AN ABSTRACT OF THE THESIS OF

Jamie Jaramillo for the degree of Master of Science in Human Development and Family Studies presented on May 8, 2018.

Title: Sibling Coercion & Mental Health among Youth in Foster Care

Abstract approved: _____

Brianne Kothari

The purpose of this observational study was to describe the frequency of coercive behavior among siblings in foster care, a diverse population at high risk for mental health impairment. We examined differences in coercion frequency at the level of the individual child (i.e. age & gender), sibling dyad (i.e. age gap, gender composition, & warmth), and foster care placement (i.e. sibling placement, number of prior placements). Finally, we wanted to know if sibling coercion was related to child mental health diagnosis. A series of descriptive statistics and non-parametric tests indicated that there was a wide range of coercion levels among individual children. Sibling coercion frequency did differ by age, with older children displaying lower levels. Coercion also differed by level of sibling warmth; children who perceived more warmth from their sibling displayed a lower frequency of coercion. Coercion levels also differed by sibling placement with siblings living together displaying a higher frequency of coercive interaction than those living apart. The frequency of sibling coercion was not related to mental health diagnosis. Though the experience of child abuse and living in a home with coercive family members may increase a child's coercive behavior towards a sibling, our findings show that not all children meet this expectation. Careful attention to specific child and sibling dyad needs are critical to design effective interventions, practices, and policies.

Sibling Coercion & Mental Health among Youth in Foster Care

by
Jamie Jaramillo

A THESIS

submitted to

Oregon State University

in partial fulfillment of
the requirements for the
degree of

Master of Science

Presented May 8, 2018
Commencement June 2018

Master of Science thesis of Jamie Jaramillo presented on May 8, 2018.

APPROVED:

Major Professor, representing Human Development & Family Studies

Director of the School of Social and Behavioral Health Sciences

Dean of the Graduate School

I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

Jamie Jaramillo, Author

ACKNOWLEDGEMENTS

I owe countless thanks to those who have supported me in the completion of this project. My committee chair, Brianne Kothari, scaffolded my growth even as we live far apart. She has been encouraging, consistently available, proactive, and has facilitated my collaboration with other excellent scholars. I will be better prepared for a post-graduate school career because of her. Mary Arnold helped me to think through my initial ideas and boosted my confidence when I needed it. Lew Bank was a great resource with abundant knowledge and a kind, approachable personality. Joel Steele offered hours of help with statistics even though he was not on my committee. Without the guidance and continued care from my undergraduate mentor, Zena R. Mello, I would not have made it to graduate school. I know that I can always depend on her.

Without support from my peers, I would not have been able to continue graduate school when life got real. Since my first day, Jeff Flesch has been my peer mentor and trusted friend, helping me to navigate and makes sense of this unfamiliar place and allowing me to vent. Asia Thogmartin, my dearest friend, extended her love to me and my family during the most stressful and traumatic experience of my life that occurred while I was completing this degree. Patrick Whelan listened to me, heard me, understood me, and helped me to see things from a different perspective. Brenda Barrett-Rivera has helped me to cope and adapt to the academic world while remaining true to myself. Thank you all for being more than peers.

I want to thank Rick Settersten for teaching the most memorable class I have ever taken and for sharing his whole self with his students, making it safe for us to do the same. Thanks to Kate MacTavish for inviting me to join the Equity, Inclusion, and Diversity committee. It has given me a greater sense of purpose. Thanks to the Students for Equity, Inclusion, and Diversity for providing a space to talk about difficult issues and giving me hope that change is possible.

Finally, I offer gratitude to my partner, Mykl, for holding me up and remaining positive when I could not do so on my own. Thank you for sticking with me. To Jerri and Michael, thank you for treating me like family. To my sister, Chantal, and my niece, Alex, thank you for tolerating the many sorrowful years of long distance between us and for being my inspiration. I love you both dearly.

TABLE OF CONTENTS

LIST OF TABLES

Chapter1: Introduction

Children and adolescents who enter foster care are at risk for a lifetime of impaired mental health. They often display high levels of depression, anxiety, withdrawal, somatic complaints, anger, aggression, disobedience, antisocial behavior and delinquent behavior (Pecora, White, Jackson, & Wiggins, 2009). These internalizing and externalizing symptoms stem from maltreatment and compounding risk factors such as poverty, parental substance abuse, and exposure to domestic violence (Courtney, McMurtry, & Zinn, 2004; Kohl, Edleson, English, & Barth, 2005; Smith & Marsh, 2002). If untreated, these symptoms may lead to emotional and behavioral disorders. Compared to the general population of adults in the United States, foster care alumni suffer higher rates of traumatic stress disorder, major depressive disorder, and substance abuse disorder, and they have a higher lifetime prevalence of these disorders (Pecora et al., 2009). Intervention during childhood is powerful for promoting lifelong mental health (Kessler et al., 2010; Shonkoff, Boyce, & McEwen, 2009).

Researchers are turning to sibling relationships as a possible avenue for intervention and promotion of positive mental health among youth in foster care (McBeath, 2014; Kothari et al., 2017; Tucker, McHale, & Crouter, 2008). Siblings are key because they are a child's first peers and these relationships tend to outlast many other types of relationships, continuing even after parent separation. An important area of intervention is sibling coercion, the most common form of family violence (Button & Gealt, 2009). Coercion refers to behaviors that are aversive, including physical and psychological aggression, and are performed to control another person (Patterson, 1982). Although many consider sibling coercion to be normal, frequent sibling coercion is related to child reports of externalizing and internalizing symptoms in the general

population (Kim, McHale, Crouter, & Osgood, 2007; Stocker, Burwell, & Briggs, 2002). Both siblings in a dyad characterized by frequent coercion are at risk of developing a mental disorder (Compton, Snyder, Schrepferman, Bank, & Shortt, 2003).

Turning to the context of foster care, the federal law requires child welfare agencies to place siblings together whenever possible (Fostering Connections to Success and Increasing Adoptions Act, 2008). Some research supports the protective effect of placing siblings together (Hegar & Rosenthal, 2011; Mota & Matos, 2015) while others argue that siblings placed together may be highly coercive toward one another, reflecting a pattern of interaction that they learned from their homes of origin (Bank & Buraston, 2004; Feinberg, Sakuma, Hostetler, & McHale; Linares, Li, Shrout, Brody, & Pettit., 2007). Research on sibling coercion and mental health in the general population (Buist & Prinzie, 2013) and in clinical male population (Bank & Burraston, 2004) has gained attention. However, the frequency of sibling coercion among youth in foster care remains unknown. Further, the relationship between sibling coercion and mental health in this population has been understudied and has yielded mixed findings, partly due to different reporters of sibling conflict (Linares, 2006; Linares, et al., 2007). The present study will use observational methods to overcome reporter bias and help clarify mixed findings.

The purpose of this observational study is to describe the frequency of coercive behavior among siblings in foster care, examining differences at the level of the individual child (i.e. age and gender) as well as at the level of the sibling dyad (i.e. age gap, gender composition, and warmth). Additionally, I will explore whether the frequency of coercive behavior is different for siblings placed together versus apart or by the number of foster home placements. Finally, I will

investigate the link between sibling coercion and diagnosis of mental health disorder in this at-risk population. Findings have implications for policy and practice related to child welfare.

Chapter 2: Literature Review

Family Systems Theory

Family systems theory provides a framework for understanding sibling relationships and child mental health (Burgess 1926, Hess & Handel, 1959). This theory conceptualizes the family as a set of interconnected members of a complex system. The focus is on interdependent relationships and ongoing processes within the family. The relationship processes between two members make up one dyad, forming a subsystem within the larger system. A subsystem influences the development and well-being of each individual member and impacts the way other dyadic relationships function (Burgess 1926, Hess & Handel, 1959). Siblings are an important subsystem with contributions to child development that are unique from parents (Dirks, Persram, Recchia, & Howe, 2015; Feinberg, Someyer, & McHale, 2012).

Family systems theory makes several assumptions that are relevant for the study of siblings in foster care and mental health. First, the outcomes of behavior and mental health emerge together from the bidirectional influence of an individual and his or her family members; one does not cause the other (Burgess, 1926; Hess & Handel, 1959). Relatedly, a whole family system, or subsystem, cannot be understood by studying individual family members in isolation from one another. Family processes and transactions between family members are key. This view is in opposition to concentrating on individual characteristics of any one member as a causal factor (Burgess, 1926; Hess & Handel, 1959). Although all members of a family system contribute to patterns of interaction, one member has the potential to disproportionately impact the functioning of the whole family system, as may be the case with members who are violent or who have a mental disorder (Constantine, 1986, 1989). A final, relevant assumption of this

theory is that stressors outside the family, such as foster care placement or impoverished neighborhoods, can negatively impact how family relationships function. Family systems theory is useful for constructing models of how risk factors are transmitted between family members. The coercive family process model is one such model.

Coercive Family Process

Extensive observational research with clinical populations at the Oregon Social Learning Center (OSLC) lead to the development of the coercive family process model (Patterson, 1982). This model builds on family systems theory, social learning theory, and theories of social reinforcement. Patterson and colleagues at OSLC used this model to study families of children who displayed clinical levels of aggressive and antisocial behavior.

Patterson (1982) described coercive behaviors as a means for "pain-control". That is, coercion has the effect of controlling the behavior of others by inflicting some level of physical or psychological discomfort. Coercive behaviors include aggressive behaviors, such as hitting, yelling, or making belittling comments. Coercive behaviors also include those that are not commonly thought of as aggressive, such as whining, disapproval, or blaming. The coercive process model assumes that this spectrum of behaviors is part of a common set that all family members display. Under certain circumstances, relatively mild coercive interactions can escalate into more intense and abusive behaviors, like using weapons (Patterson, 1982).

Patterson (1982) found that the frequency, duration, and intensity of coercive behaviors differentiates clinically antisocial children from non-clinical children. The average 11-year-old in the general population will display coercion about once every 5 minutes. The average 11-

year-old who is considered clinically aggressive will display coercion once every 1 and a half minutes. An earlier study found that during observed sibling interactions, non-clinical children displayed coercion 0.27 times per minute and clinical children 0.75 times per minute (Arnold, Levine, & Patterson, 1975). Patterson (1974) suggests a cut off rate of 0.45 times per minute to differentiate clinically aggressive boys from non-clinical boys.

The coercive behavior of an antisocial child is strongly correlated with the coercive behavior of parents and siblings (Bank, Burraston, & Snyder, 2004; Patterson, 1985). Children are likely to become frequent practitioners of coercion when the following conditions are met: they have models in the home, such as a coercive parent or older sibling, their coercive behavior is consistently reinforced by a family member's submission, the child has the supply of a victim to practice on, such as a younger sibling, and the child's parents use ineffective deterrents of coercive behavior. When one dyad is coercive, it can spread to other dyads in the family (Ingoldsby, Shaw, Owens, & Winslow, 1999). In this way, a coercive family environment is created, and patterns of coercive interaction become entrenched over time. This theory assumes that a highly coercive child is responding to a highly coercive family environment. Once this process is set in motion, a highly coercive child is likely to continue his or her behavior with others outside of the family, including peers (Johnson et al., 2015; Lewin, Hops, Davis, & Dishion, 1993). Additionally, children who are victimized by a sibling are also more likely to be victimized by peers (Tucker, Finkelhor, & Turner, 2014).

In the coercive family process model, siblings serve as agents for teaching coercive behavior by modeling and by practicing patterns of coercive interaction. Siblings provide a unique opportunity for children and adolescents to practice certain types of coercive behaviors

that they do not typically display with parents, such as teasing, threatening, hitting, and fighting (Bank et al., 1996; Bullock & Dishion, 2002; Hay, 2005; Patterson, 1986; Slomkowski, Rende, Conger, Simons, & Conger, 2001). Further, the bidirectional influence of siblings on one another's behavior persists even when shared environmental influences are controlled for (Bank & Burraston, 2001; Bank, Burraston, & Snyder, 2004; Snyder, Bank, & Burraston, 2005). Sibling relationships are thus an important piece of the coercive family process model.

Sibling Relationships

Most children in the United States grow up with a sibling who may be biologically related, a half-sibling, or a step-sibling (Hernandez, 1997; McHale et al., 2006). During some life stages people spend more time with siblings than parents or peers, and sibling relationships endure for the entire lifespan (Tucker, McHale, & Crouter, 2008). Sibling relationships teach children how to relate to others outside of the family and function as a "training ground" for both positive and negative social behavior (Dirks et al., 2015; Feinberg et al., 2012; Slomowski et al., 2001).

Sibling relationships are particularly important for youth in foster care because it is often the most viable relationship they have (McBeath et al., 2014). Following substantiated maltreatment in the home, children are uprooted from their families, schools, and friends. Once in foster care, children experience an average of 3.4 foster home placements and some children change homes over 10 times (Wulczyn, Kogan, & Harden, 2003; Zima et al., 2000). Placement instability is detrimental to a child's well-being, ability to form attachments, and creates a cycle of increased behavior problems and further placement changes (Waid, 2014; Webster & Needel,

2014). In this context, siblings can be a source of emotional support, provide a sense of continuity, and can help children make sense of their experiences (McHale et al., 2006; Richardson & Yates, 2014). Despite federal law and the potential for positive sibling relationships to reduce the negative impact of the many risk factors that youth in foster care are exposed to, the reality is that they are often placed in separate foster homes (Waid, 2014; Wojciak, Mcway, & Helfrich, 2013; Wulczyn & Zimmerman, 2005). The placement of siblings together or apart while in foster care may impact the quality of sibling relationships (Wojciak et al., 2013). Sibling relationship quality can be understood by examining the dimensions of warmth and conflict (Dirks et al., 2015; McHale, Kim, Crouter, & Whiteman, 2001).

Sibling Warmth. Warmth in sibling relationships is characterized by feelings of affection, closeness, and support. Sibling warmth is linked to child development of social competence and peer acceptance (Bank et al., 2004; Stormshak et al., 1996), academic achievement (Melby et al., 2008), and even skill in intimate partner relationships during adolescence and young adulthood (Bank et al., 1996; Doughty, Lam, Stanik, & McHale, 2014; Noland et al., 2004; Updegraff et al., 2000). Buist and colleagues' (2013) meta-analysis demonstrated that sibling warmth is associated with fewer internalizing and externalizing symptoms in the general population of children and adolescents. Further, the presence of sibling warmth, even when accompanied by significant levels of conflict, is related to less aggression and fewer internalizing symptoms (Buist & Vermande, 2014). Siblings exposed to maltreatment or domestic violence may provide support, warmth, and protection to one another (Hegar & Rosenthal, 2009; Katz, 2013; Lucas, 2002), and warm sibling relationship may ease the transition to foster care (Mota & Matos, 2015).

However, sibling warmth is not always associated with positive outcomes. In the general population and low-income population, sibling warmth has been related to more delinquent behavior, substance use, and antisocial behavior with peers (Criss & Shaw, 2005; Rowe, & Gulley; Slomkowski, Rende, Conger, Simons, & Conger, 2001). In a study of foster care youth in a temporary residential facility, greater sibling warmth was related to more behavior problems (Milojevich, Quas, & Adams, 2017). Research with children exposed to domestic violence suggests that sibling hostility may have a greater impact on child behavior than does sibling affection (Piotrowski et al., 2014).

Sibling Conflict & Coercion. Negative aspects of sibling relationships include feelings of hostility, aggression, rivalry, and conflict. It is important to distinguish between constructive conflict and destructive conflict. Constructive conflicts address a specific issue, are less emotionally intense, and are more likely to be end by negotiation (Howe, Rinaldi, Jennings, & Petrakos, 2002). Constructive conflicts help children develop social and emotional skills, such as asserting their rights and responding to the needs of others (Ross & Lazinski, 2014; Smith & Ross, 2007).

Conversely, destructive conflicts often escalate to coercion**.** Destructive sibling conflicts involve multiple forms of aggression, such as physical altercations, property damage, and psychologically damaging comments (Caspi, 2011; Howe et al., 2002; Tucker, Finkelhor, Turner, & Shattuck, 2013*).* Destructive conflicts lose focus to include multiple issues and involve high levels of negative emotion (Howe et al., 2002). Destructive conflicts often end with either a clear winner and loser or end without resolution (Howe et al., 2002). Frequent destructive conflict and coercion between siblings is related to child and adolescent antisocial

behavior, including aggression towards peers, substance use, and conduct problems (Bank et al., 1996; Bank et al., 2004). As family systems theory would predict, the relationship between child behavior and sibling conflict appears to be bi-directional (Pike & Oliver, 2016).

Variation by Child Characteristics. Studies of the general population indicate that child reports of sibling conflict and coercion vary by age and gender. One cross-sectional study found that adolescents report more hostility towards siblings than children in middle childhood (Brody, Stonemen, & McCoy, 1994). Similarly, longitudinal studies suggest that children report more sibling conflict in early adolescence than in middle childhood but report less conflict in later adolescence (Kim, McHale, Osgood, & Crouter, 2006; Kim et al., 2007).

For gender, one study found that boys report more aggression than girls during middle childhood and girls and boys report equal levels of aggression in early adolescence, though the measure of aggression did not specify whether aggression was directed towards a sibling (Williams et al., 2007). Conversely, another study found that adolescent boys report more sibling rivalry than girls (Howe, Karos, & Aquan-Assee, 2011).

Variation by Sibling Dyad Characteristics. Characteristics of the sibling dyad offer a view beyond individual child characteristics. For example, Aguilar and colleagues (2001) sampled children in kindergarten with an average age of 6 years and their siblings with an average age of 9 years. The researchers used both child report and observer ratings of sibling relationship quality, including child reported sibling warmth and observed interactions to measure aggression, negative affectivity, and conflict. Results indicated that sibling dyads with a smaller age gap (1-3 years compared to 4-6 years) scored significantly higher on all three

measures. Gender composition is another dyad characteristic examined by Aguilar and colleagues (2001). Results indicated that older brother/younger sister dyads had higher scores on all observed measures of negative interaction compared to other gender compositions. Further, older brother/younger sister dyads were least likely to report sibling warmth towards one another (Aguilar et al., 2001). Other studies of gender composition indicate that brother/brother dyads display the highest rates of coercion followed by mixed-gender and sister/sister (Williams, Conger, & Blozis, 2007; Dobash & Dobash, 1998; Goodwin & Roscoe, 1990; McGuire, Manke, Eftekhari, & Dunn, 2000).

Another dyad characteristic is sibling warmth. Previous studies of the general population using child-report data have found no correlation between levels of sibling warmth and coercion (Furman & Buhrmester 1985; Stocker & McHale 1992). It is possible for sibling relationships to be "intense" with high levels of both warmth and coercion, to be "uninvolved' with low levels of both dimensions, to be "harmonious" with high warmth and low coercion, or to be "negative" with low warmth and high coercion (McHale et al., 2001).

Variation among Youth in Foster Care. Limited research has examined variation in sibling conflict and coercion among youth in foster care. In a cross-sectional study of maltreated youth aged 6 to 17 years in a temporary residential care facility, Milojevich and colleagues (2017) found that older children reported more hostility toward a sibling compared to younger children. Conversely, Linares et al (2014) found that foster parents reported a similar weekly frequency of aggression for older and younger siblings. For gender, Milojevich and colleagues (2017) showed that child reported hostility did not significantly differ for boys and girls. In contrast to the general population, Linares et al (2014) found that observed levels of warm and

coercive interaction were positively correlated among youth in foster care (Linares et al., 2014). Milojevich et al. (2017) also found that children who reported higher levels of sibling warmth concurrently reported lower levels of sibling hostility. To my knowledge, levels of coercion by sibling age gap and gender composition has not been examined in this population.

Concerning sibling placement among youth in foster care, Milojevich and colleagues (2017) found that siblings aged 6-17 who had never or only sometimes lived together before being placed in foster care reported more aggression than those who had always lived together. However, Linares and colleagues (2006) sampled children aged 3 to10 years and did not find a relationship between placement together or apart from a sibling while in foster care and child report of sibling conflict. In general, more foster home placements is related to increased behavior problems which may manifest in sibling interactions and lead to further placement disruptions (Waid, 2014).

Sibling Coercion and Mental Health

Given that siblings share genetic, environmental, and family process influences, both siblings in a coercive dyad are at risk of developing a mental disorder (Ma, Furber, Roberts, & Winefield, 2015). The patterns of sibling interaction in early childhood are likely to persist into middle childhood and adolescence, and to have long term effects on mental health (Bank et al., 1996; Dunn, Slomkowski, Beardsall, & Rende, 1994; Stocker, Burwell, & Briggs, 2002). Research suggests that children who are coercive towards a sibling also report elevated mental health symptoms, especially for externalizing disorders. For example, one study found that children in foster care who report more sibling negativity were reported to have clinical levels of

externalizing symptoms by their foster parents (Linares, 2006). In a study of clinical boys and a community comparison group, Bank et al. (1996) found that high as compared to lower levels of coercion towards a sibling during middle childhood predicted self-reported symptoms of hostility, depression, anxiety, feelings of inadequacy, and incompetence during adolescence and young adulthood. This relationship was observed for the clinical boys but not the community comparison group (Bank et al., 1996).

Children and adolescents who report being victimized or bullied by a coercive sibling also report elevated mental health symptoms (Tucker et al., 2013). In a study of at-risk boys and their younger siblings, Compton and colleagues (2003) found that during adolescence, older brother's coercive behavior towards a younger sibling was linked to the antisocial behavior of younger brothers and sisters. Importantly, children in the general population who report more conflict with their sibling also report more internalizing and externalizing symptoms, even after accounting for parent-level influences (Kim et al., 2007; Stocker et al., 2002).

Sibling coercion not only contributes directly to a child's mental health, but also indirectly by socializing the child in a way that is related to negative trajectories. The coercive family process model holds that children model, practice, and reinforce coercive behaviors with their siblings (Bank et al., 1996; Patterson, 1982, 1984). This pattern is especially prominent when one sibling in a dyad is clinically antisocial or aggressive (Arnold et al., 1975; Aguilar et al., 2001; Bank et al., 1996). Further, sibling coercion compounds the effects of other risk factors and contributes to a shared coercive family environment that sets children up for a chain of negative consequences (Bank et al., 1996; Bank et al., 2004). Over time, children adopt a coercive interaction and coping style that carries over to peer relationships (Bank et al., 1996;

Bank et al., 2004). Coercive behavior is related to rejection by prosocial peers (Coie & Kupersmidt, 1983) and academic underachievement (Patterson, 1986). In turn, peer rejection and academic underachievement are related to low self-esteem and depressed mood (Patterson & Capaldi, 1991, Patterson & Stoolmiller, 1991).

Notably, there is variation in how children respond to coercive family environments. For example, although some studies show a correlation between coercive parental relationships and coercive sibling relationships (Brody, Stoneman, & McCoy, 1992), others show that children can occasionally develop complicity and cooperation to cope with parental conflict (Jenkins, 1992). Similarly, in an observational study of children exposed to domestic violence, Waddell and colleagues (2001) demonstrated that sibling conflict was not more common than in the general population, yet children exposed to domestic violence had more internalizing symptoms as reported by mothers. In other words, children exposed to coercive family members do not always model the exact behaviors of those family members.

A coercive family process model proposed by Compton and colleagues (2003) posits that children and adolescents may respond to coercive family environments by displaying antisocial behavior, depressive behavior, or both types of behavior depending on gender. Both antisocial behavior and depressive behavior are part of a common set that reflect a child's strategy of coping with a highly aversive family environment. Compton et al., (2003) demonstrated that in an at-risk sample older brother's coercive behavior related to younger sister's depression but not younger brother's. Similarly, Jenkins et al (2015) found that sibling aggression is related to an increase in depressed mood for female adolescents only. Simonelli and colleagues (2002) found

that violence from a brother during childhood was related to adult feelings of anxiety for women but not for men.

Among youth in foster care, there have been mixed findings on the relationship between sibling coercion and mental health symptoms, particularly for internalizing. Linares (2006) found a link between sibling conflict and child report of depressive symptoms. However, a later study by Linares and colleagues (2007) did not find a relationship between sibling conflict and child report of depressive symptoms. The difference between these two studies was the measure of sibling conflict, with the earlier study (i.e. Linares, 2006) using multiple reporters to create the sibling conflict variable while the later study (i.e. Linares et al., 2007) only used child reported sibling conflict. There are more consistent findings for sibling coercion in relation to foster parent reported externalizing symptoms (Linares, 2006, Linares et al., 2007). Drawing on research in the general population, Linares (2006) theorized that the presence of sibling warmth may moderate the negative association of sibling coercion on mental health.

Summary of Literature

In summary, frequent sibling coercion in the general population is related to symptoms of mental disorder for both siblings in a dyad. The coercive family process model posits that children may respond to coercive family environments by perpetuating this coercive behavior at clinical levels with siblings and/or they may respond with internalizing symptoms. Studies have examined individual child characteristics as well as sibling dyad characteristics as they relate to levels of sibling coercion. Children of different ages and gender report different levels of sibling coercion. Sibling coercion also varies by the age gap between siblings and the gender

composition of dyads. Although levels of sibling coercion have not been found to differ by levels of sibling warmth in the general population, a few studies of youth in foster care suggest that these dimensions may be correlated.

Research with siblings in foster care has been scant despite their risk for poor mental health outcomes stemming from coercive family environments and other risk factors that they were exposed to before entering care. The frequency of coercive sibling interactions among youth in foster care remains unknown, as does variation by individual, sibling dyad, or placement characteristics. Further, there are limited and mixed findings on the link between sibling coercion and mental health in this at-risk population. The proposed study will examine these variables and address some of the methodological limitations of previous research.

There are several methodological limitations of extant research. First, most studies on sibling relationships have been based with low risk, Caucasian children from martially intact, middle-class families (Dirks et al. 2015; Feinberg et al., 2013; Kramer, 2010). This limits generalizability of findings to more diverse and at-risk populations, such as youth in foster care. Second, the mixed findings on the frequency of sibling coercion, it's variation, and the link with mental health are partly due to different reporters. Relatedly, the most common measure of mental health is a child or a parent report as opposed to a formal evaluation by professionals. Finally, observational studies of youth in foster care are rare (Linares et al., 2015).

Present Study

The present study adds to the literature by examining siblings in foster care. Observational methods and professional mental health evaluations were used to answer the following research questions:

1. How frequent is observed coercive behavior between siblings in foster care and does it differ based on characteristics of individual children (i.e. age, gender), sibling dyad (i.e. age gap, gender composition, warmth), or foster home placement (i.e. sibling placement, number of prior placements)?

2. Is the frequency of observed coercive behavior between siblings related to child mental health, as measured by DHS administrative records of diagnosis?

Several hypotheses were formed. Regarding individual characteristics, we expected older children to have higher frequency of coercive behavior than younger children on average (Milojevich, 2017). Boys were expected to have a higher frequency of coercive behavior than girls on average (Aguilar et al., 2001; Martin & Ross, 1995; Howe, 2011). For sibling dyad characteristics, we expected those with a smaller age gap to have a higher frequency of coercive behavior on average (Aguilar et al., 2001). The following expectations pertained to sibling gender composition: Brother-brother dyads would have the highest frequency of coercive behavior, followed by older brother-younger sister, and there would not be a significant difference between older sister with younger sister and older sister with younger brother. (Conger et al., 2007; Dobash & Dobash, 1998; Goodwin & Roscoe, 1990; McGuire et al., 2000) We had a non-directional, exploratory hypothesis regarding variation of coercion levels by levels

of sibling warmth, given the mixed findings in this area (Linares, 2006; Linares et al., 2015; Milojevich et al., 2017).

For placement characteristics, and based on the coercive process model (Patterson, 1984), we theorize that siblings placed together would have the opportunity to engage in frequent coercive behavior and would thus display higher levels compared to siblings placed apart. We expected children who have had more placement changes to have a higher frequency of coercive behavior, based on findings that more behavior problems are bidirectionally related to more placement changes (Waid, 2014). Finally, we expected children with a mental health diagnosis to display higher frequencies of coercive behavior than those without a diagnosis.

Chapter 3. Method

Purpose & Rationale for Design

Study data were derived from the Supporting Siblings in Foster Care Study (SIBS-FC) study, a National Institute of Mental Health-funded experimental test of a sibling intervention for foster youth (McBeath et al., 2014). Data were collected longitudinally through multiple methods and reporters, including survey, interview, Oregon Department of Human Services (DHS) records, and structured observation methods. The proposed study will focus on baseline data and observation methods.

Observation methods are ideal for the study of relationship processes and how behaviors are elicited, maintained, and organized (Patterson, 1982). A large body of work has measured relationship dynamics and relationship quality by observing parent-child interactions (Weston, Hawes, & Pasalich, 2017; Urquiza & Timmer, 2012), intimate partner interactions (Gottman, Driver, & Tabares, 2015; Gottman et al., 2003), and interactions between siblings (Kramer & Gottman, 1992; Kramer & Kowal, 2005). Observation methods offer several advantages. First, response bias is avoided. Patterson (1982) found that parent reports of child mental health symptoms tend to show improvement over time regardless of whether children display improvement. Likewise, the tendency for individuals to self-report in ways that are socially desirable is well understood. Studies of youth in foster care suggest that they may underreport their own mental health symptoms, considering the high risks they are exposed to (Linares et al, 2007). Youth in foster care may also underreport their own coercive behavior or that of their siblings due to social desirability, or as Linares (2006) suggests, “to protect an idealized family experience” (p.103). Finally, biological parent reports and foster parent reports of sibling

conflict do not correspond with child reports, but different reporters do agree more on sibling warmth (Howe, 2011; Linares 2006). When behavior is directly observed, these biases in response are avoided. The mixed findings in the literature of sibling relationships and mental health outcomes are partly due to different reporters and their differing biases (Linares 2006; Linares et al., 2007). Observation methods may clarify these mixed results.

Participants

Siblings were defined as having the same biological mother. Data were gathered from 164 older siblings (mean age=13.1, SD=1.4) and 164 younger siblings (mean age=10.7, SD=1.7). The average age difference between siblings was 2.4 years (SD=1.1). Most youth were full siblings (62%, n=202); almost three-quarters of youth lived in the same foster home (73%, n=238); and 60% (n=201) identified as non-White. About 52% were female and 48% male. At baseline, slightly over half of youth lived in non-relative foster homes (56%, n=183) and had been living with their current caregiver for over 2 years.

This sample has some similarities to both the Oregon child welfare population as well as the national child welfare population. Data reported from the 2012 fiscal year indicated that 39% of Oregon foster youth were in the 7-15 year age range and 42% were non-White (USDHHS, 2012). While sibling-focused data are not readily available or reported in statewide and national reports of foster youth, in 2008—just prior to study start up—roughly 68% of youth were placed together with one or more of their siblings (Oregon DHS child welfare database analysis conducted at our request). In addition, the 2012 Adoption Foster Care and Reporting System

report indicated that 39% of youth in foster care nationally were in this 7-15-year age range and 58% were non-White (USDHHS, 2012).

Procedure

The 328 youths (164 dyads) were universally recruited from Oregon DHS. A member of the research team who was also employed at DHS identified potential participants from the DHS database of child and family information. Potential participants were identified from all Oregon DHS clients if they met the following inclusion and exclusion criteria.

Inclusion criteria. To be eligible, the older sibling had to be in foster care for at least 90 days and between the ages of 11-15 at study entry. In addition, the older sibling must have had a younger sibling also in care that was within 4 years of age of him or her. Additionally, both siblings must have provided assent to project participation, and have had consent from Oregon DHS, the legal guardian. Foster parent informed consent was also required for foster parent participation. All participants had to speak English. In cases where an older sibling had two or more younger siblings that meet the project's inclusion criteria, the sibling closest in age to the older sibling was selected. To participate, siblings had to live within the 4-county area constituting the Portland metropolitan and contiguous areas.

Exclusion criteria. Dyads were excluded if they did not meet the inclusion criteria or were scheduled to leave the 4-county area within the next year of study startup. Individuals who experienced a profound cognitive disability or were actively psychotic were excluded from the study. This rarely happened.

Caseworkers of eligible sibling dyads were asked for consent. Once received, foster parents were mailed an informational packet and asked over the phone to participant in a formal orientation, typically held in the foster parents' homes. Orientation included a description of the intervention, design of the study, risks and benefits of participation, and foster parents could ask questions. If a sibling dyad was living apart from one another (including one living with biological parents), each family received a separate orientation. Consent and assent forms were collected from foster parents and youths. In addition, foster parents gave authorization for researchers to exchange information with the youths' schools. If a youth changed foster home placement, researchers attempted to contact, orient, and recruit the new foster parent. Sibling pairs were yoked by living situation (i.e., siblings living together in the same home or siblings living apart) and matched by race (i.e., white or non-white) and sibling composition (i.e. same or mixed gender). Each dyad was randomly assigned to participate in the SIBS-FC intervention or receive community-as-usual services.

The dyadic SIBS-FC intervention was designed to improve the quality of sibling relationships for pre-adolescent and adolescent youth in foster care by targeting individual social skills and reducing conflict between siblings. The intervention was adapted from a manualized sibling intervention study focused on at-risk siblings (SIBS; Bank et al., under review). The SIBS-FC intervention curriculum was implemented by pairs of highly-trained, MSW-level lead coaches supported by graduate-level interns pursuing degrees in social work, psychology, and other related human service fields. The intervention was delivered in 12 sessions at locations that were convenient for participants. Eight skill-building sessions focused on social and self-regulation skills, such as cooperation, communication, emotion regulation, problem solving,

conflict management, and relationship repair strategies. Two sessions were devoted to practice approaching adult allies (e.g. foster parents, caseworkers, relatives, attorneys, judges). Four sessions were conducted in the community for youth to practice the skills they had learned.

Data Collection

All data were gathered in conformity with the requirements of the Institutional Review Board at Portland State University and DHS. Data was collected from each youth, current foster parents, teachers, caseworkers, and observers. Youth completed a face-to-face interview focused on the central outcome domains of mental health, education, quality of life, and sibling relationship quality. In addition, observational data was collected during a structured, Sibling Interaction Task (SIT).

Sibling Interaction Task. Siblings participated in the Sibling Interaction Task (SIT) which consisted of four 5-minute video-recorded activities. Assessors and video coders were blind to treatment group. The SIT was completed during the youth interview assessment, which took place at various community agencies (e.g., library, community center, a rented space, etc.). The SIT was structured in the following way. First, siblings identified specific problems between them using the Sibling Problem Inventory (SPI). The SPI lists a variety of challenges siblings commonly report (e.g., butting in when friends are around... feeling jealous towards each other… not planning fun things with me or including me in activities...). Then, a researcher instructed siblings to participate in a 5-minute warm-up activity followed by three 5-minute problem solving tasks using the problems they identified (one problem selected by the older sibling, one problem selected by the younger sibling, and the last activity was focused on the biggest problem

siblings reported). Siblings were alone while they completed these tasks The SIT videos were uploaded and coded by trained coders. For this study, video clips that fell between the structured interaction tasks were not included to reduce noise.

Measures

Mental Health. Mental health diagnoses data were extracted from the Department of Human Services (DHS) administrative data set. The DHS liaison that recruited participants into the SIBS-FC study extracted ORKIDS data using Qualtrics. The Principal Investigator (PI) and another clinician on the SIBS-FC team created the categories of diagnoses that were listed in the dropdown in the Qualtrics extraction tool; this helped ease extraction for the liaison. Mental health diagnosis categories included: 1.) Adjustment Disorders, 2.) Attention Deficit/Hyperactivity Disorders, 3.) Conduct Disorder, 4.) Depressive Disorders, 5.) Oppositional Defiant Disorder, 6.) Substance Abuse, 7.) Developmental Disorders, 8.) Learning Disorder/Disability, 9.) Bipolar Disorder, 10.) Anxiety Disorders, 11.) Emotional Disturbance NOS, 12.) Stress related to medical condition, and 13.) Others. In addition to each Mental Health Diagnosis category extracted, initial date of diagnosis and any case notes about the diagnosis were also extracted. For this study, two variables were created. First, a dichotomous variable was created with a 0 reflecting no diagnosis and a 1 indicating one or more of the listed diagnoses. Second, a three-category variable was created where 0 = no diagnosis, 1= externalizing (ADHD, ODD, CD), and 2 = other.

Sibling Coercion. Sibling coercion was measured through coding of SIT videos using an adaptation of the PEN-P system (Dishion & Soberman, 1994), an interval coding system that

codes positive or neutral (constructive, prosocial) and negative (verbal and physical aggression) interaction between sibling dyads every 18 seconds. The PEN-P was used to code each of the sibling interaction tasks. Examples of verbal negative behaviors include mocking (either with facial expressions, hand gestures or verbally), teasing, name calling, belittling, judging, blaming, yelling, and repetitive complaining. Examples of physical negative behaviors include making faces or rolling eyes at sibling, pushing, hitting, elbowing, or horseplay such as playful punching. Coding of the sibling lab tasks has resulted in adequate kappas (>.60) and percentage agreement (> 90%). Coders marked instances of negative startup (when a child initiates a negative behavior following the positive or neutral behavior of their sibling) and negative response (when a child displays a negative behavior following the aversive behavior of their sibling.)

The PI of the SIBS-FC study worked alongside another member of the SIBS-FC staff to recruit student research assistants that served as observational coders. Student research assistants were recruited from child and family studies, psychology, speech and hearing sciences, and social work to learn the Video Coding Program (VCP) and code SIT videos. Twelve coders were trained across SIBS-FC study period. Research assistants coded a few videos until they established good reliability. Once initial reliability was established, coders were assigned video tapes to code. The PI met with coders on a weekly basis to discuss coding and any questions that came up, refine coding categories, and address any issues that may have arose. Any decisions were updated and sent out to all coders. Throughout the study, one research assistant served as the lead coder and was another contact for the rest of student research assistants.

Sibling coercion was defined as negative behaviors directed toward a sibling. Sibling coercion was indicated by occurrences of negative startup, negative response, and total coercion.

Negative startup and negative response were summed for child total coercion. Then, the number of occurrences for each behavior were divided by the total minutes of observed video time to create a negative startup rate per minute, negative response rate per minute, and a total coercion rate per minute. For dyad level coercion, negative startups for each sibling were added together, negative responses for each sibling were added together, and the total coercion for each sibling were added together. Total occurrences for each dyad level behavior were divided by the total minutes of observed video time to create a dyad negative startup rater per minute, dyad negative response rate per minute, and dyad total coercion rate per minute.

Child Characteristics. Demographic information was extracted from DHS records. *Age* was treated as a continuous variable. *Gender* was coded so that 1 represented male and 2 female.

Sibling Dyad Characteristics. The age gap between siblings was treated as a continuous variable. *Gender composition* was coded with 1 representing older sister/younger sister, 2 older sister/younger brother, 3 older brother/younger brother, and 4 older brother/younger sister. *Sibling warmth* was measured via the Sibling Relationship Questionnaire (SRQ). The SRQ was adapted from an instrument originally developed to measure differing levels of closeness in friendships (Gottman & Ginsberg, 1986). It is a 72-item questionnaire designed to measure affection, inclusion, and control between siblings, and has nine subscales: receives positive affect from sibling, expression of positive affect towards sibling, is responsive towards sibling, is responded to by sibling, is influenced by sibling, influences sibling, shared fantasy, receives negative affect from sibling, expression of negative affect towards sibling. Example items include, “I would say that my brother/sister…cares about me,...is sensitive to my feelings,…often includes me in things.” Each youth responded to statements on a 5-point Likert

scale (1=Strongly Disagree to 5=Strongly Agree). For this study, each subscale as well as the total SRQ score was examined. Reliability for the Total SRQ measure was high (OS α=.98; YS α=.97) and all subscales fell within the adequate – good range.

Foster Care Placement. DHS records provided information on sibling placement and the number placements prior to study entry. *Sibling placement* was coded so that 1 represented siblings placed apart and 2 placed together in the same foster home at study baseline. *The total number of foster home placements* per child was treated as a continuous variable.

Data Analysis

All analyses were completed using STATA 13. There was no missing data on demographic information. One child had missing SRQ data. A total of 5 dyads did not have any observational data because they declined to be recorded. Finally, 16.16% of the sample did not have a DHS record of being evaluated or diagnosed by a mental health professional.

To answer the first research question (How frequent is sibling coercion and does it vary by characteristics of individual children, sibling dyads, or foster home placement?) a series of non-parametric tests were conducted due to the non-normal distribution of coercive behavior rates. Child age and coercive behavior rates were examined via spearman rank correlation. A proportion test examined child gender differences in coercive behavior rates. Spearman rank correlations were conducted for sibling age gap and dyad coercive behavior rates. A Kruskall-Wallis populations rank test examined dyad coercive behavior rate differences by sibling gender composition. Spearman rank correlations were conducted for child coercive behavior rates and SRQ scores. A proportion tests examined dyad coercive behavior rate differences by sibling

placement. A spearman rank correlation was conducted for number of placements and coercive behavior rates. To answer the second research question (Is the frequency of sibling coercion related to mental health diagnosis?) I conducted proportion tests of child coercive behavior differences by diagnosis status.

Chapter 4: Results

Research Question 1: Frequency of Coercion among Youth in Foster Care

Observations were recorded for a maximum length of 30 minutes, or 100 video segments at 18 seconds each. After video segments that fell between the structured tasks were deleted, most of the sample (95%) had video data that was between 18 and 26 minutes long. Examining individual children, coercive behavior occurred for an average of 11.30% of the observed time and the maximum was 73.23% of the time. The average child displayed coercive behavior at a rate of 0.38 per minute and the maximum rate was 2.32 per minute.

Examining sibling dyads, coercive interactions occurred for an average of 22.59% of the observed time. The average sibling dyad rate of total coercive behavior was 0.75 per minute and the maximum rate was 4.44 per minute. Table 1 presents descriptive statistics for the percent of time that coercive behavior occurred at the child and sibling dyad levels. Table 2 presents descriptive statistics for coercive behavior rates per minute at the child and sibling dyad levels.

Table 1. Descriptive Statistics for Percent of Time of Coercive Behavior Occurrence

	n	Mean % (SD)	Min %	Max %	Skew	Kurtosis
Child Negative Startup	318	8.34 (10.47)	0.00	50.10	1.71	5.75
Child Negative Response	318	2.94 (5.33)	0.00	31.88	2.79	11.72
Child Total Coercion	318	11.30 (14.10)	0.00	69.56	1.71	5.66
Dyad Negative Startup	159	16.69 (17.62)	0.00	73.23	1.30	4.08
Dyad Negative Response	159	5.90 (9.90)	0.00	60.90	2.63	10.84
Dyad Total Coercion	159	22.59 (26.60)	0.00	133.33	1.69	5.68

Table 2. Descriptive Statistics for Coercive Behavior Rates Per Minute

	n	Mean RPM (SD)	Min RPM	Max RPM	Skew	Kurtosis
Child Negative Startup	318	0.28 (0.35)	0.00	1.70	1.71	5.75
Child Negative Response	318	0.10 (0.18)	0.00	1.06	2.79	11.72
Child Total Coercion	318	0.38 (0.47)	0.00	2.32	1.71	5.68
Dyad Negative Startup	159	0.55 (0.59)	0.00	2.44	1.30	4.08
Dyad Negative Response	159	0.20 (0.33)	0.00	2.03	2.63	10.83
Dyad Total Coercion	159	0.75 (0.89)	0.00	4.44	1.69	5.68

Research Question 1: Differences by Child Characteristics

Age had a weak, negative correlation with negative response rate ($r = -0.13$, $p < .05$). Older children tended to display lower negative response rates.

Research Question 1: Differences by Sibling Dyad Characteristics

Table 3 shows positive correlations across all coercive behavior coding categories (i.e. negative startup, negative response, and total coercion) for older and younger sibling behaviors. Correlations ranged from moderate ($r = 0.53$) to strong ($r = 0.78$) and all reached statistical significance at the .001 level.

On average, older brother/younger sister dyads had the highest dyad rate of total coercive behavior (0.85) followed by older brother/younger brother (0.83). Older sister/younger sister and older sister/younger brother dyads had equal rates (0.66). Differences between the four gender composition groups did not reach statistical significance.

Table 3. Spearman Rank Correlations of Older Sibling Coercive Behavior Rates per Minute & Younger Sibling Coercive Behavior Rates per Minute

	1	2	3	4	5	6
1.O-Startup	-					
2.O-Response	0.57**	-				
3.O-Total	0.97**	0.72**	-			
4.Y-Startup	0.53**	0.78**	0.64**	-		
5.Y-Response	0.77**	0.66**	0.80**	0.66**	-	
6.Y-Total	0.65**	0.79**	0.75**	0.96**	0.82**	-

Note. O = older sibling, Y = younger sibling
**p < .001

Child reported sibling warmth, as indicated by the "positively responded to by sibling" subscale of the SRQ, had a weak, negative correlation with observed negative response rate ($r = -0.14$, $p < .05$). Children who reported more warmth from their sibling tended to display lower negative response rates.

Child reported negative affect from sibling, a subscale of the SRQ, was positively correlated with observed negative startup rate ($r = 0.12$, $p < .05$), and observed total coercive behavior rate ($r = 0.12$, $p < .05$). Children who reported more negative affect from their sibling tended to display higher rates of negative startup and total coercive behavior.

Research Question 1: Differences by Placement Characteristics

On average and as compared to siblings placed apart, siblings placed together had higher rates of dyad startup (0.58 vs. .49), dyad negative response (0.22 vs. 0.12), and total coercive

behavior (0.80 vs. 0.62). Results of proportion tests indicated that differences were statistically significant regarding total coercive behavior rate ($z = -2.48$, $p < .01$).

Research Question 2: Differences by Mental Health Diagnosis Status

Table 4 shows that over half (53.66%) of the sample had a mental health diagnosis. Of all females in the sample, 59.49% were diagnosed and 48.24% of males were diagnosed. Of all children aged 7-9, 40.63% were diagnosed, 54.44% of children aged 10-12 were diagnosed, and 61.05% of children aged 13-16 were diagnosed. Of all non-White children in the sample, 60.49% were diagnosed and 46.99% of White children were diagnosed. Chi-squared analysis revealed significant differences in diagnosis status between Whites and non-Whites, X^2 (2, N= 275) = 5.16, $p < .05$.

Table 4. Frequency & Percent of Sample with a Mental Health Diagnosis

	Frequency	Percent of n	Percent Missing	n
Total Diagnosed	176	53.66	16.16	328
Female	94	59.49	14.56	158
Male	82	48.24	17.65	170
Non-White	98	60.49	14.20	162
White	78	46.99	18.07	166
Age 7-9	26	40.63	20.31	64
Age 10-12	92	54.44	17.16	169
Age 13-16	58	61.05	11.58	95

Table 5 shows that the most common diagnosis was adjustment disorders followed by anxiety disorders and ADHD. About 39% of youth had more than one diagnosis.

Table 5. Frequency & Percent of Total Sample with Specific Diagnosis Type

Diagnosis Type	Frequency	Percent	Total Sample
Attention Deficit Hyperactivity Disorder	73	22.26	328
Oppositional Defiant Disorder	30	9.15	328
Conduct Disorder	31	9.45	328
Depressive Disorder	39	11.89	328
Anxiety Disorder	84	25.61	328
Substance Abuse	5	1.52	328
Adjustment Disorder	141	42.99	328
Emotional Disturbance	19	5.79	328
Bipolar Disorder	7	2.13	328
Developmental Disorder	53	16.16	328
Learning Disability	7	2.13	328
Stress Related to Medical Condition	39	11.89	328
Other	74	22.56	328
Multiple Disorders	127	38.72	328

Among children with a mental health diagnosis, the average negative startup rate was 0.32, the average negative response rate was 0.12, and the average total coercion rate was 0.33. Among children that did not have a diagnosis, the average negative startup rate was 0.25, the average rate of negative response was 0.08, and the average total coercion rate was 0.44. Results of proportion tests indicated non-significant differences between children who had a diagnosis and those did not regarding rates of negative startup ($z = 1.16$, $p = .24$), negative response, ($z = 0.95$, $p = .34$), and total coercion ($z = 1.66$, $p = .09$). Visual inspection of box plots revealed similar distributions of coercion rates.

Chapter 5: Discussion

This study adds to the literature on sibling relationships by sampling youth in foster care, an understudied, diverse racial/ethnic population at high risk for impaired mental health. Observational methods examined the frequency of sibling coercion and how it varies by characteristics of individual children, sibling dyads, and foster care placement. Professional mental health diagnosis data was used to investigate the link between sibling coercion and mental health.

We observed a wide range of coercion levels among individual children. A substantial portion (23.60%) of the sample had rate of 0.00 per minute and the maximum rate was 2.32 per minute, which is nearly 5 times higher than the 0.45 clinical cut off rate for externalizing disorders (Patterson, 1974). About 30% of the current sample was above the 0.45 rate. The average coercion rate in our sample was 0.38, which is slightly above the average 0.27 rate observed in the general population but, is well below the average 0.75 rate for the clinical population (Arnold et al., 1975). This points to the heterogeneity of youth in foster care; some children may be at low-risk of being coercive towards a sibling while others are at very high risk.

Theoretically, most children in foster care are at risk of being highly coercive towards a sibling, assuming their homes of origin were highly coercive environments and that coercive processes between siblings are persistent. Bank and Burraston (2001) showed that abusive home environments include interrelated but distinct elements of child maltreatment, neglectful supervision, and high sibling conflict, all stemming from unskilled parenting. In future studies it may be important to examine the type of maltreatment children experience before entering care.

Neglect may have a different impact on levels of sibling coercion than physical abuse or exposure to domestic violence.

Another study showed that the negative impact of sibling conflict on adolescent boys' antisocial behavior may be conditional on concurrent ineffective parenting (Bank, Burraston, & Snyder, 2004). A major premise for placing children in foster care is to remove the element of ineffective parenting. Perhaps this interrupts coercive processes between siblings and reduces the highly coercive behavior of some individual children. This may depend on whether foster parents have sufficient parenting skills. For children who continue to display high levels of coercion towards a sibling, removal from homes of origin and placement into foster care may not be enough to change their behavior. This could be because of individual characteristics of the child, the sibling dyad, or experiences while in foster care. An examination of the family system within the foster home may be fruitful. Further, the structure of different types of homes (e.g. residential home, therapeutic home) could impact the effectiveness of parenting and it how it relates to levels of sibling coercion.

Although research has shown the harm that can be done by frequent sibling coercion, less is known about children who display very low levels of sibling coercion. Research suggests that when a child is not engaging in conflict, it could be a sign of avoidance, complicity, and inability to solve problems (Jenkins, 1992; Furman & McQuaid, 1992). Children may respond to coercive family environments with internalizing symptoms in addition to or instead of externalizing symptoms (Compton et al., 2003; Waddell et al., 2001). Thus, the children with a sibling coercion rate of 0.00 could still be at risk of developing a mental disorder. More studies are needed to examine this subset of children.

We hypothesized that on average, older children would have a higher frequency of coercion than younger children, based on parent and self-report findings from a sample of foster care youth ages 6-17 in a temporary residential care facility (Milojevich et al., 2017). Contrary to our hypothesis, older children tended to have lower negative response rates. This suggests that, overall, youth in foster care may be similar to the general population with studies showing less sibling conflict in middle childhood compared to early adolescence (Kim et al., 2006; Kim et al., 2007; Whitman et al., 2015). Children self-report that their aggressive behaviors towards a sibling stem from intense negative emotions, such as rage, and feeling a lack of concern for the other (Recchia et al., 2013). It may be that with age, most children develop a greater ability to regulate their negative emotions and reactions to a sibling's instigation. This needs further investigation considering that the correlation we found between age and coercion was weak ($r = -0.13$, $p < .05$). Future studies should examine the relationship of emotion regulation skills and levels of sibling coercion.

Another consideration is that siblings tend to spend less time together as they enter late adolescence (Dunn, Slomkowski, & Beardsall, 1994), which could reduce the opportunity for modeling, practicing, and reinforcing coercion with one another. Future studies should examine whether coercion levels differ by the amount of time siblings spend together. The age group composition of siblings could also be interesting to look at. Perhaps levels of coercion are different when both siblings are in adolescence, when only one is in adolescence, and when both are in middle childhood.

Based on observational and questionnaire findings from the general population and clinical population, we expected boys to have a higher frequency of coercion than girls on

average (Aguilar et al., 2001; Martin & Ross, 1995; Howe et al., 2011). However, we found no significant differences by child gender. This is consistent with Milojevich et al. (2017) who found that child reported hostility did not differ for boys and girls in a temporary residential facility. It may be that levels of coercion are similar for both boys and girls in foster care. Alternatively, there may be gender differences at some developmental stages but not others. For example, one longitudinal study of children ages 9-18 years found that boys report more aggression than girls during middle childhood but boys and girls report equal levels of aggression in early adolescence (Williams et al., 2007). An examination of how age interacts with gender on levels of coercion could help clarify this.

Turning to the level of dyads, sibling coercion was observed for an average 22.59% of the observed time in the current study. This is slightly more time compared to a study of non-clinical siblings from the general population in middle childhood (ages 8-13 years) where dyads engaged in angry-yelling, verbal harassment, and physical antagonism for an average of 15.90% of the observed time (Nakaha, Grimes, Nadler, & Roberts, 2016). The average dyad rate of total coercion in our sample was 0.75 per minute, which is above the average 0.56 rate per minute observed in sibling dyads containing one child that has been referred to therapy for an externalizing disorder (Arnold et al., 1975). Further, the maximum dyad coercion rate in our sample was 4.44 per minute, almost 6 times higher than the average dyad in our sample and nearly 8 times higher than the average clinical dyad (Arnold et al., 1975). The current sample thus has a higher average frequency of sibling coercion compared to the general population and a similar average frequency to the clinical population.

Only about 30% of individuals in the current sample were highly coercive. Yet, 43% of sibling dyads were so characterized. When one sibling is highly coercive, this tends to increase coercion levels of the other sibling through the process of coercion modeling, practice, and reinforcement (Patterson, 1982). However, the current findings suggest that the coercive behavior of one individual in a dyad does not account for all the highly coercive interactions that occur between siblings. There is something else going on for about 13% of dyads. A future study would need to tease apart different types of dyads based on coercion levels of each member: both siblings highly coercive, only one sibling highly coercive, and neither highly coercive. It would be useful to examine further the conditions under which a negative startup of one sibling leads to a negative response in the other and what makes these interactions persist for long periods of time. For example, Nakaha et al (2016) suggests that some children may lack the necessary skills to resolve sibling conflicts without using coercion and others may have such skills but choose not to use them. Dyads could be grouped based on level of conflict resolution skill: both siblings skilled, only one sibling skilled, and neither skilled. Then, dyad coercion levels could be examined by type of dyad. There are many other conditions in the foster home context that could impact levels of dyad coercion (e.g. parenting or type of foster home).

We expected a smaller age gap between siblings to be related to a higher frequency of dyad coercion (Aguilar et al., 2001). This hypothesis was not confirmed. Our sample may have lacked sufficient variation in age gaps because siblings close in age (within 4 years) were intentionally recruited into the study. Aguilar et al (2001) had a wider range of sibling age gaps and could group siblings into 1-3 years and 4-6 years. This suggests that siblings in our sample were likely to display high levels of conflict due to being close in age. Another way that we

could conceptualize age in sibling dyads is the relative age between siblings. One study did so and found that children in middle childhood report greater hostility towards their younger siblings but not their older siblings (Buhrmester & Furman, 1990).

For sibling gender composition, we hypothesized that older brother/younger brother dyads would have the highest frequency of coercion followed by older brother/younger sister, and we did not expect to see a significant difference between older sister/younger sister and older sister/younger brother (Aguilar et al., 2001; Williams, Conger, & Blozis, 2007). Although the differences were not statistically significant, trends revealed that older brother/younger sister dyads had the highest dyad rate of coercion (0.85) followed closely by older brother/younger brother (0.83). This is similar to findings by Aguilar et al. (2001) that older brother/younger sister dyads were the most conflictual and had the lowest level of warmth. Confirming our expectation, older sister/younger sister and older sister/younger brother dyads had equal coercion rates (0.66).

Researchers have explained gender composition differences in sibling coercion by citing children's increased attention to gender roles among mixed-gender dyads and possible heightened sibling disagreements on what types of activities they should do together (Aguilar et al., 2001; Caldera, Huston, & O'Brien, 1989). Relatedly, older brothers may have a perception that they are entitled to be dominant over younger siblings while older sisters may be more likely to take on a nurturing role of younger siblings. Dominance and warmth could be examined by individual child gender and gender composition of dyads in future studies. Parents may also contribute to gender role differences by treating siblings differently, or socializing them differently, based on their gender. In turn, differential treatment is related to increased sibling

conflict (Brody, Stoneman, & McCoy, 1992; Furman & Buhrmester, 1985). Biological parent and foster parent perceptions of gender differences and the behaviors that they encourage of older brothers verses older sisters should be investigated.

We did not make a directional hypothesis regarding variation of sibling coercion by levels of sibling warmth, given inconsistent findings from previous studies (Linares, 2006; Linares et al., 2015; Milojevich et al., 2017). We found that children who reported more warmth from their sibling tended to display lower negative response rates. However, the correlation was weak ($r = -0.14$, $p < .05$). When children sense warmth in their sibling relationship, it seems that they are less inclined to retaliate. Perhaps warmth in sibling relationships is related to the development of emotion regulation skills or otherwise persuades children to choose more prosocial ways of responding to instigation. A similar, weak negative correlation ($r = -22$, $p < .01$) has been found for parent reports of sibling positivity and negativity (Linares, 2006). Milojevich et al. (2017) also found that children who reported higher levels of sibling warmth concurrently reported lower levels of sibling hostility. These studies suggest that among youth in foster care, sibling relationships tend to be "harmonious" (McGuire et al., 1996) or that warmth may be a protective factor.

Conversely, Linares et al. (2015) found that observed levels of sibling warmth and coercion were positively correlated in a sample of youth in foster care, suggesting affectively "intense" relationships (McGuire et al., 1996). This discrepancy between studies highlights the complexity of sibling relationships. Warmth and coercion are not linearly related. It cannot be assumed that siblings who are coercive towards one another do not also express warmth, just as it cannot be assumed that siblings who are warm towards one another are not also coercive.

Kramer (2010) argues that sibling relationships are ambivalent by nature and that the proportion of coercive and warm interactions may be a more accurate representation. An important next step is to explore how dimensions of warmth and coercion may jointly influence child outcomes.

The coercive family process model proposes that siblings placed together in the same foster home have more opportunity to model, practice, and reinforce one another's' coercive behavior and so may be coercive more frequently. We confirmed this hypothesis. Compared to siblings placed apart, siblings placed together had higher dyad rates of coercion. This is in opposition to findings by Milojevich et al. (2017) that siblings who reported never or only sometimes living together also reported more aggression than those who had reported always living together. It is important to consider that the current study only accounted for sibling placement at a single time point while Milojevich et al (2017) used child retrospective reports of living with a sibling over time.

Longitudinal findings by Linares et al. (2007) suggest that separation from a sibling may be beneficial for children that have more behavior problems upon entry into foster care but may worsen problems for those who enter foster care with few problems to begin with (Linares et al., 2007). Given the link between behavior problems and sibling coercion, findings by Linares (2007) and the current study imply that reducing exposure to a highly coercive sibling may break the cycle of coercion modeling, practice, and reinforcement. More longitudinal studies are needed to provide a clear picture of sibling placement over time and how this impacts sibling relationships, paying careful attention to initial levels of warmth and coercion.

We expected children who have had more foster home placements to display more coercion. This hypothesis was not confirmed. This was surprising given consistent findings that placement instability is bidirectionally related to more behavior problems and is detrimental to child well-being (Waid, 2014). It would be important to account for whether siblings moved together or not during multiple placements and what types of homes they moved to.

There may be additional placement related variables that have an impact specifically on sibling coercion as compared to general behavior problems. For example, the duration of time spent in the current foster home reflects children's exposure time to other children and adults in the home who serve as behavior models and interaction partners. Again, the whole family system is important to consider. In addition, foster parent tactics for addressing sibling coercion may have different levels of effectiveness depending on how long children live in their home.

Our final hypothesis was that children with a mental health diagnosis would display a higher frequency of coercion than children without a diagnosis. This hypothesis was not confirmed and the trend was in the opposite direction. Although not statistically significant, the diagnosis group had an average total coercion rate of 0.33 per minute and the non-diagnosis group had a slightly higher average rate at 0.44 per minute. These rates fall between the average 0.27 rate of the general population and the average 0.75 rate of the clinical population (Arnold et al., 1975). One possibility for the non-diagnosed group to display higher levels of coercion is that children who have been professionally diagnosed are likely receiving treatment. Mental health treatment may well reduce coercive behavior to a level below that of non-diagnosed children. One possibility for not finding a statistically significant relationship between sibling coercion and mental health diagnosis is that all children in the sample were examined together. It

may be fruitful to examine boys and girls separately, given previously found differences in the type of symptoms they display in relation to sibling coercion (Compton et al., 2003; Jenkins et al., 2015; Linares, 2006). Additionally, we could look at children with very low coercion levels separately from those with very high levels.

Our findings do not match those of studies showing a statistically significant link between sibling coercion and mental health using self-report or parent-report data (Linares, 2006). It is possible but unlikely that mental health symptoms of highly coercive children are overreported by children and parents. It could be that mental health professionals are not aware of high levels of sibling coercion because it tends to occur in the absence of adult supervision. It could also be that mental health professionals do not consider sibling coercion to be enough to warrant diagnosis. The DSM-V puts emphasis on behaviors being performed across contexts, with multiple people. For example, diagnostic criteria for Oppositional Deviant Disorder is "a pattern of angry/irritable mood, argumentative/defiant behavior, or vindictiveness lasting at least 6 months as evidenced by at least four symptoms…and exhibited during interaction with at least one individual who is not a sibling," (American Psychiatric Association, 2013). If a parent, foster parent, or caseworker is providing mental health professionals the information they use for diagnosis and only report that a child is coercive towards a sibling then this will not meet diagnosis criteria.

If mental health treatment does reduce sibling coercion, and if treatment is only provided to children who receive a diagnosis, then children who are only known to be coercive towards siblings may be missing out on a beneficial intervention. Based on Patterson's work (1982), coercion towards a sibling may be a precursor to coercion with peers and others outside the

family. Although studies show the direct influence of sibling coercion on antisocial behavior diminishes as children get older and spend more time with antisocial peers (Bank et al., 2004), frequent sibling coercion could be thought of as an early call for help. Earlier interventions are better because coercive interactions between siblings become entrenched over time and then children use this style of coping and interacting with others outside the family (Bank, 1996 Feinberg et al., 2015; Patterson, 1982). Addressing sibling coercion in childhood may help to interrupt the trajectory towards adolescent symptoms of hostility, depression, anxiety, feelings of inadequacy, incompetence, academic failure, rejection by prosocial peers, association with antisocial peers, and adult arrests (Bank, 1996; Feinberg et al., 2015). Longitudinal studies and intervention studies are needed to test this theory.

It must be stressed that while separation from a sibling could interrupt coercive processes, it would deprive children from relationship warmth and the opportunity to learn prosocial skills, such as conflict management (Kramer, 2010). Sibling warmth has been shown to protect mental health even in the presence of sibling conflict (Buist & Vermande, 2014) and is especially protective for youth in foster care (McBeath et al., 2014; McHale et al., 2006; Richardson & Yates, 2014). Kramer (2010) provides evidence that reducing sibling conflict does not in itself increase levels of warmth nor does it increase prosocial skills. Constructive conflicts with siblings are beneficial for social, emotional, and cognitive development (Kramer, 2010; Ross & Lazinski, 2014; Smith & Ross, 2007). Thus, intervention efforts must help siblings to develop prosocial skills and competencies as opposed to only reducing sibling conflict.

Limitations

This study has several limitations to consider. First, the focus on sibling dyads excludes the influence of larger sibling groups, other family members, and people in the foster home on levels of coercion. Second, the duration of coercive interactions could only be approximated, given the 18 second coding method, and the intensity of coercion was not coded. Duration and intensity of coercive behaviors are important when differentiating between children who have a mental health condition and those that do not (Patterson, 1984). Third, sibling warmth data was self-report instead of observational which could lead to some bias. Fourth, this study is correlational and focused on data at a single time point which prevents conclusions about causation. Fifth, sibling dyads from one metropolitan were recruited for practical purposes. Future work will need to address similar needs of siblings in foster care in rural communities. Finally, a focus on sibling coercion perpetuates a deficit model of youth in foster care. A strength based approach will provide an understanding of resilience in this population and is essential for improving outcomes.

Chapter 6: Conclusion

Despite limitations, this observational study has important implications for sibling relationships in the context of foster care. Two research questions drove this work: 1. How frequent is sibling coercion among youth in foster care and does it differ based on characteristics of individual children (i.e. age, gender), sibling dyads (i.e. age gap, gender composition, warmth), or foster care placement (i.e. sibling placement, number of prior placements)? 2. Is the frequency of sibling coercion related to child mental health diagnosis?

The answer to research question one is the average child in foster displayed only slightly more frequent coercion than the average child in the general population (Arnold et al., 1975). There was a wide range of frequencies: many children displayed no coercive behavior whatsoever and others displayed a frequency of coercion that is 5 times higher than the clinical cutoff point for externalizing disorders (Patterson, 1974). Sibling coercion frequency did differ by age, with older children displaying lower levels.

Continuing with research question one and looking at sibling dyads, the frequency of coercive interactions among siblings in foster care was higher than that observed in dyads containing one sibling with an externalizing disorder (Arnold et al., 1975). Coercion frequency did differ by the level of sibling warmth; children who perceived more warmth from their sibling displayed a lower frequency of coercion. Coercion levels also differed by sibling placement with siblings living together displaying a higher frequency of coercive interaction than those living apart. The answer to the second research question is no, the frequency of sibling coercion was not related to mental health diagnosis.

These findings expand our knowledge of siblings in foster care, an understudied and diverse population. These children are indeed at high risk with more than half having a diagnosed mental disorder, and non-white children being more likely to be diagnosed. It was our hope that the mixed findings of previous research on the relationship between sibling coercion and mental health (Linares, 2006, Linares et al., 2007) would be clarified using observational methods and professional diagnosis data. We find it hard to conclude that sibling coercion is irrelevant to mental health, given previous findings in the general population (Bank et al., 1996; Dunn, et al., 1994; Stocker, et al., 2002) and among youth in foster care (Linares, 2006). These results suggest that sibling coercion may not be on the radar of mental health professionals. Yet, there is a strong theoretical foundation for sibling relationships to shape a child's understanding of how to interact with other people, how to resolve conflicts, and how to regulate their emotions and behavior (Bank et al., 1996; Bank et al., 2004; Feinberg et al., 2015; Kramer, 2010; Patterson, 1984). It may be useful for practitioners, researchers, and foster parents to consider frequent sibling coercion as an early marker of needed intervention.

Though the experience of child abuse and living in a home with coercive family members may increase a child's coercive behavior towards a sibling, our findings show that not all children meet this expectation. Careful attention to specific child and sibling dyad needs are critical to create effective interventions, practices, and policies. For example, the federal policy of placing siblings together in foster care (Fostering Connections to Success and Increasing Adoptions Act, 2008) may not be enough to promote positive relationships because when siblings live together, they are frequently coercive. More effort is needed to teach siblings constructive ways of dealing with conflict and to capitalize on the lifelong impact of siblings

(Kramer, 2010). This work is especially important for youth in foster care because siblings may provide the most stable relationship in their lives (McBeath et al., 2014). Interventions should be aimed at teaching siblings this social skill and foster parents should be trained to facilitate learning.

There are several key next steps in this work. First, the joint influence of multiple dimensions of sibling relationships needs to be examined. Second, more contextual variables that relate to the foster home need to be accounted for. Third, it is important to follow siblings in foster care over time to accurately model developmental, relationship, and context changes. Fourth, intervention studies are needed to pinpoint the role of sibling interactions in child outcomes. Finally, more sophisticated statistical methods, such as multilevel modeling, are needed to more accurately model the complexity of human development.

References

Aguilar, B., O'brien, K. M., August, G. J., Aoun, S. L., & Hektner, J. M. (2001). Relationship quality of aggressive children and their siblings: A multi-informant, multi-measure investigation. *Journal of Abnormal Child Psychology, 29*(6), 479-489.

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Washington, DC: Author.

Arnold, J., Levine, A., & Patterson, G.R. (1975). Changes in sibling behavior following family intervention. *Journal of Consulting and Clinical Psychology, 43,* 683-688. doi:10.1037/0022-006X.43.5.683

Bank, L., Patterson, G. R., & Reid, J. B. (1996). Negative sibling interaction patterns as predictors of later adjustment problems in adolescent and young adult males. *Advances in Applied Developmental Psychology, 10,* 197-229.

Bank, L., Burraston, B., & Snyder, J. (2004). Sibling conflict and ineffective parenting as predictors of adolescent boys' antisocial behavior and peer difficulties: Additive and interactive effects. *Journal of Research on Adolescence, 14,* 99 – 125.

Bank, L., & Burraston, B. (2001). Abusive home environments as predictors of poor adjustment during adolescence and early adulthood. *Journal of Community Psychology, 29*(3), 19 217. doi:10.1002/jcop.1014

Brody, G. H., Stoneman, Z., & McCoy, J. K. (1994). Forecasting sibling relationships in early adolescence from child temperaments and family processes in middle childhood. *Child Development, 65*(3), 771-784.

Brody, G. H., Stoneman, Z., & McCoy, J. K. (1992). Associations of maternal and paternal direct and differential behavior with sibling relationships: Contemporaneous and longitudinal analyses. *Child Development, 63,* 82–92.doi:10.2307/1131417

Buhrmester, D., & Furman, W. (1990). Perceptions of sibling relationships during middle childhood and adolescence. *Child development, 61*(5), 1387-1398.doi:10.2307/1130750

Buist, K. L., Deković, M., & Prinzie, P. (2013). Sibling relationship quality and psychopathology of children and adolescents: A meta-analysis. *Clinical Psychology Review, 33*(1), 97-106. doi:10.1016/j.cpr.2012.10.007

Buist, K. L., & Vermande, M. (2014). Sibling relationship patterns and their associations with child competence and problem behavior. *Journal of Family Psychology, 28*(4), 529. doi:10.1037/a0036990

Bullock, B. M., & Dishion, T. J. (2002). Sibling collusion and problem behavior in early adolescence: Toward a process model for family mutuality. *Journal of Abnormal Child* Psychology, 30, 143 – 153.

Burgess, E.W. (1926). The Family as a unity of interacting personalities. *The Family, 7,* 3-9.

Button, D. M., & Gealt, R. (2009). High risk behaviors among victims of sibling violence. *Journal of Family Violence, 25,* 131–140.doi:10.1007/s10896-009-9276-x

Caldera, Y. M., Huston, A. C., & O'Brien, M. (1989). Social interactions and play patterns of parents and toddlers with feminine, masculine, and neutral toys. *Child Development, 60,* 70–76. doi:10.2307/1131072

Caspi, J. (2011). Future directions for sibling research, practice, and theory. In J. Caspi (Ed.), Sibling development: Implications for mental health practitioners (pp. 377–390). New

York: Springer Publishing.
Child Welfare Information Gateway. (2017). Foster care statistics 2015. Washington, DC: U.S. Department of Health and Human Services, Children's Bureau.
Coie, J. D., & Kupersmdt, J. B. (1983). A behavioral analysis of emerging social status n boys' groups. *Child Development, 54*, 1400-1416.
Courtney, M. E., McMurtry, S. L., & Zinn, A. (2004). Housing problems experienced by recipients of child welfare services. *Child Welfare, 83*(5), 393-422.
Compton, K., Snyder, J., Schrepferman, L., Bank, L., & Shortt, J. W. (2003). The contribution of parents and siblings to antisocial and depressive behavior in adolescents: A double jeopardy coercion model. *Development and Psychopathology*, *15*(1), 163-182. doi:10.1017/S0954579403000099
Constantine, L. L. (1986). Family paradigms. New York: Gullford.
Constantine, L .L. (1989). Furniture as firewood: Blaming the systems paradigm. *Journal of Marital and Family Therapy, 15,* 111-113.
Criss, M. M., & Shaw, D. S. (2005). Sibling relationships as contexts for delinquency training in low-income families. *Journal of Family Psychology, 19*(4), 592-600. doi:10.1037/0893-3200.19.4.592
Dirks, M. A., Persram, R., Recchia, H. E., & Howe, N. (2015). Sibling relationships as sources of risk and resilience in the development and maintenance of internalizing and externalizing problems during childhood and adolescence. *Clinical Psychology Review, 42*, 145-155. doi:10.1016/j.cpr.2015.07.003
Dobash, R. E., & Dobash, R. P. (1998). Violent men and violent context. In R. E. Dobash & R. P. Dobash (Eds.), Rethinking violence against women (pp. 141 – 168). Thousand Oaks, CA: Sage.
Doughty, S. E., Lam, C. B., Stanik, C. E., & McHale, S. M. (2014). Links between sibling experiences and romantic competence from adolescence through young adulthood. *Journal of Youth and Adolescence*, 1–13. doi:10.1007/s10964-014-0177-9
Dunn, J., Slomkowski, C., Beardsall, L., & Rende, R. (1994). Adjustment in Middle Childhood and Early Adolescence: Links with Earlier and Contemporary Siblings Relationships. *Journal of Child Psychology & Psychiatry & Allied Disciplines, 35*(3), 491-504. doi:10.1111/1469-7610.ep11839502
Feinberg, M. E., Sakuma, K. L., Hostetler, M., & McHale, S. M. (2012). Enhancing sibling relationships to prevent adolescent problem behaviors: Theory, design and feasibility of siblings are special. *Evaluation and Program Planning, 36*, 97-106. doi:10.1016/j.evalprogplan.2012.08.003
Feinberg, M.E., Solmeyer, A.R., & McHale. S.M. (2012). The third rail of family systems: Sibling relationships, mental and behavioral health, and preventive intervention in childhood and adolescence. *Clinical Child and Family Psychology Review, 15*(1)43–57. doi:10.1007/s10567-011-0104-5.
Fostering Connections to Success and Increasing Adoptions Act, H.R. 6893, 110th Cong. (2008). Retrieved April 9, 2014, from http://www.govtrack.us/congress/bills/110/hr6893

Furman, W., & McQuaid, E. L. (1992). *Intervention programs for the management of conflict*. In C. U. Shantz & W. W. Hartup (Eds.), Conflict in child and adolescent development (pp. 402–429). New York: Cambridge University Press.

Furman, W., & Buhrmester, D. (1985). Children's perceptions of the qualities of sibling relationships. *Child Development, 56,* 448–461. doi:10. 2307/1129733

Goodwin, M. P., & Roscoe, B. (1990). Sibling violence and agonistic interactions among middle adolescents. *Adolescence, 25,* 451 – 467.

Gottman, J. M., Driver, J., & Tabares, A. (2015). Repair During Marital Conflict in Newlyweds: How Couples Move from Attack–Defend to Collaboration. *Journal Of Family Psychotherapy, 26*(2), 85. doi:10.1080/08975353.2015.1038962

Gottman, J. M., Levenson, R. W., Gross, J., Frederickson, B. L., McCoy, K., Rosenthal, L., Ruef, A., & Yoshimoto, D. (2003). Correlates of Gay and Lesbian Couples' Relationship Satisfaction and Relationship Dissolution. *Journal of Homosexuality, 45*(1), 23-43. doi: 10.1300/J082v45n01_02

Hay, D. F. (2005). *The beginnings of aggression in infancy*. In R. Tremblay, W. Hartup, & J. Archer (Eds.), Developmental origins of aggression (pp. 107 – 132). New York: Guilford Press.

Hegar, R. L., & Rosenthal. J. A. (2011). Foster children placed with or separated from siblings: Outcomes based on a national sample. *Children and Youth Services Review, 33*(7), 1245–53. doi:10.1016/j.childyouth.2011.02.020.

Hernandez, D. J. (1997). Child development and social demography of childhood. *Child Development, 68*, 149–169. doi:10.2307/1131933

Hess, R., & Handel, G. (1959). *Family Worlds*, Chicago: University of Chicago Press.

Howe, N., Rinaldi, C. M., Jennings, M., & Petrakos, H. (2002). "No! The lambs can stay out because they got cozies": Constructive and destructive sibling conflict, pretend play, and social understanding. *Child development, 73*(5), 1460-1473. doi:10.1111/1467-8624.00483

Howe, N., Karos, L. K., & Aquan-Assee, J. (2011). Sibling relationship quality in early adolescence: child and maternal perceptions and daily interactions. *Infant and Child Development, 20*(2), 227-245. doi:10.1002/icd.694

Ingoldsby, E. M., Shaw, D. S., Owens, E. B., & Winslow, E. B. (1999). A longitudinal study of interparental conflict, emotional and behavioral reactivity, and preschoolers' adjustment problems among low-income families. *Journal of Abnormal Child Psychology, 27*, 343–356.

Johnson, R. M., Duncan, D. T., Rothman, E. F., Gilreath, T. D., Hemenway, D., Molnar, B. E., & Azrael, D. (2015). Fighting with siblings and with peers among urban high school students. *Journal of Interpersonal Violence, 30*(13), 2221-2237. doi:10.1177/0886260514552440

Kessler, R. C., McLaughlin, K. A., Green, J. G., Gruber, M. J., Sampson, N. A., Zaslavsky, A. M., ... & Benjet, C. (2010). Childhood adversities and adult psychopathology in the WHO World Mental Health Surveys. *The British Journal of Psychiatry, 197*(5), 378-385. doi:10.1192/bjp.bp.110.080499

Kim, J. Y., McHale, S. M., Crouter, A. C., & Osgood, D. W. (2007). Longitudinal linkages between sibling relationships and adjustment from middle childhood through adolescence. *Developmental Psychology, 43*(4), 960. doi:10.1037/0012-1649.43.4.960

Kim, J., McHale, S. M., Osgood, D. W., & Crouter, A. C. (2006). Longitudinal course and family correlates of sibling relationships from childhood through adolescence. *Child Development, 77*, 1746–1761. doi:10.1037/0012-1649.43.4.960

Kohl, P. L., Edleson, J. L., English, D. J., & Barth, R. P. (2005). Domestic violence and pathways into child welfare services: Findings from the national survey of child and adolescent well-being. *Children and Youth Services Review, 27*(11), 1167-1182. doi:10.1016/j.childyouth.2005.04.003

Kramer, L. (2010). The Essential Ingredients of Successful Sibling Relationships: An Emerging Framework for Advancing Theory and Practice. *Child Development Perspectives,4*(2), 8 0-86. doi:10.1111/j.1750-8606.2010.00122.x

Kramer, L., & Kowal, A. K. (2005). Sibling relationship quality from birth to adolescence: The enduring contributions of friends. Journal of Family Psychology, 19, 503–511.

Kramer, L., & Gottman, J. M. (1992). Becoming a sibling: ‘‘With a little help from my friends.’’ *Developmental Psychology, 28*, 685–699. doi:10.1037/0012-1649.28.4.685

Linares, L. O. (2006). An understudied form of intra-family violence: Sibling-to-sibling aggression among foster children. *Aggression and violent behavior, 11*(1), 95-109.

Linares, L. O., Li, M., Shrout, P. E., Brody, G. H., & Pettit, G. S. (2007). Placement shift, sibling relationship quality, and child outcomes in foster care: a controlled study. *Journal of Family Psychology, 21*(4), 736. doi:10.1037/0893-3200.21.4.736

Linares, L. O., Jimenez, J., Nesci, C., Pearson, E., Beller, S., Edwards, N., & Levin-Rector, A. (2015). Reducing sibling conflict in maltreated children placed in foster homes. *Prevention Science, 16*(2), 211-221. doi:10.1007/s11121-014-0476-0

Lewin, L. M., Hops, H., Davis, B., & Dishion, T. (1991). Similarity in siblings’ school behavior: A comparison of teacher and peer ratings and direct observations. *Developmental Psychology, 29*, 963-969.

Ma, N., Roberts, R., Winefield, H., & Furber, G. (2015). The prevalence of psychopathology in siblings of children with mental health problems: A 20-year systematic review. *Child Psychiatry & Human Development, 46*(1), 130-149. doi:10.1007/s10578-014-0459-1

Martin, J. L., & Ross, H. S. (2005). Sibling aggression: Sex differences and parents' reactions. *International Journal of Behavioral Development, 29*(2), 129-138. doi:10.1080/01650250444000469

McBeath, B., Kothari, B. H., Blakeslee, J., Lamson-Siu, E., Bank, L., Linares, L. O., Waid, J., Sorenson, P., Jimenez, J., Pearson, E., & Shlonsky, A. (2014). Intervening to improve outcomes for siblings in foster care: Conceptual, substantive, and methodological dimensions of a prevention science framework. *Children and Youth Services Review, 39*, 1-10. doi:10.1016/j.childyouth.2013.12.004

McGuire, S., Manke, B., Eftekhari, A., & Dunn, J. (2000). Children’s perceptions of sibling conflict during middle childhood: Issues and sibling (dis)similarity. *Social Development, 9*, 173 – 190. doi:10.1111/1467-9507.00118

McGuire, S., McHale, S. M., & Updegraff, K. (1996). Children's perceptions of the sibling relationship in middle childhood: Connections within and between family relationships. *Personal Relationships, 3,* 229–239. doi:10.1111/j.1475-6811.1996.tb00114.x.

McHale, S. M., Whiteman, S. D., Kim, J.-Y., & Crouter, A. C. (2007). Characteristics and correlates of sibling relationships in two-parent African American families. *Journal of Family Psychology, 21*(2), 227-235. doi:10.1037/0893-3200.21.2.227

McHale, S. M., Kim, J., & Whiteman, S. D. (2006). *Sibling relationships in childhood and adolescence.* In P. Noller, & J. Feeney (Eds.), Close Relationships (pp. 127–150): Psychology Press.

Milojevich, H. M., Quas, J. A., & Adams, B. L. (2017). Quality of Sibling Relationships in Maltreated Youth Residing in Out-of-Home-Care. *Journal of Interpersonal Violence,* doi:0886260517730562.

Mota, C. P., & Matos, P. M. (2015). Does sibling relationship matter to self-concept and resilience in institutionalized adolescents? *Child and Youth Service Review, 56,* 97-106. doi:10.1016/j.childyouth.2015.06.017

Noland, V. J., Liller, K. D., McDermott, R. J., Coulter, M. L., & Seraphine, A. E. (2004). Is adolescent sibling violence a precursor to college dating violence? *American Journal of Health Behavior, 28*(Suppl. 1), S13–S23.

Patterson, G. R. (1982). *Coercive family process*. Eugene, OR: Castalia.

Patterson, G. R. (1984). Siblings: Fellow travelers in coercive family process. In R. Blanchard & D. Blanchard (Eds.), *Advances in the study of aggression* (Vol. 1, pp. 173 – 215). Orlando, FL: Academic Press.

Patterson, G. R. (1986). The contribution of siblings to training for fighting: A microsocial analysis. In D. Olweus, J. Block, & M. Radke-Yarrow (Eds.), *Development of antisocial and prosocial behavior: Research, theories and issues* (pp. 235 – 261). Orlando, FL: Academic.

Patterson, G. R., & Stoolmiller, M. (1991). Replications of a dual failure model for boys' depressed mood. *Journal of consulting and Clinical Psychology, 59,* 491-498.

Pecora, P. J., White, C. R., Jackson, L. J., & Wiggins, T. (2009). Mental health of current and former recipients of foster care: a review of recent studies in the USA. *Child & Family Social Work, 14*(2), 132-146. doi:10.1111/j.1365-2206.2009.00618.x

Piotrowski, C. C., Tailor, K., & Cormier, D. C. (2014). Siblings exposed to intimate partner violence: Linking sibling relationship quality & child adjustment problems. *Child Abuse & Neglect, 38,* 123-134. doi:10.1016/j.chiabu.2013.08.005

Richardson, S. M., & Yates, T. M. (2014). Siblings in foster care: A relational path to resilience for emancipated foster youth. *Children and Youth Services Review, 47,* 378-388. doi:10.1016/j.childyouth.2014.10.015

Rolf, A. Masten, D. Cicchetti, K. Neuchterlein, & S. Weintraub (Eds), *Risk and protective factors in the development of psychopathology* (pp. 141-163). Boston: Syndicate of the Press, University of Cambridge.

Rowe, D. C., & Gulley, B. L. (1992). Sibling effects on substance use and delinquency. *Criminology, 30*(2), 217-233. doi:10.1111/j.1745-9125.1992.tb01103.x

Ross, H. S., & Lazinski, M. J. (2014). Parent mediation empowers sibling conflict resolution. *Early Education and Development, 25*(2), 259-275.

doi:10.1080/10409289.2013.788425
Shonkoff, J. P., Boyce, W. T., & McEwen, B. S. (2009). Neuroscience, molecular biology, and the childhood roots of health disparities. *JAMA: Journal of The American Medical Association, 301*(21), 2252-2259. doi:10.1001/jama.2009.754
Slomkowski, C., Rende, R., Conger, K. J., Simons, R. L., & Conger, R. D. (2001). Sisters, brothers, and delinquency: Evaluating the social influence during early and middle adolescence. *Child Development, 72*, 271 – 283. doi:10.1111/1467-8624.00278
Smith, B. D., & Marsh, J. C. (2002). Client-service matching in substance abuse treatment for women with children. *Journal of Substance Abuse Treatment, 22*(3), 161-168. doi:10.1016/S0740-5472(02)00229-5
Smith, J., & Ross, H. (2007). Training parents to mediate sibling disputes affects children's negotiation and conflict understanding. *Child Development, 78*, 790–805.
Snyder, J., Bank, L., & Burraston, B. (2005). The consequences of antisocial behavior in older male siblings for younger brothers and sisters. *Journal of Family Psychology, 19*(4), 643. doi:10.1037/0893-3200.19.4.643
Stocker, Clare M., Burwell, R. A., & Briggs, M. L (2002). Sibling Conflict in Middle Childhood Predicts Children's Adjustment in Early Adolescence. *Journal of Family Psychology: JFP: Journal of the Division of Family Psychology of the American Psychological Association (Division 43)., 16*(1), 50-57. doi:10.1037/0893-3200.16.1.50
Stormshak, E. A., Bellanti, C. J., & Bierman, K. L. (1996). The quality of sibling relationships and the development of social competence and behavioral control in aggressive children. *Developmental Psychology, 32*(1), 79–89. doi:10.1037/0012-1649.32.1.79
Tucker C.J., Finkelhor D, Turner H., & Shatuck, A.M. (2014) Family dynamics and young children's sibling victimization. *Journal of Family Psychology*, *28*(5): 625–633. doi:10.1037/fam0000016
Tucker, C. J., Finkelhor, D., Turner, H., & Shattuck, A.M. (2013). Association of sibling aggression with child and adolescent mental health. *Pediatrics, 132*(1), 79-84. doi:10.1542/peds.2012-3801
Tucker, C. J., McHale, S. M., & Crouter, A. C. (2008). Links between older and younger adolescent siblings' adjustment: The moderating role of shared activities. *International Journal of Behavioral Development, 32*, 152-160. doi:10.1177/0165025407087214
Updegraff, K. A., McHale, S. M., & Crouter, A. C. (2000). Adolescents' sex-typed friendship experiences: Does having a sister versus a brother matter? *Child Development, 71*(6), 1597–1610.
Urquiza, A. J., & Timmer, S. (2012). Parent-child interaction therapy: Enhancing parent-child relationships. *Psychosocial Intervention, 21*(2), 145-156. doi:10.5093/in2012a16
U.S. Department of Health and Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau. (2012). *Adoption and Foster Care Analysis and Reporting System (AFCARS) FY 2012 data.* Retrieved from: www.acf.hhs.gov/programs/cb
Waddell, J., Pepler, D., & Moore, T. (2001). Observations of sibling interactions in violent families. *Journal of Community Psychology, 29*(3), 241-258. doi:10.1002/jcop.1016
Waid, J. (2014). Sibling foster care, placement stability, and well-being: A theoretical and conceptual framework. *Journal of Family Social Work, 17*(3), 283-297.

doi:10.1080/10522158.2014.885474
Weston, S., Hawes, D., & Pasalich, D. (2017). The Five Minute Speech Sample as a Measure of Parent-Child Dynamics: Evidence from Observational Research. *Journal Of Child & Family Studies, 26*(1), 118-136. doi 10.1007/s10826-016-0549-8
Williams, S. T., Conger, K. J., & Blozis, S. A. (2007). The development of interpersonal aggression during adolescence: The importance of parents, siblings, and family economics. *Child Development, 78*(5), 1526-1542. doi:10.1111/j.1467-8624.2007.01081.x
Whiteman, S., Solmeyer, A., & McHale, S. (2015). Sibling relationships and adolescent adjustment: Longitudinal associations in two-parent African American families. *Journal of Youth and Adolescence., 44*(11), 2042-2053. doi-10.1007/s10964-015-0286-0
Wojciak, A. S.,. McWey, L. M., & Helfrich, C. M. (2013). Sibling relationships and internalizing symptoms of youth in foster care. *Children and Youth Services Review, 35*(7), 71–77. doi:10.1016/j.childyouth.2013.04.021.
Wulczyn, F., & Zimmerman, E. (2005). sibling placements in longitudinal perspective. *Children and Youth Services Review, 27*(7), 741–63. doi:10.1016/j.childyouth.2004.12.017.
Wulczyn, F. (2003). Placement Stability and Movement Trajectories. *The Social Service Review, 77*(2), 212-236.doi:10.1086/373906
Zima, B. T., Bussing, R., Freeman, S., Yang, X., Belin, T. R., & Forness, S. R. (2000). Behavior problems, academic skill delays and school failure among school-aged children in foster care: Their relationship to placement characteristics. *Journal of Child and Family Studies, 9,* 87– 103.