such as hoping the new baby would be a companion for the first (Crawford & Boyer, 1984) or bemoaned their lack of

choice in being delegated the primary caregiver by their husbands, when they wanted to return to work (Frost & Rodriguez, 2015). Even though many mothers expressed gratitude for the knowledge gained from their experiences with the first child, they also desired and actively sought more information than was available about parenting two children (Hiser, 1987; Jordan, 1989; O'Reilly, 2004).

Pregnancy and postpartum changes. Finally, much of the previous literature focused on mothers' concerns about the physical aspects of pregnancy, as well as labor and delivery. Many mothers discussed issues in their pregnancy (e.g., fear of complications and medical problems) and worry regarding labor and delivery, such as fear of caesarean delivery or overmedication (Affonso, Mayberry, & Sheptak, 1988; Colman & Colman, 1971; Fisher, 1987; Hiser, 1987; Larsen, 1966; Mercer, 1979; Nichols et al., 2007; Norr et al, 1980; Rubin, 1970, Stewart, 1990; Westbrook, 1978). Others specifically mentioned physical complaints during pregnancy, such as fatigue or discomfort (Colman & Colman, 1971; Norr et al., 1980; Westbrook, 1978) and after the birth, such as exhaustion or painful stitches (Halas, 1984; Hiser, 1987; Larsen, 1966). These subthemes indicate that no pregnancy is ever the same and second-time mothers still experienced multiple issues and concerns regarding their pregnancy, delivery, and postpartum period.

New Baby

The second theme identified by the previous literature pertained to the new baby. Though mothers discussed their second child far less than their first, mothers did express concern regarding the needs, adjustment, and health of their new baby. Several mentioned fears for the baby's health and safety during pregnancy and at the hospital (Hiser, 1987; Larsen, 1966),

whereas others had concerns regarding their second child's needs after the birth (Krieg, 2007; Larsen, 1966) or about breast-feeding (Young, Boyle & Colletti, 1983).

Older Sibling Adjustment

Third, mothers were deeply concerned about the adjustment of their older children. Many spoke of their hope that their older children would accept their new siblings (Fisher, 1987; Richardson, 1983), whereas others worried about how their older children would act around their baby siblings (Affonso, Mayberry & Sheptak, 1988; Hiser, 1987; Moss, 1981). Mothers were also worried about their older children's behaviors, both positive and negative (Richardson, 1983; Sammons, 1985) as well as their first children's needs and adjustment to the changes in the family (Larsen, 1966; Rubin, 1984; Young, Boyle, & Colleti, 1983). Finally, many mothers expressed concern about the burgeoning sibling relationship and conflict (Balsink Krieg, 2007; Campbell, 2002; Mackey, 1975; Mercer, 1986) and discussed the spacing between their children (e.g., worry that their children were born too far apart or too close together: Halas, 1984).

Marriage and Family Relationships

The mothers' marriage and family relationships were the fourth theme identified. Mothers were very concerned about maintaining the quality of their relationship with their partner (Halas, 1984; Krieg, 2007; Lederman, 1984; O'Reilly, 2004; Richardson, 1982; Richardson, 1986; Ulrich, 1981). Some spoke of increased conflict with their partner whereas others spoke of the necessary relationship reorganization catalyzed by the upcoming birth of their new baby. In addition to relationship maintenance, several studies also found that mothers were concerned about the division of household labor, with many indicating that they desired more support for childcare and housework from their partner (Affonso, Mayberry, & Sheptak, 1988; Halas, 1984; Jordan, 1989; Nichols et al., 2007).

Next, mothers discussed their concern over the reorganization of family relationships inherent in adding a new baby to the family (i.e., moving from triadic to quadratic relationships), and the impending disruption that the new child might bring to the family (Colman and Colman, 1971; Halas, 1984; Lederman, 1984; Mercer, 1979; Moss, 1981; Nichols et al., 2007; Pridham et al., 1982; Richardson, 1983, Rubin, 1976).

Work and Family life

The fifth major theme mothers discussed pertained to the work and family logistics of managing life with two young children. With respect to work logistics, mothers were concerned about how to balance work and parenting, and if they would receive enough maternity leave (Barnes, 2013; Frost & Rodriguez, 2015). With respect to family life, mothers discussed the logistics of family life, such as planning new routines, managing finances, or handling the increased workload with the addition of a new baby (Halas, 1984; Larsen, 1966; Nichols et al., 2007; Walz & Rich, 1983)

Social Support

The final theme identified by the literature related to mothers' desire for both acceptance and support of the addition of their new baby. Mothers sought acceptance of the new baby from different family members (e.g., partner, older child, grandparents) (Halas, 1984; Jordan, 1989; Norr et al., 1980; O'Reilly, 2004) and sought emotional support and encouragement from their partner and network (Halas, 1984; Jordan, 1989; Norr et al., 1980; O'Reilly, 2004), and discussed issues with their support networks, such as less extended family enthusiasm for the new baby (Larsen, 1966; Westbrook, 1978). Finally, mothers expressed that they desired material support (e.g., caregiving, meals) like what they received with their first child, even

though it was their second child (Halas, 1984), indicating that mothers still felt this transition was a stressful time.

Much of this qualitative research on maternal concerns was completed between 1965 and 1990, so it is currently unclear if parents today have similar concerns. Given that information is now readily available to parents via the internet, including findings from parenting studies, and more child-rearing books providing updated recommendations on how to manage the transition have been published (e.g., Cooper-Abbs, 2013; Dais, 2016; Edwards, 2010; Leonard, 2000) second-time mothers today may differ in their degree of concern or preparedness, or potentially have unique concerns not expressed by mothers in the late 20th century. Knowing this information will help both researchers in designing future studies to know which areas are most important to second-time parents, and for interventionists wishing to assist families undergoing the transition. Internet sites that include anonymous forums for parents provide data-rich mediums for acquiring such knowledge because they aggregate candid questions and conversations between potentially thousands of users. In an earlier study of the parenting forum, YouBeMom, Yardi Schoenebeck (2013) found that the anonymous nature of online message boards provided an environment for mothers to potentially discuss issues more freely and openly. The disinhibition provided by the anonymity, however, may also lead to performative posts (Goffman, 1956; Goffman, 1963; Yardi Schoenebeck, 2013), in which mothers may share how they are feeling regardless of the accuracy of their post (e.g., mothers may exaggerate certain concerns and emotions). BabyCenter is another such online parenting forum that allows a unique opportunity to explore mothers' experiences during the transition to the second child in a current and data-rich setting.

About BabyCenter

BabyCenter L.L.C. is an American website for parents that is a member of the Johnson & Johnson family of companies and consists of five major parts: 1) *Expert Advice*, which includes topics, tools, and resources around pregnancy and parenting during the childhood years written by BabyCenter staff and reviewed by the BabyCenter Advisory Board (a team of doctors and professionals in a variety of medical, physical, and emotional health fields); 2) a *Blog*, which comprises articles around parenting written by freelance writers for BabyCenter; 3) *Products and Gear*, a section which includes BabyCenter vetted and "Mom Picks" (the top items chosen by users on the site) paraphernalia for childrearing; 4) *Mission Motherhood*, a section devoted to BabyCenter's non-profit work; and 5) *Community*, a pseudonymous message board for parents, which contributed the primary data for this paper.

BabyCenter's Community forum is primarily text-based and is categorized by (a) "Birth Clubs", message boards devoted specifically to people expecting a child in a specific month and year (e.g., January 2017 Birth Club), (b) "Groups", discussion boards centered around specific topics (e.g., family life, breastfeeding support, ultrasounds), (c) "Mom Answers", in which a BabyCenter user can post a question and have other mothers in the community answer, and (d) "Photo Clubs", forums in which users only post pictures centered around certain topics. BabyCenter is a pseudonymous site, in which anyone can view public posts in groups, but users who want to post content or belong to private groups must create an account with a username and a password. When users log in, they can view and manage their own history, and if others' profiles are set to visible, they can access that profile to see the others' activity as well. Further, the pseudonyms users choose may in fact reveal information about them, such as first name or number of children. If the profile of another user is set to private, however, users may not see

any information other than the pseudonym that a particular user chooses to share access by becoming "friends". Conversations in the Birth Clubs and Groups consist of a post by a particular user and replies by other users in the community.

The Current Study

Due to our interest in mothers' concerns around the transition to the second child, BabyCenter's Groups were the primary focus of this study. Formatted like Birth Clubs, there are many Groups specific to second-time parenting. Investigating these second-time parenting specific Groups allowed us a unique opportunity to assess the topics and sentiments around the transition to the second-child in a contemporary and salient qualitative setting. The current study assessed the themes of second-time motherhood expressed on BabyCenter Groups using Latent Dirichlet Allocation (LDA) and qualitative analysis. LDA modeling has been successfully applied to investigate other subjects of interest relevant to psychology and children's development from a variety of social media settings. For example, Xu, Jun, Zhu, and Bellmore (2012) used LDA models to study bullying through social media, and Chancellor, Lin, Goodman, Zerwas, and De Choudhury (2016) used LDA to obtain information on mental illness severity from online communities. Directly relevant to the current investigation, Ammari, Schoenebeck, and Romero (2018) used LDA to investigate the topics parents discussed on Reddit, another online community, over a seven-year time span. The main aim of the present study was to isolate predominant topics expressed on BabyCenter during the transition to the second child (both pre- and post-birth) and compare these themes to those found in previous decades. Specifically, we were interested in the following questions:

1. What were the topical categories mothers discussed online before and after the birth of a second child?

2. Were these categories similar to or different from topics expressed by mothers in early decades as isolated in the previous qualitative literature?

Method

Dataset

Publicly available data were gleaned from the website, BabyCenter. Similar to other online parent message boards like YouBeMom (Yardi, 2013), content on BabyCenter is archived so it is possible to crawl content within specific periods of time. The dataset included comments, usernames (pseudonyms), and the timestamp of the specific comment, but did not include any other identifying information (e.g., home address, gender). Some users appeared to occasionally use part of their given name in their username but this was rare. Stopwords (e.g., "the", "is", "are") were removed and we ignored words with little relevance for analytical purposes such as "anything". Data were drawn from BabyCenter Groups between May 2016 to November 2017. We concentrated on BabyCenter Groups that focused on second-time parenting.

To compile a dataset large enough to analyze effectively, our second-time mothers were gleaned from two sequential Groups titled "Month A 2017 Second-Time and Beyond Parents" (7,526 posts, 2710 threads, 1,908 unique posting users at time of data collection: December 2017) and "Month B 2017 Second-Time and Beyond Parents" (8,052 posts, 2,414 threads, 2,096 unique posting users at time of data collection: December 2017) that were combined to create a second-time parenting dataset (15,578 comments, 5,124 threads, 4,004 unique posting users at time of data collection: December 2017). Out of respect for the privacy of the mothers, specific months of the Groups are not identified and instead referred to above as Month A, etc. More information on the dataset can be obtained from the first author. To isolate concerns specific to the prenatal period, the transition period when the baby sibling was born, and the postnatal

period following the birth, the data set was divided into pre-birth (the months before the baby was due) and post-birth (the due date month and subsequent eight months after the birth).

Due to the pseudonymous nature of the site, we cannot know the demographics of the BabyCenter Community with certainty, but on its About BabyCenter, L.L.C. page, the company states that "in the United States, 8 in 10 new and expectant mothers online use BabyCenter each month" (BabyCenter L.L.C., 2017). Users in the Community seem to be primarily U.S. based and have groups devoted specifically to certain states or areas of the country. BabyCenter is marketed broadly as a parenting forum, including sections specifically "Just for Moms" or "Just for Dads", but its user base, particularly for the Community section, appeared to be mainly mothers, evidenced by the predominance of mom-centered topics (e.g., pregnancy, breast-feeding). As such, we will utilize that assumption here, and use mother-coded language to describe the parent responses.

Latent Dirichlet Allocation (LDA) Topic Modeling

The LDA model (Blei, Ng, & Jordan, 2003) was used to extract latent topics (e.g., co-occurring sets of terms in a text corpus; Bansal, 2015) from text documents created from the crawled data gleaned from the first- and second-time parenting Groups on the BabyCenter website. LDA is used for topic mining and analysis and is a three-level Bayesian model that uses machine learning to generatively and probabilistically identify topics present in a body of text and derive patterns present in the data. As such, it represents text documents created from the crawled data as collection of topics that are exemplified by a body of words gleaned from the text corpora that probabilistically match that topic (Blei, Ng, & Jordan, 2003; Chen, 2011). LDA does not utilize prior experimenter-based expectations about the topics that may be present in the document. Instead, LDA allows all parameters to be free, does not impose any prior expectations

or biases on part of the researcher, and generatively isolates topics present in the data that may have been previously unknown to the researcher (Zhai, 2016).

For the current study, we trained two independent LDA models (i.e., four separate bodies of text from the website) using the Python gensim package: (a) second-time parenting pre-birth and (b) second-time parenting post-birth. The output of these models allowed us to isolate what mothers in second-time BabyCenter Groups discussed online. The output of each LDA model contained a set of topics, each represented by a group of tokenized keywords, which we refer to as lexical groups (LG). The research team manually specified the model to output 20 topics, per the two lexical bodies of text for a total of 40 sets, a number which provided the most informative lexical groups with the smallest amount of noise.

Topic Analysis

The current study used an inductive approach to analyze the four sets of LGs within the dataset (20 per subset: second-time parenting pre- and post-birth). In order to maintain as much topic objectivity as possible, the coding was done in two stages. First, a team of two researchers (the lead author and a trained research assistant with no prior knowledge of the second-time parenting literature review) independently coded every set of keywords to isolate a general topic for each of the forty sets of LGs. Next, the team met to discuss the LGs, and through consensus label each LG topic. The first stage team reached an inter-rater reliability of .79. In the second stage, the lead author met with an expert in the subject matter (but who did not conduct the second-time parenting literature review) to discuss the codes gleaned from the first stage. The lead author and the topic matter expert then coded the forty topic terms by consensus. Though the second stage team generally agreed, there was initial disagreement over the *concerns about pregnancy and loss* topic term. The second stage team reached an inter-rater reliability of .88.

Tables 4.2 - 4.3 show the LDA generated LGs that were then assigned a topic term for both periods examined. In addition, example comments for each topic term are presented to provide richer context for each lexical group.

Results

RQ1. What were the topical categories mothers discussed online before and after the birth of a second child?

To address the current study's first research question, the following section details the LGs isolated from our dataset. Due to the unique longitudinal nature of the dataset, the twenty identified LGs isolated from the pre-birth subset and the twenty LGs isolated from post-birth subset are discussed temporally and follow the pregnancy and postpartum timeline.

Pre-birth. Early in the pregnancy, mothers relayed stories of announcing their pregnancy to family and friends and gave feedback on each other's ideas. They also discussed concerns about the safety of certain items during pregnancy (e.g., Are certain vitamins safe for use during pregnancy?). Next, mothers worried that they may not love their second child as much as their first. Some mothers expressed conflicted feelings regarding this pregnancy versus the first, mentioning that though they were happy for the new child in the family, they mourned the loss of their exclusive dyadic relationship with their firstborn. Mothers also worried that they may not be able to love the new baby as much as the firstborn and expressed guilt both over the change in relationship with the firstborn and over the mixed emotions surrounding the new pregnancy.

Mothers discussed normal prenatal check-ups at the doctor's office, provided suggestions for early pregnancy symptom management, such as nausea or leaky breasts. Prior to their ultrasounds to reveal the sex of the new baby, mothers often expressed guesses and debated possible early sex-detection procedures. After mothers had found out the sex of the baby, they

often discussed the ultrasound experience, and conversed about their feelings about having a boy or girl. Mothers also often announced their child's sex to the BabyCenter community and mentioned how they planned to share the news with family and friends. Further, mothers discussed their diet and their weight gain in comparison with their experiences with their first pregnancy (e.g., women often gained more weight with their second baby than they did with their first). They discussed possible baby names, elicited suggestions from the community, and often announced the chosen name once it was decided. Mothers also expressed concerns about their pregnancies and discussed hearing their babies' heartbeats for the first time. Mothers shared prenatal test results and celebrated or grieved the outcomes with the BabyCenter community.

As the pregnancy progressed, mothers appeared to turn to the BabyCenter community for advice, support, and guidance. Mothers discussed their older children's evolving roles and adjustment and traded advice on how to prepare their older sibling for a new brother or sister and shared stories of how their children were adjusting to their new place in the family system. Next, mothers both sought and received support from two separate communities: their real-life support system and the BabyCenter community. With respect to their real-life support system, mothers often discussed their met and frequently unmet needs. With respect to the BabyCenter community, mothers often shared positive emotions with each other. Further, mothers appeared to utilize the group for advice. They sought or shared advice on baby- or pregnancy-related topics and deliberated over baby-related material wish lists and discussed ideas of where to purchase those items.

As mothers moved into later pregnancy, discussions turned to topics relevant to their approaching due dates. Stay at home mothers discussed the added pregnancy-related financial stress whereas working mothers talked about timing their maternity leaves and debated the pros

and cons of daycare. Many mothers discussed late pregnancy-related discomfort, such cramping or early contractions. Finally, mothers discussed topics related to labor and delivery (L & D) preparation, such as location for delivery, vaginal birth after C-section, C-section preparation, and L& D scheduling (see Table 4.2 for the specific LGs isolated from the LDA models trained on the second-time parenting pre-birth subset, along with the topic terms that defined each LG and example comments to give context).

Post-birth. Because the post-birth subset started with the month of the due date, most LGs near the beginning of this subset concentrated on the experience and aftermath of labor and delivery, though one focused specifically mothers' prenatal health concerns such as carpal tunnel syndrome (a common ailment in pregnancy) and suggestions for relief. As their due dates drew closer, many mothers discussed specific labor and delivery logistics, often considering who should accompany the mother during the delivery and who would watch over the firstborn. Mothers also related their concerns regarding labor, delivery, and recovery (e.g., how the L & D would affect the mother and family) and their decisions about L & D (e.g., birth plan discussions). Next, mothers turned to the BabyCenter community to share early labor symptoms and seek advice about whether "it was the real deal".

After the birth, mothers discussed their general labor and delivery experiences. Mothers often gave L & D timelines (e.g., "started Pitocin at 6am and had hard contractions almost immediately") and detailed their birth story to the group. Mothers also discussed general recovery after birth and C-section specific recovery. Mothers sought advice for recovery tips, commiserated over postpartum pain, and discussed pain medication. During this time, mothers also shared announcements of their baby's birth and celebrated with the BabyCenter

Community. Finally, they discussed the baby's health shortly after birth, such as temperature, flu symptoms, or tests results.

Once home, mothers shared stories of how the first few weeks were going for their family and provided suggestions to help with the transition. During this time, mothers focused on the new baby and the family as a whole. They talked about feeding, by both breast and bottle, and discussed joys and issues surrounding their new baby's eating habits. Conversations ranged from milk production to baby's hunger signals, or advice on supplementing breastmilk with formula. mothers discussed their family's adjustment to the addition of a new baby. Mothers also shared stories of their older children's' reactions to their new role (both positive and negative), communicated the difficulties inherent in trying to maintain a relationship with their partner during this demanding transition, and worried about their ability to care for two children at different developmental stages. They discussed fears such as getting two children in and out of the car or dealing with toddler tantrums while caring for a baby. Further, mothers sought advice from each other regarding strategies around caring for two children once the support network left and the mother became the primary caregiver. Finally, mothers discussed how to arrange life with two children. Though similar to mothers' concern over their ability to care for two children, this topic focused instead on the physical adjustment such as changing room arrangements for both the older and younger sibling.

As time progressed, mothers' concerns focused on the new baby and on work family balance. Throughout this time period, mothers expressed concern over normalcy. Concerns ranged from unpleasant smelling umbilical cords to excessive spitting up. Depending on the issue, mothers in the community reassured the worried poster or suggested they seek medical advice. Mothers also talked about the new baby's sleep habits. They traded suggestions for

getting a baby to nap while other mothers discussed sleep schedules. Similarly, mothers discussed their new baby's digestion (e.g., baby's defecation and the optimal spacing between feeds) and their new babies' health more generally, often worrying about their baby's acid reflux or indigestion issues. Finally, as the weeks passed, post-birth mothers either celebrated or commiserated the return to family norms or going back to work after maternity leave (see Table 4.3 for the specific LGs isolated from the LDA models trained on the second-time parenting post-birth subset, along with the topic terms that defined each LG and example comments to give context).

RQ2. Were these categories similar to or different from topics expressed by mothers in early decades as isolated in the previous qualitative literature?

To address the current study's second research question, this section compares the topics isolated from LDA models trained on the second-time parenting pre- and post-birth datasets and the previous empirical work on mothers' concerns during the transition to the second child. Recall that there were six overarching themes identified by the previous literature: 1) Maternal Characteristics, 2) New Baby, 3) Older Sibling Adjustment, 4) Marriage and Family Relationships, 5) Work and Family Life, and 6) Social Support.

Pre-birth. Of all the themes identified as important by the empirical literature, maternal characteristics were the most prevalent in our pre-birth subset of LGs (n = 11). Of those eleven LGs, ten focused on pregnancy concerns, such as physical symptoms during pregnancy. Interestingly, the other LG related to maternal characteristics was an affective concern: mothers worried that they would not be able to love their second child as much as their first. This topic was discussed heavily in the previous literature and suggests that it may be a significant and perhaps universal worry during second-time pregnancy.

Next, LGs related to social support were the second most prevalent theme in our dataset (n = 4). Previous literature suggested that social support was very important to mothers during the transition to the second child. Like the mothers in previous work, mothers in our dataset also sought both emotional and physical support and also discussed their unmet needs (e.g., more material support from family and friends). The last pre-birth LG identified by the current study related to social support was not specific to pre-birth mothers was not isolated by the previous literature. Mothers in the pre-birth subset had multiple discussions in which they sought or shared advice on baby- or pregnancy-related topics.

All the other LGs in the current pre-birth dataset coincided with previously identified themes. Mothers in the pre-birth subset discussed their new baby (n = 3), older sibling adjustment (n = 1), and work family balance (n = 1). Analogous to the previous literature, mothers in the pre-birth subset the new baby, but the topics they focused on—the baby's sex, name, and new purchases—were unique to the current study. Next, as in previous studies, mothers were deeply concerned about their older children's evolving role. Though multiple subthemes regarding older sibling adjustment were identified in the previous literature, only one broad topic was isolated for the current study. Finally, the previous work and family life as an important theme during this transition and we see that reflected in the current dataset. Mothers today also discussed work logistics like maternity leave and the financial stress added by the pregnancy.

Post-birth. Again, of the themes identified as important by the empirical literature, maternal characteristics were the most prevalent in our post-birth subset of LGs (n = 10). Like the mothers in the previous work, mothers in the post-birth subset had multiple concerns related to labor, delivery, and recovery (n = 8). The other LGs related to maternal characteristics were both

behavioral concerns, and were also identified by the previous literature as important: mothers in this subset worried about their ability to physically care for the needs of two children at different developmental stages and discussed their experiences (both good and bad) with the first few weeks after the birth of the baby.

Next, LGs related to the new baby were the second most prevalent theme in our post-birth subset (n = 7). Though mothers in the previous literature did discuss the health and adjustment of their new children, they did not do so with the specificity of the mothers in the current study. Mothers in the current study discussed everything from baby's digestion and baby's sleep habits to concern over normalcy, suggesting that the nature of the BabyCenter community may elicit more detailed accounting of mothers' experiences with their new babies.

The other LGs in the current pre-birth dataset coincided with previously identified themes. Mothers in the post-birth data set were concerned about work and family life (n =2) and their marriage and family relationships (n = 1). As in previous work, mothers worried about arranging family life for two children and new family routines and about returning to work after maternity leave. Further, mothers were concerned about changes in family life and their older children's adjustment to their new family structure.

Discussion

The main purpose the present study was to isolate predominant topics expressed on BabyCenter during the transition to the second child (both pre- and post-birth) and compare these themes to those found in previous decades. Parents today rely heavily on the Internet and parenting websites to acquire information about parenting and children's development (BabyCenter L.L.C., 2017; Danebeck & Plantin, 2008; Dworkin, Connell, & Doty, 2013; Plantin & Danebeck, 2009; Sarkadi and Bremberg, 2004), but they also have a unique opportunity to

share their pregnancy and parenting experiences with a wide audience of other parents, and receive immediate feedback and tips from others. Despite the varied concerns and interests of mothers today who are undergoing the transition from one child to two children, this topic has received little empirical attention since the Internet became ubiquitous, and little is known about whether the concerns expressed by present-day mothers echo those of mothers from previous generations. Consequently, it is difficult to know how best to serve the needs of second-time mothers today. The present study was designed to address this gap by comparing themes of second-time motherhood expressed on online BabyCenter Groups with themes emanating from previous work conducted with second-time mothers decades earlier. General patterns of identified topics from the current study indicated that similar to previous work, mothers in the current study had diverse concerns that spanned Belsky's (1984) determinants of parenting. The following discussion will highlight some of the key similarities and differences between themes of second-time motherhood expressed in BabyCenter Groups and the themes originating from the previous work on second-time motherhood and detail implications and future directions.

Pregnancy and Postpartum Concerns

Of all the themes identified as important by the empirical literature, LGs related to maternal characteristics were the most predominant in current dataset. Because the dataset was gleaned from a BabyCenter Group focused on mothers' experiences, this result is not entirely surprising. Similar to mothers studied in the previous body of literature (Affonso, Mayberry, & Sheptak, 1988; Colman & Colman, 1971; Fisher, 1987; Halas, 1984; Hiser, 1987; Larsen, 1966; Mercer, 1979; Nichols et al., 2007; Norr et al, 1980; Rubin, 1970, Stewart, 1990; Westbrook, 1978), mothers in the current study overwhelmingly discussed their experiences with pregnancy and postpartum and did so in great detail. Mothers' concerns ranged from small (e.g., what type

of foods alleviated morning sickness) to large (e.g., worry over the health and safety of the unborn baby) and spanned the length of the current dataset. Taken together, these findings suggest that, like mothers in previous work, second-time mothers today did not appear to effortlessly navigate their pregnancies, deliveries, or recoveries simply because it was their second one. Instead, mothers today appeared to have variety of pregnancy symptoms and were continually concerned about their pre- and post-natal experiences. These findings indicate that second-time mothers need as much, if not more, thoughtful and thorough care from healthcare providers during this time period.

Can I Love My Second Child as Much as My First?

Another topic conveyed by many mothers in both the current dataset and in previous work (Halas, 1984; Jenkins, 1976; Mercer, 1979; Mercer, 1995; Walz & Rich, 1983) was the concern that they may not be able to love their second child as much as their first. This is particularly striking, as no empirical research to date has attempted to address the causes and consequences of this issue. Mothers repeatedly worried if it was normal for them to feel anxious about whether they would be able to love their second child as much as their first. One mother stated,

> Hello everyone, I'm a little conflicted about the way I feel about this pregnancy. Me and my husband have a 6-year-old wonderful girl. I just finished college and me and my husband planned to get pregnant right after I graduated. That was in June. Well, being 25, I got pregnant the first try. I just found out on Sunday and I got very nervous. I thought I was going to react differently, be over the moon happy, joyful. But when I found out, I felt happy but just a little sad...maybe. I mean, we had been planning this for many years and my girl is excited to be a big sister. But I feel like I'm mourning something. I feel like

> the relationship that I have with my girl is going to change. I have a fear that I might not love the baby the way I love her. Pleaseeeeeeeeeeee don't judge or bash me. I talked to my sister and she told me she felt the same way with her second baby. Does anyone feel the same? Am I alone with these crazy feelings??

This quote exemplifies how second-time mothers in the current dataset had complicated feelings about their changing family dynamic, were afraid of judgement, and looked to their community for support and reassurance. Popular media confirms that mothers are desperate for answers. A Good Morning America segment recently detailed the experience of an ABC News chief meteorologist, Ginger Zeeb, as she prepared for the birth of her second child (Sherwood, 2017). Zeeb was concerned she could not love her second child as much as her first and asked for advice on her Facebook account. She received thousands of responses from other mothers who expressed the same concerns and fears. Similarly, in a recent article published in the Huffington Post, the author wrote documented a comparable struggle, stating that she mourned that her exclusive time with her first child and truly felt that there was no way she could love her second child as much as her first (Shapiro, 2017). Based on popular media, most mothers have reported that these feelings generally dispel after the birth of their second child (Good Morning America, 2018; Shapiro, 2017) but because of insufficient empirical research, the timeline of these feelings is unknown, which makes it difficult to assist women who struggle with this concern. Further, this lack of knowledge makes it difficult to know when to suggest mothers seek help if those feelings do not dispel naturally or if these mothers continually find it difficult to bond with their baby. In sum, because this topic has come up repeatedly in both the previous literature and the current study, more work is clearly needed to elucidate the nature of this issue, and develop advantageous interventions.

The Importance of Social Support during Second-Time Motherhood

Another similarity between the mothers in the current study and mothers from previous decades was their desire for support. LGs regarding social support were the second most prevalent theme in the pre-birth dataset, indicating that mothers discussed this topic often and in detail. Similar to the mothers in previous work (Halas, 1984; Jordan, 1989; Norr et al., 1980; O'Reilly, 2004; Rubin, 1970; Rubin, 1976; Ulrich, 1981), mothers in the current dataset also sought emotional and material support from their real-life social network like they received with their first child, but many felt ignored or forgotten. A key difference between the two groups, however, was that mothers in the current study frequently leveraged support from their online BabyCenter community. Mothers often turned to others in the Group for emotional support when they experienced frustration, sadness, joy, or excitement. As one mother stated, "Pregnancy seems to be one worry after another. Has anyone had a similar experience and everything was okay? I guess there is really no way of knowing if this did or will affect the baby. But this is on my mind and you are all my best support. Thanks for reading". This example, along with findings from previous research on parents' online behavior (Dworkin, Connell, & Doty, 2013; Sarkadi and Bremberg, 2004), indicates that the online world may provide mothers the opportunity to candidly discuss their worries and fears (Yardi Schoenebeck, 2013) while also offering them settings to receive targeted support from a large and diverse network.

Advice. Another unique characteristic of mothers in the current study was that these mothers sought advice from their online network about adding new children to the family. More generally, mothers in the current sample had many interactions in which they sought or shared guidance on pregnancy-, transition- or baby-related topics and appeared to use their online community as a primary knowledge source. Perhaps due to the message board nature of the

BabyCenter forum versus the one-on-one dynamic of a qualitative interview, this finding highlights that mothers today are actively seeking out information and advice from other mothers in the same situation. As such, these findings indicate that online communities may be an advantageous target for interventions that seek to distribute factual and empirically-based information about the transition to the second child.

Collectively, these findings indicated that mothers today are concerned about some of the same issues mentioned by mothers decades ago, yet there are still few resources available to parents undergoing this transition (Beyers-Carlson & Volling, 2017). For instance, the findings that mothers are still concerned about managing the responsibilities of care for two children, feel guilt of possibly not loving both equally, and desire more social support and advice suggest little has been done to alleviate these concerns in the years since the first qualitative studies emerged.

Moreover, current research suggests that while some children experience substantial disruption, others often respond positively (Oh et al., 2015, Song and Volling, 2015) or with little to no distress (Volling, 2012). Even so, there is still a pervasive belief among practitioners and parents alike that the period surrounding the birth of a new baby is universally disruptive and potentially traumatic for young children (e.g., Boyd, 2009; Cooper-Abbs, 2013; Dais, 2016). This individual variation in firstborn's adjustment would suggest that while some mothers' concerns are well-founded, others may be unnecessarily worried about the transition. Clearly, there appears to be a disconnect between empirical research and popular rhetoric surrounding the transition to the second child, indicating a need to provide mothers with factual empirically-based information rather than potentially inaccurate or biased information friends, family, or online communities. Future research may want to consider developing second-time parenting education interventions similar to those provided for first-time parents in order to support family

adjustment and facilitate the development of a positive sibling relationship. Alternatively, because these results suggest that many mothers look for support and information online, future research may benefit from partnering with online parenting communities as a means of spreading factual information and/or addressing common questions or worries regarding this transition. Taken together, these findings suggest that second-time motherhood is a transition unique from first-time motherhood, yet a search of the literature revealed that there are very few supports available to mothers expecting their second child. By isolating the concerns of second-time mothers today and highlighting their desire for more information and support, the current study provided a framework to develop interventions that target areas of concern to today's second-time mothers and that are consistent with findings from the empirical database.

Strengths and Limitations

One of the strengths of the current study was its use of the pseudonymous forums for mothers on BabyCenter, which provided a data-rich contemporary arena to investigate the concerns of second-time mothers. The BabyCenter Groups seemed to provide a largely supportive outlet in which mothers could openly discuss their feelings about pregnancy, birth, and parenting, free from societal pressures. These results support Yardi Schoenebeck's (2013) findings on the parenting forum, YouBeMom, in which the anonymous nature of online message boards can provide environments where mothers can discuss their genuine feelings and experiences. As such, our results may provide an honest and uninhibited picture of mothers' fears and experiences during second-time parenting. The initial literature review from which the themes were derived primarily from studies with small sample sizes ($N = 14 - < 100$) and only one was published after 2010. Utilizing the BabyCenter Groups in the current research allowed us to obtain a contemporary representation of mothers' concerns and motivations during the

transition to the second child from a large sample (N= 4,004 unique posting users) of English-speaking mothers who were largely located in the United States. Such a large sample allowed us to widen the generalizability of our results and provided insight into the current topics of interest to second-time mothers.

Despite these strengths, there are also several limitations. Although studying a pseudonymous website like BabyCenter allowed us to glean information from a large sample size that is open to users all over the country, it was impossible to determine the ethnic, cultural, and socio-economic breakdown of the BabyCenter users. As a result, the specificity of our findings was unknown and must be treated with caution. Additionally, though BabyCenter does have father-specific Groups, most active users in second-time parenting groups were mothers, evidenced by the fact that most topics focused strictly on maternal experiences (e.g., pregnancy, breast-feeding). Further, there is no qualitative literature on fathers' concerns and motivations during the transition to the second child, and as such, it is unclear what topics are of interest to second-time fathers, both online or otherwise, during this time period. Therefore, we suggest that future work examine both fathers and mothers to provide a clearer picture of the emotional landscape of second-time parenting.

Similarly, the overwhelming majority of conversations about partner relationships in the first- and second-time parenting groups appeared to be written by female partners within heterosexual relationships, and it is unclear whether same-sex couples experience unique concerns during this transition. Finally, though the anonymous nature of online message boards can provide safe environments, the environment of anonymity and disinhibition may also lead to performative posts in which users make comments or express ideas that they do not necessarily mean in order to gain attention or reactions from others in the group. Therefore, future research

may wish to conduct work with focus groups of second-time parents to more rigorously validate and confirm our findings about this important developmental transition.

Implications and Future Directions

Almost four decades ago, Ramona Mercer (1979) argued though that healthcare providers often felt that second-time mothers needed far less help during their pregnancy and delivery because they "know the ropes", second-time mothers require significantly more attention due to the adjustment of their changing family unit. Though this article was written many years ago, the findings of the current study discovered that mothers today are still worried about many of the same issues as mothers from previous decades, yet few traditional supports appear to be available to them as they navigate the transition to the second child. Further, because there is long-term stability in children's sibling relationships over time (Aldercotte, White, & Hughes, 2016; Dunn, Slomkowski, & Beardsall, 1994) and parents are often deeply concerned on how best to promote positive sibling interaction and reduce sibling conflict (Kramer & Ramsburg, 2002), it is imperative to provide parents with practical, evidence-based information about second-time motherhood so that they may effectively navigate a time period that can considered the earliest beginnings of children's sibling relationship.

Conclusion

The current work has shown that, as Yardi Schoenebeck (2013) argues, the culture of anonymity and disinhibition provided by pseudonymous online parenting spaces allows mothers to express their fears around parenting and seek advice from others in a safe and supportive environment that they might not otherwise have in their offline lives. Our findings indicated that mothers today worry about many of the same topics isolated by decades-old qualitative research on the transition to the second child. Moreover, many of these areas of concern were consistent

with areas uncovered in current empirical studies as targets for intervention that could assist mothers undergoing the transition. Given that many mothers are turning to online communities for knowledge and support, these communities may present an efficient avenue for providing mothers with useful information and research-based interventions to help ease concerns about the transition to second-time parenting.

Table 4.1

Mothers' Concerns and Motivations during the Transition to the Second child

Theme	Subtheme	References
Maternal Characteristics		
Affect		
	Personal Emotional Concerns (e.g., grief, role stress, irritable or unable to cope)	Grace, 1993; Halas 1984; Hiser, 1987; Larsen, 1966; Mercer, 1979; O'Reilly, 2004; Pridham et al., 1982; Richardson, 1983; Richardson, 1986; Rubin, 1967; Rubin, 1976; Walz and Rich, 1983; Young, Boyle, & Colletti, 1983
	Feelings of betrayal and guilt toward OS	Balsink, 2001; Halas, 1984; Jenkins, 1976
	Maintenance, reorganization, and/or feelings of loss regarding the exclusive dyadic relationship with OS	Fisher, 1987; Halas, 1984; Mackey, 1975; Richardson, 1983; Richardson, 1986; Rubin, 1976; Walz and Rich, 1983; Young, Boyle, & Colletti, 1983
	Feelings of regret regarding lack of exclusive relationship with new baby	Rubin, 1976; Sammons, 1985
Behavior (Parenting competence)		
	Ability to physically care for two children	Fisher, 1987; Halas, 1984; Jenkins, 1976;
	Ability to emotionally manage relationship with two children	Halas, 1984; Jenkins, 1976; Mercer, 1979; Mercer, 1995; Walz & Rich, 1983
	Parenting (e.g., meeting the needs of their family)	Hiser, 1987; Pridham et al., 1982
	Balancing positive and negative aspects of early weeks (e.g., postpartum difficulties such as lack of sleep and/or easier second-time deliveries)	O'Reilly, 2004
	Family routines	Larsen, 1966; O'Reilly, 2004

	Promotion of maturity in OS	Fisher, 1987; Walz & Rich, 1983
Cognition		
	Motivations for having a second child	Crawford & Boyer, 1984
	Primary caregiver stress	Frost & Rodriguez, 2015
	Grateful for previous knowledge and desire to know more about parenting two children and having a second child	Hiser, 1987; Jordan, 1989; O'Reilly, 2004
Pregnancy and Postpartum Concerns		
	Pregnancy/Labor	Affonso, Mayberry, & Sheptak, 1988; Colman & Colman, 1971; Fisher, 1987; Hiser, 1987; Larsen, 1966; Mercer, 1979; Nichols et al., 2007; Norr et al, 1980; Rubin, 1970, Stewart, 1991; Westbrook, 1978
	Physical symptoms during pregnancy	Colman & Colman, 1971; Norr et al., 1980; Westbrook, 1978
	Physical symptoms after birth	Halas, 1984; Hiser, 1987; Larsen, 1966
New Baby		
	Needs, adjustment, and health of new baby	Krieg, 2007; Larsen, 1966; Rubin, 1984; Sammons, 1985
	Breastfeeding	Young, Boyle & Colletti, 1983
Older Sibling Adjustment		
	Needs and adjustment of OS	Larsen, 1966; Rubin, 1984; Young, Boyle, & Colleti, 1983
	OS acceptance of YS	Fisher, 1987; Richardson, 1983
	OS behaviors toward the new baby	Affonso, Mayberry & Sheptak, 1988; Hiser, 1987; Moss, 1981
	OS Behaviors (both positive and negative)	Richardson, 1983; Sammons, 1985
	Sibling Relationship (e.g., conflict)	Balsink Krieg, 2007; Campbell, 2002; Mackey, 1975; Mercer, 1986
	Spacing gap between children	Halas, 1984
Marriage and Family Relationships		
Partner		
	Relationship Maintenance	Halas, 1984; Krieg, 2007; Lederman, 1984; O'Reilly, 2004; Richardson, 1982; Richardson, 1986; Ulrich, 1981

		Division of labor	Affonso, Mayberry, & Sheptak, 1988; Halas, 1984; Jordan, 1989; Nichols et al., 2007
	Family		
		Shift, change, or concern over family relationships	Colman and Colman, 1971; Halas, 1984; Lederman, 1984; Mercer, 1979; Moss, 1981; Nichols et al., 2007; Pridham et al., 1982; Richardson, 1983, Rubin, 1976;
Work and Family Life			
		Work logistics (e.g., maternity leave)	Barnes, 2013; Frost & Rodriguez, 2015
		Family life logistics	Halas, 1984; Larsen, 1966; Nichols et al., 2007; Walz & Rich, 1983
Social Support			
		Desire to gain acceptance of new baby from different family members (e.g., partner, OS, grandparents)	Rubin, 1970; Rubin, 1976; Ulrich, 1981
		Desire Emotional support	Halas, 1984; Jordan, 1989; Norr et al., 1980; O'Reilly, 2004
		Desire Material Support from Parents and friends like they received with first child	Halas, 1984
		Issues with extended family	Larsen, 1966; Westbrook, 1978

Note. OS = older sibling ; YS = younger sibling.

Table 4.2

Topics from 2nd Time Parenting Group Pre-Birth LDA Model

Lexical Group and Topic Terms	Example
Sharing pregnancy announcement with friends and family peopl,post,famy,com,group,bump,pic,friend,us,say,tel,shar,ask,know,everyon,see,look,moth,law,col,pleas,annount,if,her,on,mil,pict,let,lov,interes	"we wanted to do a fun travel themed announcement…We wanted to do something BIG because people are definitely going to be surprised as we've insisted from day one that we aren't hving anymore kids."
Safety concerns ye,tak,vitamin,b,ut,temp,much,preggo,bath,warm,smok,doc,tummy,okay,said,artic,outsid,gummy,fol,reach,intercours,dress,insid,uter,rol,swe,nest,dai,warn,the	"So just found out that we're pregnant yesterday and I'm researching vitamins but can't decide on one. I took the Spring Made brand with DD (dear daughter) 4 years ago, and I took them again from May 2015-January 2016 until I ran out. We were ttcing during that time but I gave up stressing about it so I forgot to get more vitamins."
Can I love my second child as much as I love my first? i,pregn,feel,week,baby,lik,know,first,tim,think,on,real,get,so,want,thi,second,last,much,worry,ev,sint,show,felt,but,day,lol,start,going,ho	\\Hello everyone, I'm a little conflicted about the way I feel about this pregnancy. Me and my husband have a 6 year old wonderful girl. I just finished college and me and my husband planned to get pregnant right after I graduated. That was in June, well being 25 I got pregnant the first try. I just found out on Sunday and I got very nervous. I thought I was going to react differently, be over the moon happy joyful. But when I found out I felt happy but just a little sad...maybe. I mean we had been planning this for many years and my girl is excited to be a big sister. But I feel like I'm mourning something. I feel like the relationship that I have with my girl is going to change. I have a fear that I might not love the baby the way I love her. Pleaseeeeeeeeeee don't judge or bash me. I talked to my sister and she told me she felt the same way with her second baby. Does anyone feel the same? Am I alone with these crazy feelings??//
Normal prenatal check-ups at doctor's office im,u,dont,confirm,hav,cant,me,didnt,that,hair,yet,r,bean,puk,back,st,h,tho,bil,bloodwork,transvagin,uns,serv,friday,pres,box,green,very,ramz,isn	"Had my sizing u/s today. On track! 10w4d. Baby was dancing and had a HR of 171. Yeay! Tomorrow is all my bloodwork including panarama test. In about a week I'll know the sex of my bean!"

Managing early pregnancy symptoms (e.g., nausea, leaky breasts) progesteron,milk,ad,effect,produc,fruit,breast,secret,com,staff,leak,babyc,peppermint,liquid,answ,you,keep,accid,fee,zero,org,mass,mad,perhap,o,strange,can,pedy,gum,zi	“I had a dry mouth for one day last week. I wasn't thirsty or dehydrated. Water didn't help. It only lasted a day. I mentioned it to my midwife at my appt yesterday and she said it was likely just hormonal from increasing progesterone, just a random pregnancy symptom...since it just lasted a day. It was super annoying.”
Morning sickness and sleep changes i,day,week,pregn,feel,tim,sick,first,last,get,lik,morn,night,tak,nause,symptom,every,today,it,my,start,stil,ev,tir,on,norm,thi,bad,sleep,nau	"This pregnancy feels so much harder! I've experienced the same level of morning sickness as the last...which is all day. Luckily, that has subsided a little during the past few days. The thing that is different is the level of exhaustion."
Baby's sex i,week,baby,ultrasound,boy,girl,see,due,th,dat,day,said,wait,today,think,first,ear,gend,meas,lin,my,scan,find,we,the,look,hop,anoth,would,doc	"hi. Went for U/S (ultrasound) at 23 weeks just to check gender. Was told that it was a boy. Then had to be checked again at 26 weeks as my amniotic fluid is low, a different U/S (ultrasound) tech was sure its a girl. DH (dear husband) decided to get a 2nd opinion from another U/S (ultrasound) technician who also said he was 99.5% sure that its a girl. Has this happened to anyone?"
Diet i,eat,drink,try,help,wat,pregn,food,tak,keep,it,mak,us,lot,also,tri,ev,control,conceiv,much,good,work,sur,hormon,crav,sug,know,anyth,meal,wan	"I am eating what I want. Even if I eat bad stuff after a day or two I end up wanting healthy food so it balances out. My portions are also smaller because baby is pressing on my stomach so I can't load up on bad stuff. Id rather not stress about meal plans and food organization and get hit with a craving. I'm saving that for after the baby. It didn't take me long to get all the weight off after my son was born so I'm not concerned." // I ate it the other day i just didnt eat meat! Kind of did a veggie bowl i just wanted the chips and guac really been craving guac like crazy// Hey, I've been eating a lot of fruit lately which is good . I hope I don't start craving junk food later on. My biggest craving with my first one was peanut butter. So I ate anything with peanut butter, receese , butter finger , sometimes just a spoon and the jar lol. I don't even like peanut butter. What was your biggest craving ?
Pregnancy weight gain in comparison to first anyon,els,pregn,i,expery,has,week,weight,level,gain,hcg,lbs,doe,first,ear,bfp,dark,er,cury,lost,my,healthy,pound,fat,today,got,worry,big,just,d	"My weight is also increased.. Im almost on tht weight when I ws nine month pregnant.. So may b this is also a cause.."

Baby names nam,lik,lov,girl,boy,i,we,fatigu,middl,pick,cut,preg,decid,eg,fing,cross,yog,hah,calc,it,think,sound,or,our,pop,receiv,april,wrap,acn,loo	"we are having such a hard time even thinking of baby names! We really like Kaydee for a girl but can't think of a middle name. We don't even have a clue for a boy name lol. Any ideas or suggestions?? I'm pretty sure we're having a girl."
Concerns about pregnancy and heartbeat sorry,heartb,heart,norm,hear,sex,no,baby,heard,cervix,fin,sam,is,beat,min,that,cup,doct,ok,said,round,sound,check,everyth,braxton,littl,coff,sign,hick,su	"I went to the dr and they did a cervix check at 12 weeks and it was closed up tight. No blood. She cleaned me up, but I still had it [discharge] pretty regularly for about a month. I attributed it to constipation because I couldn't figure out what else it could be. If you're feeling your baby, or hearing the heartbeat and I wouldn't worry. But obviously if you're worried call the doctor." // "We had a little scare and I was lucky enough to see baby's heartbeat at 6 weeks. But now, our first appointment is tomorrow and I'm 8 weeks. Do you think she'd be able to pick up baby's heartbeat on the fetal Doppler tomorrow?"
Test results and outcomes for maternal and baby health concerns test,i,posit,blood,took,day,march,period,got,high,neg,back,said,lat,result,yesterday,anoth,cam,see,they,doct,pregn,miscarry,on,went,tak,due,would,follow,uri	"My blood screening test results came back a couple of days ago. The doctor said my baby's spinal cord and brain development number is abnormal. My number is 1/500. The normal number is 1/900. I'm so worried that I'm going to see a maternal fetal medicine specialist next week to find out what's going on. Has this happened to any of you? What was your number like? Thank you for any comments and support!!"
Older sibling adjustment i,old,baby,my,year,husband,want,dear,son,daught,we,tim,get,on,he,month,kid,littl,mom,going,she,dd,famy,room,dh,new,us,know,big,li	"Well, we told our 3.5 year old today that he is going to be a big brother... We showed him a picture of the ultrasound, got him a nice book about being a big brother and let him ask any questions he wanted. In the beginning, he was curious and asked questions (like where is the baby, how big and why is he/she in mommy's tummy and he wanted to start gathering books for the baby)…Then half an hour after, he started hitting me saying he wants to squish the baby…Then his dad went and talked to him and he expressed that he was frustrated and jealous - he took his 'the way I feel' book and showed how he was feeling and that he was afraid that we won't take him to the pool or play with him."
Seeking support would,baby,if,i,it,nee,may,get,lot,also,you,thing,saf,help,they,tak,find,pregn,the,support,high,good,might,put,much,wom,lik,matern,bag,fa	"Pregnancy seems to be one worry after another. Has anyone had a similar experience and everything was okay? I guess there is really no way of knowing if this did or will effect the baby. But this is on my mind and you are all my best support. Thanks for reading"

Receiving support good,luck,pray,congr,wish,congrat,best,hop,success,mam,welcom,ur,send,abdomin,wel,was,healthy,mama,look,determin,sweet,fun,al,way,reply,perfect,heal,it,ish,i	“Congratulations and welcome!! I wish you a happy, healthy pregnancy.”
Seeking and giving advice thank,any,adv,lady,hi,year,help,n,expery,apprecy,pleas,anyon,new,twin,wond,old,how,ide,gre,what,board,hey,mom,suggest,thought,baby,tip,gift,guy,man	"I had to use a pump to establish supply. Formula saved my twins, and honestly I never made enough for both so I chose to supplement with formula long term. You are doing great by providing milk. Do what works best for you."
New baby purchases i,us,on,buy,seat,siz,baby,bought,nurs,car,cloth,lov,smel,com,wear,fit,diap,brand,stor,got,sensit,ov,fre,new,opt,also,doubl,bra,stroller,stuf	" still using, such as fleece blankets, his crib (we have a convertible crib), and dresser. I need stuff as small as bottle brushes, pacifiers, and nipples for bottles since my son liked to chew on his. I also donated some stuff to a family that had a home fire, and gave up things I didn't love from my first (my diaper bag and stroller among other things). Plus I'll always need diapers, wipes, lotions, shampoos, and clothes."
Work and family balance i,work,get,would,nee,tak,lik,tim,us,mak,car,you,help,go,know,hom,job,it,want,good,if,thing,ins,try,real,think,on,ev,leav,ne	“Unfortunately, I'm working RIGHT up until birth because I haven't been at my job long enough to qualify for FMLA so I have to use all my PTO days to get any time off. I'm working a half day on 3/1 and going in for a C-section on 3/2!...But it totally SUCKS and I wish I could take some time off to get through these last super uncomfortable weeks and finish doing all the things at home to feel 100% ready.”
Pregnancy discomfort i,pain,cramp,blee,back,lik,low,it,get,sid,spot,press,feel,period,walk,norm,help,hurt,sometim,bad,sit,left,lay,lot,head,right,heavy,us,caus,le	"I've been having contractions that I can feel since yesterday morning. All over the place on time and pain (stomach, back, pelvic pressure, cervical pain) so unless my water breaks between now and Wednesday afternoon, I'll see what she says at my appt. I'm thinking she is going to send me l&d or tell me to stop the meds."
Labor and delivery preparation (e.g., C-section, vaginal birth) i,week,doct,lab,c,hospit,sect,my,baby,bir,go,first,said,tim,cal,ob,would,going,went,contract,dr,check,get,vagin,told,hour,appoint,last,expery,de	"My 1st daughter was a breech baby. We decided to schedule a csection. I had 0 complications and had an amazing experience. I was so nervous but it turned out perfect. The downfall was the long hospital stay and about a week recovery but overall an amazing experience. This time, we are doing a vbac [vaginal birth after Cesarean."

Note. The topic is displayed along with keywords from the LDA model and an example quote to give the topic context.

Table 4.3

Topics from 2nd Time Motherhood Group Post-Birth LDA Model

Lexical Group and Topic Terms	Example
Health concerns (e.g., carpal tunnel, acne) ongrat,precy,midw,turn,girl,rec,so,may,ther,pretty,complet,anyth,oft,said,littl,fin,needy,hir,skin,much,also,pea,tunnel,leaflet,defo,carp,far,good,talk,alar	"I have the same - it's carpal tunnel - look online for exercises. Ask your midwife for a leaflet but defo phone her and tell her too."
Specific labor and delivery logistics nee,good,feel,dont,tak,baby,want,famy,new,luck,you,right,do,tim,heart,situ,it,thing,pregn,many,tel,back,friend,expery,go,alon,rel,hop,delivery,fin	"DH (dear husband) will be with me at the hospital for the first day/night while his mom is with DD (dear daughter) and I'll spend a day longer at the hospital with DS (dear son) alone after DH (dear husband) goes home."
Concerns regarding labor, delivery, and recovery march,th,due,baby,dat,scheduled,son,ds,min,nam,cam,dear,ar,week,nd,mild,ear,born,induc,oz,sect,my,hour,what,c,soon,contract,tim,so,wa	"I'm terrified of my C section recovery on top of caring for a newborn and toddler."
Decisions around delivery i,baby,induc,com,would,girl,hand,my,thank,stil,week,think,told,due,see,on,tak,way,sur,it,opt,ev,delivery,daught,right,long,thing,and,try,posi	"Im 3 days overdue and induction is set the 16th March and I've never been induced with my first born. I'm just little bit curious about induction. Anyone who have been induced before and how is it like? Should I be worried or scared?"
Early labor symptoms muc,plug,week,lost,i,sound,day,today,ago,could,lab,los,grow,two,stil,induc,go,but,drop,show,hap,nos,thi,spurt,mean,posit,big,u,bloody,preg	"Well ladies wat can ye tell me bout them I had 2nd sweep 2day and my mucus plug is coming away.my back is getting very sore and seem to be getting pressure, pain is coming and going also pressure near back passage. when do u know if it's the real thing or not"

Labor and delivery i,hour,week,contract,lab,tim,day,start,baby,hop,wat,induc,went,first,my,brok,get,night,feel,today,hospit,lat,cm,second,go,work,around,fast,pain,woul	"When I arrived at the hospital I was almost 4cm and having contractions, but they just weren't strong or regular enough. Started pitocin at 6am and hard contractions started almost immediately. OW! Got epidural around 10:30am (pure heaven), water broke on its own at 12:45pm and I was at 10cm & ready to push but had to wait for my doc to get to the hospital. Doc arrived and I started pushing at 1:24, she was born at 1:28. No tearing/cuts, fast & easy, felt no pain. It was amazing. We left hospital after 24 hours and we're happy to be home with big brother!"
Recovery after birth i,try,us,easy,rest,day,baby,expery,good,you,first,driv,red,thi,plan,tim,numb,help,sleep,way,clear,famy,peopl,get,energy,hard,foc,today,real,wor	"I had mine on feb.3. Im feeling great now at the 2 week mark.. the first week the pain was the worst. im glad i stayed 4 nights in the hospital because i was able to get more rest than if i came home.. are you taking the pain meds?"
Recovery after C-section sect,c,recovery,surgery,walk,week,drink,he,first,wednesday,stretches,diff,sex,birthday,tea,that,lat,lot,mis,weak,rrl,nettl,blend,upcom,ballgam,br,cholestas,icpc,icp,ursodio	"I am 16 days pp from my 2nd c section. Doctor told me the fastest way to recovery was to walk."
Arrival of new baby congr,littl,born,girl,hom,on,joy,our,hun,bundl,glad,the,room,lil,sorry,hug,tub,sunday,ppd,lbs,sound,contain,he,drug,best,deal,someon,anxy,new,enoug	Congratulations on your new precious bundle of joy
Health of baby post-birth i,baby,get,go,ear,week,know,hom,com,pregn,cal,help,told,could,the,decid,right,lab,hospit,fin,day,if,sur,so,would,result,blood,end,don,du	"So the morning me and my baby were to be discharged and go home, she had a mild temperature" the ped on call told us to wait because test and cultures had to be done to make sure she didnt catch an infection. We were all worried until her temperature came back to normal within the hours and her blood work came back negative."
First few weeks i,tim,week,lik,feel,baby,first,get,day,mak,last,help,know,pain,said,real,want,think,nee,husband,try,would,and,on,say,also,my,went,back,wai	"in these early weeks things can all become a blur because they are so close together. There's supposed to be a; Growth spurt at 2/3 weeks Wonder Week at 5 weeks Growth spurt at 4/6 weeks Wonder Week at 8 weeks. It can be a rough time for parents thinking that things might be wrong or that they might be doing something wrong. But in reality it's just an intense period of growth and development for your LO. "// "I'm so excited, I was due 21 but dd (dear daughter) came rushing on the first of March. She's so adorable DH (dear husband) and i can't stop staring at her. Son is overwhelmed."

Breast- and bottle-feeding bottl,fee,pump,milk,breast,formul,breastfee,nurs,nippl,supply,weight,us,get,latch,the,suppl,much,eat,enough,gain,also,ount,increas,freez,may,oz,giv,sometim,hungry,lac	“There are some things you can also do to increase milk production, like fenugreek, drink Mothers Milk tea (it's at the grocer), eat oatmeal, brewers yeast, etc. of course you can supplement with formula but if you don't actually need to (as in the baby is getting enough from you) then introducing formula may end up hurting your supply itself. If the baby actually isn't getting enough from you (weight growth would be a good indicator) then you SHOULD be supplementing. I would talk ALL of this through with a doctor and lactation consultant.”
Changes in family life and children's adjustment daught,i,dear,lov,husband,dh,he,she,bath,dd,ad,it,feel,you,how,right,is,tel,find,go,hop,old,am,though,excit,around,enjoy,hang,don,kee	Since being home my DD (dear daughter) LOVES her new little sister and wants to help and do everything for her. She is so sweet towards her (holding her hands and saying I love your beautiful fingers, I love your beautiful hair lol) BUT she is acting out otherwise. She was the center of our universe before LO (little one) and now obviously has to share the spot light. She is back tracking with potty training and purposely going in her pants. She also is just running around and being super hyper and not listening. If I warn her about a punishment that's coming she will make sure to do it again as if she wants to be punished for the extra attention. She also keeps taking LO (little one) binkies and crawling around acting like a baby. I am trying to handle it with patience and sitting her down and explaining that we still love her and making sure to give her one on one time but I can feel my patience thinning and with all these hormones from birth I know I'm going to end up snapping. Any advise is welcome! I want my sweet toddler back!
Management of two children i,old,nap,baby,help,bed,toddl,she,month,nurs,giv,day,sist,my,tim,back,night,he,girl,hour,week,newborn,put,lik,oldest,but,big,rock,feel,cri	"I don't know what I'll do after next week when I'm on my own dealing with a newborn and a toddler that screams constantly, won't nap without 2 hours of coddling, and then turns bedtime into a marathon nightmare screamfest . . . Anyone else with a young toddler of the needy variety have advice to offer?"
Arranging life with two children toy,smal,baby,beauty,i,old,tiny,mov,room,we,year,lik,stor,fig,new,put,keep,toddl,tim,thing,plac,bit,spec,marbl,could,stil,worry,when,absolv,aroun	“We kept our oldest in our room in his own crib at first to make things easier at night. We moved when he was about eight months and put him in his own room. Now both boys have to share the room. I've been staying in there at night to make things easier and I probably will for at least the first six weeks.”

Concern over what is normal and what is not would,us,if,thank,stinky,bp,giv,high,not,dry,urin,said,cardiolog,story,told,lady,birth,think,ex,hear,real,pregn,d,bloodwork,horemom,everyth,nev,somewh,test,no	"her umbilical cord being stinky my now daughter is 1 weeks old and hers stinks bad! Is this normal? Please help! I know to keep it dry and not give baths just sponge baths until it falls off. It's stinky stinky though!"
Baby's sleep i,sleep,night,get,wak,month,us,old,week,baby,n,boy,stil,caus,happy,think,lady,know,ev,cury,start,sometim,mon,would,alway,say,bad,three,real,watc	“My boy hasn't been a good sleeper from the start...he takes 2 (maybe 3) naps during the day, and if he naps in our arms he'll sleep for 1 to 1.5hr, but if we put him in the crib or pack n play he'll only sleep for about 30 min....bedtime routine is good, and falls asleep in crib on his own around 7 or 7:30...then he's up around 11, 1, 3, 5, until wake up around 7...when he wakes one of us will pick him up (he gets hysterical if we dont), a feeding, then goes back to sleep.....just want to help him get more sleep so we can get more sleep and everyone will be happier!!”
Baby digestion eat,lik,he,oz,norm,proof,im,poop,someth,day,long,hrs,my,us,anyon,baby,want,nippl,look,divorc,good,i,every,is,last,kid,put,thank,perfect,fi	"I try to feed her every 3 hours but shell eat annoz or 2 and refuse anymore. She tends to eat about every 4 and a half hours without problems. I am just worried its not good for her to eat so far apart."
Baby's general health baby,giv,tim,she,sweet,try,want,we,od,oil,sur,lot,lov,good,chang,at,acid,so,any,yeah,read,cut,much,i,wat,tomorrow,warn,room,indigest,hel	“my baby is about to more than 4 month old and she had acid reflex whenever she take milk sometime she spit alot ... is there any same case and any suggestions?”
Returning to work i,on,littl,lo,my,she,day,try,work,tak,us,good,old,also,it,back,luck,son,mak,around,going,help,put,tri,baby,sur,week,tim,lik,kee	"Anyone else going back to work this week? I forgot how hard it is for this transition. I cried a lot this week! I wish there was more time, but I'm grateful for every minute of my maternity leave with my little guy. Also...I miss my maternity pants! Normal pants are so uncomfortable and not stretchy! Lol"

Note. The topic is displayed along with keywords from the LDA model and an example quote to give the topic context.

References

Affonso, D. D., Mayberry, L. J., & Sheptak, S. (1988). Multiparity and stressful events. *Journal of Perinatology: Official Journal of the California Perinatal Association*, *8*(4), 312-317.

Ammari, T., Schoenebeck, S., & Romero, D. M. (2018, April). Pseudonymous Parents: Comparing Parenting Roles and Identities on the Mommit and Daddit Subreddits. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems* (p. 489). ACM.

Barnes, M. W. (2012). Having a First Versus a Second Child: Comparing Women's Maternity Leave Choices and Concerns. *Journal of Family Issues*, *34*(1), 85–112.

Bansal, S. (2015). *Beginners guide to topic modeling in python.* [web log post]. Retrieved from https://www.analyticsvidhya.com/blog/2016/08/beginners-guide-to-topic-modeling-in-python/

Belsky, J. (1984). The determinants of parenting: A process model. *Child Development*, 83-96.

Beyers-Carlson, E. E., & Volling, B. L. (2017). Efficacy of sibling preparation classes. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, *46*(4), 521-531.

Blei, D. M., Ng, A. Y., & Jordan, M. I. (2003). Latent dirichlet allocation. *Journal of machine Learning research*, *3*(Jan), 993-1022.

Boyd, H. (2009). *Preparing your child for the birth of a sibling*. Retrieved from https://www.education.com/magazine/article/Preparing_Child_Birth_Sibling/

Chancellor, S., Lin, Z., Goodman, E. L., Zerwas, S., & De Choudhury, M. (2016, February). Quantifying and predicting mental illness severity in online pro-eating disorder communities. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing* (pp. 1171-1184). ACM.

Chen, E. (2011). *Introduction to latent dirichlet allocation.* Retrieved from http://blog.echen.me/2011/08/22/introduction-to-latent-dirichlet-allocation/

Colman, L. L., & Colman, A. D. (1971). Pregnancy: The psychological experience. New York, NY: Seabury Press.

Cooper-Abbs, N. (2013). The need to know guide to life with a toddler and a newborn: How to prepare for and cope with the day to day challenge of raising two young children. London: Central YMCA Trading Ltd.

Crawford, T. J. & Boyer, R. (1984). Parity and the expected consequences of childbearing. Population and Environment. 7.234-245.

Daneback, K., & Plantin, L. (2008). Research on parenthood and the Internet: Themes and trends. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *2*(2).

Dais, D. (2016). *The sh!t no one tells you about baby #2: A guide to surviving your growing family.* Berkeley, CA: Seal Press.

Daneback, K. & Plantin, L. (2008). Research on parenthood and the internet: Themes and trends. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 2*(2), article 2.

Dunn, J., & Kendrick, C. (1982). *Siblings: Love, envy, & understanding.* Cambridge, MA: Harvard University Press.

Dunn, J., Kendrick, C., & MacNamee, R. (1981). The reaction of first-born children to the birth of a sibling: Mothers' reports. *Journal of Child Psychology and Psychiatry* 22(1), 1-18.

Dworkin, J., Connell, J., & Doty, J. (2013). A literature review of parents' online behavior. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *7*(2).
Fisher, S. H. (1987). Antenatal concerns of the lower socioeconomic secundigravida regarding her older child. *Scholar Archive*. 1981.
Frost, N., & Rodriguez, D. (2015). "And it was all my choice but it didn't feel like a choice": A re-examination of interpretation of data using a "rhetoric of choice" lens. *Women's Studies International Forum*, *53*, 192–199.
Goffman, E. (1955). On face-work: An analysis of ritual elements of social interaction. *Psychiatry: Journal for the Study of Interpersonal Processes, 18*(3):213–231.
Goffman, E. (1963). *Behavior in public places*. New York, NY: The Free Press.
Grace, J. T. (1993). Mothers' self-reports of parenthood across the first 6 months postpartum. *Research in Nursing & Health*, *16*(6), 431–439.
Halas, M. A. (1984) *An ethnographic examination of sex-role development and role arrangements among middle class couples having a second child.* (Order No. 8414765). Retrieved from ProQuest Dissertations & Theses Global. (303288367).
Hiser, P. L. (1987). Concerns of multiparas during the second postpartum week. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, *16*(3), 195-203.
Jenkins, P. (1976). Conflicts of a secundigravida. *Maternal-Child Nursing Journal*, *5*, 117-126.
Jordan, P.L. (1989) Support behaviors identified as helpful and desired by second-time parents over the perinatal period. *Maternal-Child Nursing Journal*, *18*(2), 133-145.
Kolak, A. M., & Volling, B. L. (2013). Coparenting moderates the association between firstborn children's temperament and problem behavior across the transition to siblinghood. *Journal of Family Psychology*, *27*(3), 355-364.
Krieg, D. L. B. (2001). *The expanding family system: Accommodating the first or second child* (Order No. 3015516). Retrieved from ProQuest Dissertations & Theses Global. (251794955).
Krieg, D. B. (2007). Does Motherhood Get Easier the Second-Time Around? Examining Parenting Stress and Marital Quality Among Mothers Having Their First or Second Child. *Parenting, Science and Practice*, *7*(2), 149–175.
Larsen, V. L. (1966). Stresses of the childbearing year. *American Journal of Public Health and the Nation's Health*, *56*(1), 32–36.
Lederman, R. P. (1984). Anxiety and conflict in pregnancy: relationship to maternal health status. *Annual Review of Nursing Research*, *2*, 27-61.
Leonard, J. (2000). Twice blessed: Everything you need to know about having a second child—Preparing yourself, your marriage, and your firstborn for a new family of four. New York: St. Martin's Griffin.
Mackey, M. C. (1975). *One Woman's Work at Becoming the Mother of a Second Child* (Doctoral dissertation, University of Pittsburgh).
Martin, S. P., & Robinson, J. P. (2007). The income digital divide: Trends and predictions for levels of Internet use. *Social problems*, *54*(1), 1-22.
Mercer, R.T. (1979). Having another child "She's a Multip. … She Knows the Ropes". *MCN, The American Journal of Maternal/Child Nursing. 4*(5), 301-304.
Mercer, R. T. (1986). First –time motherhood: Age differences from teens to forties. New York: Springer.
Mercer, R. T. (1995). Becoming a mother: Research on maternal identity from Rubin to present New York: Springer.

Moss, J. R. (1981). Concerns of Multiparas on the Third Postpartum Day. *JOGN Nursing, 10*(6), 421-424.
National Telecommunications and Information Administration. (2011). *Digital nation: Expanding Internet usage*. Washington, DC: U.S. Department of Commerce. Retrieved from: http://ntia.doc.gov/files/ntia/publications/ntia_internet_use_report_february_2011.pdf
Nichols, M. R., Roux, G. M., & Harris, N. R. (2007). Primigravid and multigravid women: prenatal perspectives. *The Journal of Perinatal Education*, *16*(2), 21–32.
Norr, K. L., Block, C. R., Charles, A. G., & Meyering, S. (1980) The Second Time Around: Parity and Birth Experience. *JOGN Nursing, 9*(1), 30-36.
O'Reilly, M. M. (2004). Achieving a new balance: women's transition to second-time parenthood. *Journal of Obstetric, Gynecologic, and Neonatal Nursing: JOGNN / NAACOG*, *33*(4), 455–462.
Oh, W., Volling, B. L., & Gonzalez, R. (2015). Trajectories of children's social interactions with their infant sibling in the first year: A multidimensional approach. *Journal of Family Psychology*, *29*(1), 119-129.
Plantin, L., & Daneback, K. (2009). Parenthood, information, and support on the Internet: A literature review of research on parents and professionals online. *BMC Family Practice, 10*, 34. doi:10.1186/1471-2296-10-34
Pridham, K.F, Hansen, M.F, Bradley, M.E, & Heighway, S.M. (1982). Issues and concern to mothers of new babies. *Journal of Family Practice, 14*(6), 1079-1085.
Richardson, P. (1983a). Women's perceptions of change in relationships shared with their husbands during pregnancy. *Maternal-Child Nursing Journal*, *12*(1), 1-19.
Richardson, P. (1983b). Women's perceptions of change in relationships shared with children during pregnancy. *Maternal-Child Nursing Journal*, *12*(2), 75-88.
Richardson, P. (1981). Women's perceptions of their important dyadic relationships during pregnancy. *Maternal-child nursing journal*, *10*(3), 159-174.
Rubin, R. (1967) Attainment of the maternal role: Part I. Processes. *Nursing Research, 16*(3), 237-245.
Rubin, R. (1970). Cognitive style in pregnancy. *The American Journal of Nursing*, 502-508.
Rubin, R. (1976). Maternal tasks in pregnancy. *Journal of Advanced Nursing*, *1*(5), 367-376.
Rubin, R. (1984). Maternal identity and the maternal experience. New York: Springer.
Sammons, L. N. (1985). Maternal anxiety, somatic symptoms, marital adjustment, and family relationships in second pregnancy (Unpublished doctoral dissertation). University of California, San Francisco, CA.
Sarkadi, A., & Bremberg, S. (2004). Socially unbiased parenting support on the Internet: A cross-sectional study of users of a large Swedish parenting website. *Child: Care, Health, & Development, 31*, 43-52.
Sherwood, R. (Producer). (2018, January 26). *Good morning America* [Television broadcast]. New York, NY: American Broadcasting Company.
Shirky, C. (2008). *Here comes everybody: the power of organizing without organizations.* New York: Penguin Press.
Song, J. H., & Volling, B. L. (2015). Coparenting and children's temperament predict firstborns' cooperation in the care of an infant sibling. *Journal of Family Psychology*, *29*(1), 130-135.
Stewart Jr, R. B. (1990). *The second child: Family transition and adjustment*. Newbury Park,

CA: Sage Publications, Inc.
Ulrich, S. C. (1982). Psychosocial work of a secundigravida in relation to acceptance of her baby. *Maternal-Child Nursing Journal*, *11*(1), 1-9.
Westbrook, M. T. (1978). The Effect of the Order of a Birth on Women's Experience of Childbearing. *Journal of Marriage and Family Counseling*, *40*(1), 165–172.
Volling, B. L. (2012). Family transitions following the birth of a sibling: An empirical review of changes in the firstborn's adjustment. *Psychological Bulletin*, *138*(3), 497-528.
Volling, B. L., Gonzalez, R., Oh, W., Song, J. H., Yu, T., Rosenberg, L., ... & Stevenson, M. M. (2017). *Developmental trajectories of children's adjustment across the transition to siblinghood: Pre-birth predictors and sibling outcomes at one year*. Wiley.
Walz, B. L., & Rich, O. J. (1983). Maternal tasks of taking-on a second child in the postpartum period. *Maternal-Child Nursing Journal 12*(3), 185-216.
Yardi Schoenebeck, S. (2013, June). The Secret Life of Online Moms: Anonymity and Disinhibition on YouBeMom. com. In *ICWSM*.
Young, P. C., Boyle, K., & Colletti, R. B. (1983). Maternal reaction to the birth of a second child: Another side of sibling rivalry. *Child Psychiatry & Human Development*, *14*(1), 43-48.
Xu, J. M., Jun, K. S., Zhu, X., & Bellmore, A. (2012, June). Learning from bullying traces in social media. In *Proceedings of the 2012 conference of the North American chapter of the association for computational linguistics: Human language technologies* (pp. 656-666). Association for Computational Linguistics.
Zhai, C. (2016). *Latent Dirichlet Allocation (LDA): Part 2* PowerPoint slides]. Retrieved from https://www.coursera.org/learn/text-mining/lecture/taJgZ/3-10-latent-dirichlet-allocation-lda-part-2

CHAPTER V

GENERAL DISCUSSION

For decades, when considering children, developmental psychology has focused predominantly on the individual and the individual's development over the lifecourse. Though theorists such as Bronfenbrenner (1979) and Sameroff (2009) moved to place the individual in context, most research on children's development focuses predominantly on the mother-child relationship when attempting to understand the contextual influences on their adjustment and growth over time. Far from developing in an environment consisting only of the mother-child dyad, however, children develop instead within family systems and wider ecological contexts that consist of multiple subsystems (e.g., parent-parent, older sibling-younger sibling) and individuals. Though nearly 80% of children in the United States have at least one sibling (U.S. Census, 2009), the sibling subsystem is often overlooked when studying contextual influences of children's development. The overarching aim of this dissertation was to investigate the development of the sibling relationship in early childhood. Through three studies, I approached the examination of sibling relationships from a family systems perspective to understand the complex contexts in which children develop social behavior.

Each of the three dissertation studies focused on how children in the family contribute to the development of sibling relationships with a focus on (1) the dyadic sibling relationship; (2) the broader family ecology (i.e., interparental relationship quality and parenting) and how it affected dyadic sibling interactions; and finally (3) the early origins of the sibling relationship and how mothers prepare for the birth of a second child. To conduct these studies, I leveraged

rich observational, survey, and contemporary qualitative data using a variety of statistical and computational techniques.

Summary of Findings

Study 1: Sibling Sharing and Early Moral Development

The sibling relationship in early childhood is comprised of unique components, such as emotional intimacy, ambivalence, and power and age differentials, and provides distinct opportunities for development not present in other close or familial relationships (Cox, 2010; Dunn, 1988; Dunn, 2002; Furman & Buhrmester, 1985; Jenkins & Dunn, 2009). This distinct bond between two familiar and well-acquainted children offers a context that fosters social capabilities (Dunn & Munn, 1986; Zukow, 1989) and may have important implications for how children develop prosocial behaviors, like sharing. Further, sibling sharing, an experience that uses both the relationship between the two siblings as well as their grasp and implementation of fairness, may also be important for other aspects of their moral development, such as the internalization of conscience. Though previous work on the relational influences on conscience development in early childhood has concentrated on the influence of parent-child interaction (e.g., Dunn, Brown, & Maguire, 1995; Grusec & Goodnow, 1994; Hoffman, 1983; Kochanska, 1997; Kochanska et al., 2004), it is likely that siblings meet some of the necessary requirements for the development of conscience through daily negotiations, struggles, and joys inherent in life with a sibling. As such, Study 1 investigated the dyadic influence of siblings on each other's sharing behaviors and then related sharing to conscience development in early childhood. These results revealed a nuanced picture of sibling sharing in early childhood. Older siblings played a dominant role in the sibling sharing interactions and influenced their younger siblings' sharing

behaviors from 18 to 24 months, after which the 36-month-old younger sibling appeared to play an active role in the sibling sharing interactions.

These findings indicated that—perhaps due to the immaturity of their toddler sibling—the way that older siblings engaged with their younger siblings (e.g., promoting positive behaviors or exhibiting negative behaviors) at 18 months, when they were too young to initiate sharing behaviors, was particularly influential for setting the stage later at 24 and 36 months for younger siblings' sharing behaviors. At 18 months, younger toddler siblings simply may not have understood the task without their older siblings' help and look to them for guidance and modeling of social behavior. By 24 months, however, younger siblings appeared to have developed some skill at socially engaging with an older sibling and sharing or taking-turns (i.e., passing the fishing rod back and forth). By 36 months, younger siblings may have developed sufficient independence to actively make their own choices, regardless of their older siblings' behaviors.

Furthermore, even though the results suggested that there was no direct effect of the young siblings sharing from one time to the next, there was clearly reciprocity in sibling sharing at each time. Recall that older and younger siblings' sharing was significantly correlated at all three timepoints, indicating that the task elicited a reciprocally engaged process (e.g., turn-taking) within time. Taken together, these findings potentially represent a novel developmental process in which older siblings' behaviors act as foundation for their younger siblings to learn and imitate important prosocial skills early in toddlerhood, such as sharing, that are then carried forward into early childhood when children's social skills and understanding are developing rapidly.

Kochanska (1993; 1994) conceptualized conscience as involving two components, affective discomfort (i.e., emotional reactions such as empathic concern, anxiety, or guilt toward acts of transgression) and moral regulation (i.e., the need to control antisocial and destructive tendencies within oneself and employ self-restraint). Prosocial behaviors consist of a wide range of behaviors, cognitions and affective states that are intended to help others, including components of helping, sympathy, cooperation, and sharing. These components, however, may have distinct, non-overlapping predictors, even though all of these are often composited into the umbrella variable of "prosocial behaviors." Therefore, although behaviors such as empathy and helping are closely linked to affective discomfort (e.g., Eisenberg, Fabes, & Spinrad, 2006; Miller et al., 1989), the results from Study 1 provided evidence that sharing may be more closely related to the moral regulation dimension of conscience as opposed to the affective discomfort dimension. Considering that sharing is behaviorally-based and requires both the promotion of other-focused positive behaviors and the inhibition of self-focused negative behaviors, these findings are intuitive and provide a more nuanced understanding of the differential relations between sibling sharing. In sum, Study 1 contributes to the literature by elucidating the dynamics of the sibling relationship in early childhood, but also by introducing the use of a new paradigm for assessing sibling sharing, a rarely studied topic in developmental psychology.

Study 2: Bringing in the Wider Family Ecology

To truly understand the sibling relationship, however, we must place it in its ecological context. Though one sibling may have a unique influence on the sharing of the other, family systems theory posits that their relationship exists within a larger family system that includes other subsystems such as the interparental or parent-child relationship (Cox & Paley, 2003). Because aspects of the parent-child relationship, such as parental inductive discipline, have been

stressed as important for children's early prosocial development (e.g., Eisenberg, Fabes, and Spinrad, 2006), and the interparental relationship is a significant determinant of parenting (Belsky, 1984), Study 2 investigated a longitudinal family process model in which parental induction predicted sibling sharing behaviors in early childhood, while also examining how interparental relationship quality may indirectly predict sibling sharing via inductive parental discipline. To do so, I tested two competing hypotheses for how the interparental relationship and the parent-child relationship may predict sibling sharing. Recall that the spillover hypothesis postulates that emotions in the interparental relationship can spillover into the parent-child relationship and vice versa (Erel & Burman, 1995), whereas the compensatory hypothesis states that deficiencies in one family subsystem (e.g., interparental relationship) may be compensated by another (e.g., parent-child relationship: Erel & Burman; Nelson et al., 2009). The results of Study 2 provided more support for the spillover hypothesis than the compensatory hypothesis, when considering the links between interparental relationship quality and parental inductive discipline. Positive interparental relationship quality at 18 months directly predicted more maternal inductive discipline with both older and younger siblings at 24 months, as well as more paternal inductive discipline with the younger sibling at 24 months, indicating that positive emotions in the interparental relationship can spillover into the parent-child relationship and are a determinant of positive parenting practices, such as inductive discipline.

Further, though parental inductive discipline during sibling quarrels did not predict sibling sharing, these findings shed light on the development of sibling sharing and prosocial behavior. First, although it may be that using inductive discipline to intervene in quarrels may reduce sibling conflict, it may not necessarily promote sharing. Implementing a "don't" strategy (e.g., don't fight) even if done in a child-centered manner, may not be sufficient to promote a

"do" behavior (e.g., do share with your brother), and future research is needed to address such distinctions further. Similarly, it may be that the parental inductions, a discipline strategy often related to the development of empathy, is not an effective strategy for promoting sharing. Although previous work on parental inductive discipline found that it can be predictive of the moral regulation component of conscience in boys at risk for school-aged conduct problems (Kerr, Lopez, Olson and Sameroff (2004), parental inductive discipline has most often been associated with prosocial behaviors more closely linked to the affective discomfort component of conscience in both typically developing boys and girls, such as empathy and helping (e.g., Eisenberg, Fabes, & Spinrad, 2006; Miller et al., 1989). Because sharing was more closely related to moral regulation (see Study 1), other parental behaviors not considered here, such as parental sensitivity or parental warmth, may be more important in predicting sharing (van Berkel et al., 2015a).

Another unique strength of Study 2 which has implications for future research was the inclusion of information from fathers. Including fathers' discipline allowed a direct test of the Father Vulnerability Hypothesis and an examination of whether interparental relationship quality would be more predictive of fathers' discipline than mothers' discipline (Cummings, Goeke-Morey, & Raymond, 2004). This was not the case here. The findings provided stronger evidence that both mothers and fathers engaged in more positive discipline strategies, such as inductive discipline, when they felt supported in their interparental relationship. Raising two young children during early childhood is stressful for any parent, regardless of gender, and our findings indicated that both parents can benefit when they are sustained by a positive interparental relationship. Because most of the work on the father vulnerability hypothesis assesses the influence of interparental relationship conflict on harsh parenting, testing a positive parenting

discipline strategy like inductive discipline may have given rise to different findings than had we examined the influence of negative interparental relationship quality and harsh discipline practices.

Study 3: The Early Origins of the Sibling Relationship

Studies 1 and 2 provided insight into the development of sibling sharing behavior in the early years of childhood. Yet, starting as early as the first year, there is long-term stability in children's sibling relationships over time (Aldercotte, White, & Hughes, 2016; Dunn, Slomkowski, & Beardsall, 1994). Further, parents are often deeply concerned on how best to promote positive sibling interaction, and reduce sibling conflict (Kramer & Ramsburg, 2002), so examining how parents think about and prepare for the birth of a second child—a time that may be considered the earliest beginnings for children's first sibling relationship—is worthy of further investigation. To do so, Study 3 took a more expansive computational approach to address this issue by topic mining the website BabyCenter to summarize how mothers think about and prepare for the upcoming birth of their second child. General patterns of the identified topics indicated that most mothers are still concerned about many the same issues as mothers in previous qualitative studies conducted several decades ago. Pre-birth, mothers spoke at length about managing their pregnancy symptoms, sought support from each other and their real-life social networks, worried about their older children's adjustment and expressed concern that they would not be able to love their second children as much as their first. Post-birth, mothers discussed their labor, delivery, and recovery, worried about the health of their new baby, and voiced concern about their ability to both physically and emotionally care for the needs of two children. Taken together, these findings highlighted that second-time motherhood is a unique transition with distinct needs, yet a search of the literature revealed that there are very few

supports available to mothers expecting their second child. Clearly, there appears to be a demand to develop materials, websites, and/or interventions that provide mothers with the information they desire rather than relying on potentially biased and inaccurate information. In sum, Study 3 contributed to the literature by isolating the concerns of second-time mothers today, highlighting their desire for more information and support, and by implementing a novel and innovative way to collect and mine social media data as a means of investigating significant topics in child and family development.

Limitations

Specific limitations for all three studies were described in the preceding chapters, but some general limitations remain and should be addressed in future research. In this dissertation, I specifically used a family systems framework by focusing on families that consisted of two - parents in heterosexual relationships with two children in the early years of childhood. Though we cannot know the demographics of the sample in Study 3, the couples in Studies 1 and 2 were all heterosexual and married, and therefore, the findings may not apply to families with unmarried parents or to couples who do not identify as heterosexual. Further, family structures often include more than two children. Accordingly, children of multi-child families could be both an older and younger sibling concurrently, and be both the recipient and initiator of sibling interactions. Also, families with siblings are formed by many different means, including adoption, divorce and remarriage, and birth, and the current findings may not generalize to these different family situations. Sensitivity to these family structure issues would allow for a more multi-faceted and inclusive examination of family processes across diverse family forms. Research on sibling relationships in childhood, adolescence and adulthood is still relatively scarce in comparison to research on parents (predominantly mothers), spouses, peers, and other

social influences (e.g., social networks, schools, neighborhoods), even though the sibling relationship is often one of the longest lasting relationships an individual will have. The current findings address an under-investigated social relationship, yet provide only a small snapshot into the lives of siblings. Future research examining sibling relationships across the life-span from a family systems perspective is clearly needed.

Although the use of a novel method to measure sharing, in Studies 1 and 2, the Fishing Game Task, was a strength of this dissertation, it also presents limitations. Though this sharing paradigm created a naturalistic environment to measure sibling sharing, it was used for the first time in this dissertation. Due to the novelty of this task, we suggest future research replicate our findings to confirm the validity of the task.

Implications

Sibling Sharing

Though exploratory, this dissertation suggests that children are influenced by their sibling relationships and that the sibling relationship may be an important context for children's prosocial and moral development. Specifically, siblings appear to influence each other's sharing behaviors. This is not altogether surprising, due to the powerful and intimate bond young siblings share together. What is surprising, however, is the lack of literature on the dynamics of sibling sharing and its influence on children's social development and childhood socialization. Sibling sharing is a common concern for parents, particularly for families with two or more children. In fact, a quick internet search of the topic revealed a multitude of popular media articles devoted to the subject (e.g., Markham, 2018; Lansbury, 2015; Lerner, 2006; Schwarz, 2017). Despite the popular interest in this topic by the public, there is very little empirical literature devoted to siblings, in general, and sibling sharing specifically. Previous research on sharing and prosocial

behavior is primarily lab-based. Children are often encouraged to share and interact with an experimenter, hypothetical peer, or inanimate object, such as a toy dog or a puppet (e.g., Blake & McAuliffe, 2011; Chernyak & Kushnir, 2013; Chernyak & Sobel, 2016; Smith, Blake & Harris, 2013). The ecological validity of these sharing tasks and how children share with their siblings is unclear.

Few studies of sibling sharing exist, and one of the only other studies to consider sibling sharing focused only on whether older siblings' shared raisins with a younger sibling (van Berkel et al., 2015a; van Berkel et al., 2015b). This is certainly an area deserving of more investigation, in terms of both measurement and findings. Because early social development often occurs in the family (Tiedemann & Johnston, 1992), it is likely that some of children's earliest sharing behaviors manifest between siblings. This dynamic, however, is distinctly different than the dynamic between another child in a lab setting or with an experimenter. Specifically, sibling relationships generally include a differential power dynamic, in which the older sibling typically plays the dominant role due to the asymmetry between the two children's skills and competencies (Hughes, McHarg, & White, 2018). As such, this dissertation presented important preliminary research examining the dynamics and influences of sibling sharing. Findings indicated that, although older siblings did influence their younger siblings' sharing behaviors over time, younger siblings did reciprocate in a naturalistic sharing task. Further, sibling sharing did appear to be related to children's development of moral regulation over time. Findings from this dissertation revealed that more research is needed on how children share with their siblings, and what effect, if any, that dynamic has on their prosocial behaviors.

Moving Beyond the Mother-Child Dyad

Because developmental psychology scholars have traditionally placed emphasis on the mother-child dyad and traditional methods to study them, one of the novel contributions of this dissertation was the attempt to consider alternative explanations and methodologies for studying children's development in early childhood. Though the parent-child subsystem is integral to the understanding of the contextual influences of children's social development, using it as a primary focus limits our grasp of the broader world in which children develop. Because children's development is affected both directly and indirectly by these different family relationships (Cox & Paley, 2003; Minuchin, 1985), it is necessary to jointly investigate multiple subsystems to elucidate the varied influences on children's socioemotional development. To address this issue, the research reported in this dissertation took a family systems perspective to more closely investigate the sibling relationship, an often-overlooked subsystem, in early childhood. By examining the sibling relationship from dyadic-, family-systems-, and broader computational approaches, this work revealed a more nuanced picture of how children grow and develop in their family systems and how those subsystems interact and contribute to children's prosocial and moral development.

Further, this dissertation used novel methodology in all three studies to understand how sibling relationships evolve in early childhood. Studies 1 and 2 introduced the use of a new method to assess sibling sharing, the Fishing Game Task. This observational task created a naturalistic, lab-based environment to measure both older and younger siblings' self-focused and other-focused behaviors, both essential components of sharing. Due to the novelty of this task, however, future research on sharing should investigate the influence of siblings on children's sharing and do so in ecologically valid settings, such as the home environment. Further, instead

of using conventional approaches to understand parents' concerns, Study 3 used a pseudonymous forum for parents on BabyCenter, a data-rich contemporary online arena, to investigate the concerns of second-time mothers through the cross-disciplinary approach of topic modeling. Doing so provided an effective strategy for isolating a large sample of mothers willing to discuss issues regarding second-time parenting, which afforded a wider array of potential topics of concern than could have been gleaned from qualitative interviews with a small sample of second-time mothers. Future work in developmental psychology will likely benefit from deeper integration of social media data and text mining with data obtained through traditional longitudinal, naturalistic, and experimental methods.

Supporting Women and Families across the Lifecourse

In 1979, Ramona Mercer noted that healthcare providers often felt that second-time mothers needed far less help during their pregnancy or delivery because they "know the ropes" (Mercer, 1979). But, in fact, she concluded that second-time mothers require even more attention due to the complexity of their changing family unit. Though this article was written almost four decades ago, the findings of Study 3 revealed that mothers today are still concerned about many of the same issues as mothers from previous decades, yet few healthcare supports are available to them as they navigate the transition to the second child. No two pregnancies are ever physically or emotionally the same, and each new pregnancy brings with it new complexities as the family system adjusts and expands to include the new family member. Findings from Study 3 indicated that mothers were deeply concerned about many issues during the transition, including managing the responsibilities of care for two children and the older sibling's adjustment. One important topic conveyed by many mothers in study 3, the concern that they may not be able to love their second child as much as their first, was particularly noteworthy, as no empirical research to date

has attempted to address the causes and consequences of this issue. This gap in the literature may be due to the overwhelming emphasis in developmental psychology on the mother-child dyad as the focal relationship in early child development, without considering that most families have more than one child. Mothers expressed concern repeatedly about whether it was normal for them to worry about whether they would be able to love their second child as much as their first.

Unfortunately, there is no empirical research on this topic to know how to assist these mothers, though popular media confirms that mothers are desperate for answers. A Good Morning America segment recently documented the experience of an ABC News chief meteorologist, Ginger Zeeb, as she prepared for her second child (Sherwood, 2017). Zeeb was worried about how she would love two children equally and asked for advice on her Facebook account. She received thousands of responses from other mothers who expressed the same concerns and fears. This sentiment is echoed repeatedly in popular media. in a recent article published in the Huffington Post, the author wrote,

> When I was pregnant with my second child, my husband and I affectionately (and jokingly) began to refer to him as "Baby Chopped Liver." You see, we already had our firstborn — our golden child, our prince, our special, special boy. And though I wouldn't have admitted it at the time, while pregnant, I thought to myself often that I would always do my best to make Baby Chopped Liver (hereinafter referred to as "Little BCL") feel like he was loved just as much as his brother, even though it obviously could never be true. In my ninth month of pregnancy, I sat on the floor of my son's bedroom and cried as I read to him, mourning that our time alone together was coming to a close. I might have even resented the fact that, despite all of my wishes for a second child, there was going to be another human being who would need me and detract my attention from my perfect

son. I thought, *how on earth could I possibly love anyone or anything as much as my firstborn?* (Shapiro, 2017)

This quote exemplifies how second-time mothers have many complex feelings around their changing family dynamic. These examples, along with findings from Study 3, corroborate that developmental scientists may not always be addressing the most pertinent parenting issues for mothers as they encounter different phases of the family life course. Here, second-time mothers are deeply concerned about how they will love their second child as much as their first, seek advice and support from other mothers, and are unable to find answers based on sound scientific evidence because of the inherent biases imposed by the one-parent, one-child research design that pervades developmental science.

Clearly, there appears to be a need to develop materials, websites, and/or interventions that provide mothers with practical, evidence-based information about second-time motherhood rather than relying on potentially biased and inaccurate information from friends, family, or social media. Because many mothers expressed feelings of guilt that they may not love one of their children, we speculate that they may not share these fears with healthcare providers, who are likely an important source of advice and information. Even if they did, it is unclear whether healthcare providers would be able to provide satisfactory answers. Based on popular media, many mothers are also reporting these feelings generally dissipate once the baby is born, and as Shapiro (2017) states "my fears were unfounded. I have not, for one minute, had to pretend to love Little BCL as much as his older brother. That came entirely naturally." But what if a mother does not feel this way? What if she finds it difficult to bond with her new baby? Because there is insufficient research, we do not know when to suggest mothers seek help if these feelings do not

dispel naturally. More research is needed to understand the nature and timeline of these types of feelings, and develop effective intervention strategies.

Further, in the quote detailed above, Shapiro (2017) mentioned that both she *and* her husband were concerned about this transition and what it would mean for their family. Though the quote clearly indicates that fathers may also struggle with concerns that they may not love both of their children equally, there is a dearth of research on the concerns or issues of fathers, considered by some professionals to be critical for their support of mothers and older children during this transition (e.g., Kolak & Volling, 2013; Volling et al., 2017). Fathers are parents too and may share many of the same concerns as second-time mothers or may have unique unaddressed worries as they prepare to become a parent for the second time. Therefore, I suggest future work examine the experiences of both parents to create advantageous and adaptable interventions for this change in family structure.

Family systems theory posits that an integral part of the family is the ability to reorganize in response to changes in the family structure, such as the addition of a new baby (Cox & Paley, 2003). Developmental psychology has not given parents the necessary tools to effectively readjust to this normative transition. Further, treating mothers as if they know everything about parenting necessary after having their first child ignores their own development across the lifecourse. Mothers, like children, grow and change over time and their concerns and motivations also may change. Parenthood requires constant adaptive restructuring as children develop and mothers and fathers navigate not only second pregnancies, but the "terrible twos", the transition to school, peer relationships, bullying, or empty nesting. Because there is long-term stability in children's sibling relationships over time (Aldercotte, White, & Hughes, 2016; Dunn, Slomkowski, & Beardsall, 1994), starting as early as the first year, it is particularly important to

efficiently equip parents for the transition to the second child. By treating parents as individuals who also are in the process of developing over time, advantageous interventions may help lay the foundation for strong sibling and family relationships.

Conclusions

Children do not develop in a vacuum, nor only within the mother-child dyad. Each family subsystem has an important influence on children's socioemotional development and only by studying these subsystems, individually and collectively, can we begin to grasp the broader context of children's developmental spheres. The interparental relationship is a significant determinant of parenting (Belsky, 1984), the parent-child relationship has been consistently stressed as important for children's socioemotional development (e.g., Asbury, Dunn, Pike, & Plomin, 2003; Bryant & Crockenberg, 1980), and parents help lay the groundwork for strong sibling relationships. Further, though overlooked, siblings, too, are important. Their relationship comprises unique components, is one of the longest enduring relationships in the lifecourse (Cox, 2010), and affords salient developmental contexts not provided by other subsystems. As such, it is crucial to consider that children are influenced by their varied relationships and that their prosocial and moral development occurs in a broader context beyond that of the mother-child dyad.

References

Aldercotte, A., White, N., & Hughes, C. (2016). Sibling and peer relationships in early childhood. In L. Balter, C.S. Tamis-Lemonda (Eds.), *Child psychology: A handbook of contemporary issues* (pp. 141-165). New York, NY: Routledge.

Asbury, K., Dunn, J. F., Pike, A., & Plomin, R. (2003). Nonshared environmental influences on individual differences in early behavioral development: A monozygotic twin differences study. *Child Development*, *74*(3), 933-943.

Belsky, J. (1984). The determinants of parenting: A process model. *Child Development*, *55*(1) 83-96.

Blake, P. R., & McAuliffe, K. (2011). "I had so much it didn't seem fair": Eight-year-olds reject two forms of inequity. *Cognition*, *120*(2), 215-224.

Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge, MA: Harvard university press.

Bryant, B. K., & Crockenberg, S. B. (1980). Correlates and dimensions of prosocial behavior: A study of female siblings with their mothers. *Child Development*, *51*(2), 529-544.

Cox, M. J. (2010). Family systems and sibling relationships. *Child Development Perspectives*, *4*(2), 95-96.

Chernyak, N., & Kushnir, T. (2013). Giving preschoolers choice increases sharing behavior. *Psychological Science*, *24*(10), 1971-1979.

Chernyak, N., & Sobel, D. M. (2016). Equal but not always fair: Value-laden sharing in preschool-aged children. *Social Development*, *25*(2), 340-351.

Cox, M. J., & Paley, B. (2003). Understanding families as systems. *Current Directions in Psychological Science*, *12*(5), 193-196.

Cummings, E. M., Goeke-Morey, M. C., & Raymond, J. (2004). Fathers in family context: Effects of marital quality and marital conflict. In M. E. Lamb (Ed.), The role of the father in child development (4th ed., pp. 196-221). Hoboken, NJ: Wiley

Dunn, J. (1988). *The beginnings of social understanding*. Cambridge, MA: Harvard University Press.

Dunn, J. (2002). Sibling relationships. In P. K. Smith & C. H. Hart (Eds.), *Blackwell handbooks of developmental psychology. Blackwell handbook of childhood social development* (pp. 223-237). Malden, MA: Blackwell Publishing.

Dunn, J., Brown, J. R., & Maguire, M. (1995). The development of children's moral sensibility: Individual differences and emotion understanding. *Developmental psychology*, *31*(4), 649-659.

Dunn, J., & Munn, P. (1986). Sibling quarrels and maternal intervention: Individual differences in understanding and aggression. *Journal of Child Psychology and Psychiatry*, *27*(5), 583-595.

Dunn, J., Slomkowski, C., & Beardsall, L. (1994). Sibling relationships from the preschool period through middle childhood and early adolescence. *Developmental Psychology*, *30*(3), 315-324.

Eisenberg, N., Fabes, R. A., & Spinrad, T. L. (2006). Prosocial development. In Damon, W. & Lerner, R. (Eds.), *Handbook of child psychology* (pp. 646-718). Hoboken, N.J. : John Wiley & Sons.

Erel, O., & Burman, B. (1995). Interrelatedness of marital relations and parent-child relations: a meta-analytic review. *Psychological Bulletin*, *118*(1), 108-132.

Furman, W., & Buhrmester, D. (1985). Children's perceptions of the personal relationships in their social networks. *Developmental Psychology, 21*(6), 1016-1024.
Grusec, J. E., & Goodnow, J. J. (1994). Impact of parental discipline methods on the child's internalization of values: A reconceptualization of current points of view. *Developmental Psychology*, *30*(1), 4-19.
Hoffman, M.L. (1983). Affective and cognitive processes in moral internalization: An information processing approach. In E.T. Higgins, D. Ruble, & W. Hartup (Eds.), *Social Cognition and Social Development: A Socio-Cultural Perspective*. New York: Cambridge University Press, 236-274.
Hughes, C., McHarg, G., & White, N. (2018). Sibling influences on prosocial behavior. *Current opinion in psychology*, *20*, 96-101.
Jenkins, J., & Dunn, J. (2009). Siblings within families: Levels of analysis and patterns of influence. New directions for child and adolescent development, 2009(126), 79-93.
Kerr, D. C., Lopez, N. L., Olson, S. L., & Sameroff, A. J. (2004). Parental discipline and externalizing behavior problems in early childhood: The roles of moral regulation an child gender. *Journal of abnormal child psychology*, *32*(4), 369-383.
Kochanska, G. (1993). Toward a synthesis of parental socialization and child temperament in early development of conscience. *Child Development, 64*(2), 325–347.
Kochanska, G. (1994). Beyond cognition: Expanding the search for the early roots of internalization, and conscience. *Developmental Psychology, 30*(1), 20–22.
Kochanska, G. (1997). Multiple pathways to conscience for children with different temperaments: from toddlerhood to age 5. *Developmental Psychology*, *33*(2), 228.
Kochanska, G., Aksan, N., Knaack, A., & Rhines, H. M. (2004). Maternal parenting and children's conscience: Early security as moderator. *Child development*, *75*(4), 1229-1242.
Kolak, A. M., & Volling, B. L. (2013). Coparenting moderates the association between firstborn children's temperament and problem behavior across the transition to siblinghood. *Journal of family psychology*, *27*(3), 355-364.
Kramer, L., & Ramsburg, D. (2002). Advice given to parents on welcoming a second child: A critical review. *Family relations*, *51*(1), 2-14.
Kreppner, K., Paulsen, S., & Schuetze, Y. (1982). Infant and family development: From triads to tetrads. *Human Development*, *25*(6), 373-391.
Lansbury, J. (2015). *4 Reasons to Relax About Sibling Toy Taking.* Retrieved from http://www.janetlansbury.com/2015/04/4-reasons-to-relax-about-sibling-toy-taking/
Lerner, C. (2006). *When toddlers won't share with siblings.* Retrieved from https://www.parents.com/parenting/dynamics/sibling-rivalry/when-toddlers-wont-share-with-siblings/
Markham, L. (2018). *Siblings 101*. Retrieved from http://www.ahaparenting.com/parenting-tools/siblings/siblings-101
Mercer, R.T. (1979). Having another child "She's a Multip. … She Knows the Ropes". *MCN, The American Journal of Maternal/Child Nursing. 4*(5), 301-304.
Miller, P. A., Eisenberg, N., Fabes, R. A., Shell, R., & Gular, S. (1989). Mothers' emotional arousal as a moderator in the socialization of children's empathy. *New Directions for Child and Adolescent Development*, *1989*(44), 65-83.
Minuchin, P. (1985). Families and individual development: Provocations from the field of family therapy. *Child Development*, *56*(2), 289–302.
Nelson, J. A., O'Brien, M., Blankson, A. N., Calkins, S. D., & Keane, S. P. (2009). Family stress

and parental responses to children's negative emotions: Tests of the spillover, crossover, and compensatory hypotheses. *Journal of Family Psychology*, *23*(5), 671-679.
Sameroff, A. (2009). The transactional model. In A. Sameroff (Ed.), *The transactional model of development: How children and contexts shape each other* (pp. 3-21). Washington, DC, US: American Psychological Association.
Schwarz, N. (2017). *10 Sharing rules every sibling should know*. Retrieved from https://imperfectfamilies.com/10-sharing-rules-every-sibling-know/
Shapiro, D. R. (2017). *Can you really love your second child as much as your first?* Retrieved from https://www.huffingtonpost.com/darcy-r-shapiro/can-you-really-love-your-second-child-as-much-as-your-first_b_5938522.html
Sherwood, R. (Producer). (2018, January 26). *Good morning America* [Television broadcast]. New York, NY: American Broadcasting Company.
Smith, C. E., Blake, P. R., & Harris, P. L. (2013). I should but I won't: Why young children endorse norms of fair sharing but do not follow them. *PloS one*, *8*(3), e59510.
Tiedemann, G. L., & Johnston, C. (1992). Evaluation of a parent training program to promote sharing between young siblings. *Behavior Therapy*, *23*(2), 299-318.
U.S. Census Bureau. (2009). America's families and living arrangements: 2009. Retrieved from http://www.census.gov/population/www/socd
van Berkel, S. R., Groeneveld, M. G., Mesman, J., Endendijk, J. J., Hallers-Haalboom, E. T., van der Pol, L. D., & Bakermans-Kranenburg, M. J. (2015a). Parental sensitivity towards toddlers and infant siblings predicting toddler sharing and compliance. *Journal of Child and Family Studies*, *24*(8), 2270-2279.
van Berkel, S. R., van der Pol, L. D., Groeneveld, M. G., Hallers-Haalboom, E. T., Endendijk, J. J., Mesman, J., & Bakermans-Kranenburg, M. J. (2015b). To share or not to share: Parental, sibling, and situational influences on sharing with a younger sibling. International Journal of Behavioral Development, 39(3), 235-241.
Volling, B. L., Gonzalez, R., Oh, W., Song, J. H., Yu, T., Rosenberg, L., ... & Stevenson, M. M. (2017). *Developmental trajectories of children's adjustment across the transition to siblinghood: Pre-birth predictors and sibling outcomes at one year*. Wiley.
Zukow, P. G. (1989). Sibling interaction across cultures: theoretical and methodological issues. NY, New York: Springer-Verlag.