Conflict Dynamics in Mother-Child and Sibling Dyads: The Interplay Between Observed Behavior and Emotional Expression and Links with Children's Socioemotional Development

Saskia J. Ferrar

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_____ Chair
Dr. Diane Pesco
_____ External Examiner
Dr. Debra Pepler
_____ External to Program
Dr. Hilary Rose
_____ Examiner
Dr. Nina Howe
_____ Examiner
Dr. Erin Barker
_____ Supervisor
Dr. Dale Stack

Approved by _____
Dr. Andrew Chapman
Graduate Program Director

_____
Dr. Pascale Sicotte
Dean of Faculty of Arts and Sciences

Date of Defence: October 16, 2020

ABSTRACT

Conflict dynamics in mother-child and sibling dyads: The interplay between observed behavior and emotional expression and links with children's socioemotional development

Saskia J. Ferrar, Ph.D.
Concordia University, 2020

In a series of two observational studies, the present dissertation examined the interplay between emotional expressions and behavior during conflict between children and their family members. Conflict discussions were observed at two developmental periods (preadolescence and adolescence) and in two types of relationships (mother-child and sibling), to assess how family members respond to their own and their partners' emotional expressions. Within-family similarities in responses to negative emotions as well as links with youths' socioemotional development were also examined.

The participants in the two present studies were drawn from an ongoing forty-year longitudinal study of families in Montréal, Québec. In Study 1, preadolescents (aged 9 to 13 years) were observed during conflict discussions with their mothers, and questionnaire measures of their temperament and socioemotional functioning were collected at one time point prior (aged 6 to 10 years) and one time point subsequent (aged 11 to 16 years) to the observational measurements. In Study 2, early adolescents (aged 12 to 15 years) were observed during conflict discussions with their siblings and with their mothers. In both studies, participants' verbal conflict behaviors and emotional expressions were coded continuously. Time-window sequential analysis was used to identify how participants responded to their own and their interaction partners' emotional expressions. In Study 1, across-dyad differences in responses to negative emotions were associated with youths' socioemotional functioning over time, and in Study 2, within-family similarities in responses to negative emotions were examined.

Results from both studies indicated that overall, family members escalated conflict more (i.e., disagreed and confronted) and made more assertive (i.e., analytic) remarks when they appeared angry (i.e., displayed frowning/upset affect), and were more conciliatory and avoidant when they appeared sad. Neutral affect predicted the most conflict de-escalating behavior (i.e., analytic and conciliatory remarks), while positive affect promoted both de-escalating behavior and avoidance. Links between individuals' behavior and their interaction partners' emotional expressions were generally similar, yet weaker than responses to their own emotions. Differences between mother-child versus sibling conflict patterns, as well as between mother-child conflict before and after the transition to adolescence, suggested that family conflict dynamics are influenced by relationship type as well as developmental timing. Results from Study 1 also indicated that mothers' tendency to escalate conflict when angry was associated with difficult child characteristics in earlier childhood and socioemotional difficulties in adolescence. Further, maternal and child de-escalation following sadness predicted socioemotional adjustment in adolescence. Furthermore, Study 2 identified many within-family similarities in responses to negative emotions, yet relatively few similarities in how youth responded across the two conflict contexts (i.e., with their mothers and with their siblings).

Findings are discussed in relation to goal-based theories of emotion, as well as dynamic systems, transactional, and family systems perspectives on child development. The present dissertation makes a substantive contribution to our understanding of family conflict dynamics across the transition to adolescence, by illustrating how constructive and destructive conflict is linked to several contextual variables, including emotion, child characteristics, and relationship type. In addition, they show how individual differences in the management of negative emotions are tied to youths' socioemotional development and to family functioning. Taken together, the present findings have a number of clinical implications that can help inform interventions aimed at promoting adaptive family conflict communication and psychological well-being.

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To Conor, thank you for inspiring me, for motivating me to set my sights high, and for caring for me in all the ways that you do. I have so much love for you, and for the other members of our pack, Hank and Beans; together, you have filled these months of pandemic-induced writing with smiles and wagging tails.

Contributions of Authors

This dissertation consists of two manuscripts:

Study 1 (see Chapter 2)

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Study 2 (see Chapter 4)

Ferrar, S. J., Stack, D. M., & Serbin, L. A. (under review). Conflict resolution and emotional expression in sibling and mother-adolescent dyads: Within-family and across-context similarities. *The Journal of Early Adolescence.*

I with my supervisor, Dr. Dale Stack, am responsible for the conceptualization of the research presented in this dissertation, including the two aforementioned studies. The data used in both studies were collected by research staff in Dr. Stack's Infant and Child Studies Laboratory (Concordia University) and Dr. Lisa Serbin's Intergenerational Laboratory (Concordia University). Behavioral observational coding for both studies was carried out by me in Dr. Stack's research laboratory, with the help of undergraduate students. With guidance and feedback from my supervisor, I chose the research questions, hypotheses and analysis plans, and conducted all the statistical analyses, interpreted the results and wrote the present dissertation in all of its sections. Dr. Daniel Dickson provided assistance with statistical analyses in Study 1. Dr. Stack provided guidance, revisions, and feedback throughout every step of my dissertation.

Table of Contents

List of Figures

Chapter 2: Study 1

List of Tables

Chapter 2: Study 1

Chapter 4: Study 2

List of Appendices

Chapter 1: General Introduction

Conflict between family members is inevitable, and how children learn to manage these conflicts affects their well-being across the lifespan (e.g., Cummings & Schatz, 2012). According to dynamic systems and transactional perspectives, patterns of interaction, such as conflict resolution, develop reciprocally between children and their family members over time (Fogel, 2009; Hollenstein, 2013). While some strategies for managing conflict are generally more constructive than others, their effectiveness likely depends on the specific dynamics of the interaction. Thus, conflict behavior should vary according to the emotional state of both partners, as well as the type of relationship (Abuhatoum & Howe, 2013). However, the emphasis of most developmental research remains on the unidirectional effects of parents on their children, often disregarding the influences that children have on their parents, as well as the significant roles that siblings play in development. In line with a dynamic systems perspective, the present studies sought a more in-depth understanding of the processes underlying family conflict, by examining temporal links between emotional expressions and behavior of children and their family members. In Study 1, conflict behaviors and emotional expressions of preadolescents and their mothers were observed. In Study 2, these same behaviors were observed during conflicts between early adolescents and their siblings, as well as between these same adolescents and their mothers. Using sequential analysis, patterns of interaction were compared across families and across relationships, in order to assess how family members respond to emotions during conflict. Longitudinal associations between conflict interactions and socioemotional adjustment, as well as within-family similarities in behavior, were also examined, to provide a detailed understanding of the role of conflict dynamics in child development.

Family Conflict and Socioemotional Development

Conflict is defined as an expressed struggle between individuals who mutually perceive that they have incompatible goals (Della Porta & Howe, 2017; Shantz, 1987). Family conflict has an important influence on children's socioemotional development (Cahn, 1992). For example, children who have more frequent and intense conflicts with their parents and siblings rate these relationships as poorer, and are at-risk of developing behavioral, emotional, and social difficulties (Buist et al., 2013; Laursen & Hafen, 2010; Smetana, 1996). Over the long-term, these children develop poorer relationships with peers and romantic partners, and experience more psychopathology and lower life satisfaction in adulthood (e.g., Bradford et al., 2008; Overbeek et al., 2007). However, by focusing on the frequency and intensity of family conflict, this line of research misses much of the complexity at play. Observational studies of conflict can address this issue by exploring the process of conflict interactions, allowing researchers to parse out the specific elements of conflict that are damaging to development.

Although it is clear that experiencing frequent, intense conflict within the home is detrimental to children's socioemotional functioning, it is important to acknowledge that conflict is an inevitable part of family relationships. In fact, for most individuals, their most conflictual relationships occur within the family, and avoiding conflict altogether can lead to hostility and unmet needs (Kramer, 2010; Sillars et al., 2004). In addition, conflict affords key opportunities for growth. First, it is a chance for family members to communicate their desires and displeasures within their relationships (Ting-Toomey & Oetzel, 2013). This often involves re-negotiating rights and responsibilities as children's abilities and needs for independence increase (Laursen et al., 1998). If managed effectively, conflicts then serve as opportunities to establish compromises that meet each individual's desires (Allison & Schultz, 2004; Koerner, 2013).

Second, conflict with family members serves as a setting in which children develop social skills, including empathy, perspective-taking and prosocial conflict resolution strategies (Koerner & Fitzpatrick, 2013). As relationships with their parents and siblings are typically permanent, they offer children the chance to practice these skills without the risk of the relationship dissolving (Campione-Barr & Killoren, 2019). Normative conflict between siblings is linked with the development of perspective-taking abilities and emotional sensitivity (Dunn & Slomkowski, 1992), while constructive conflict resolution with parents is associated with increased identity development and role-taking abilities (Cooper & Cooper, 1992). Examining the communication styles children develop within their family relationships is important, as these may spill into their eventual relationships with peers and romantic partners (e.g., Laursen & Hafen, 2010; Van Doorn et al., 2011).

Given these important and adaptive functions of conflict in children's social and emotional development, the focus on conflict as a purely negative phenomenon is unwarranted (Persram et al., 2019). Thus, rather than looking at conflict *quantity* as a source of harm to relationships and well-being, assessing the *quality* of conflicts, and the *specific behaviors* involved, is more helpful in understanding the role of conflict in socioemotional development. Generally, conflict has been characterized as constructive when it is limited to specific issues, affect is relatively controlled, and it includes attempts to compromise. Conversely, destructive conflict involves unregulated and escalating affect, coercion, dismissal, and the discussion of multiple issues at once (Deutsch, 1973). Using observational methods, the present studies helped clarify how constructive and destructive conflicts unfold, by separately parsing out behavior and emotional expressions and observing their interrelations, as well as how these interrelations are linked to developmental timing, type of relationship, and youths' socioemotional functioning.

Observational Research on Conflict Behavior

Within observational research on conflict, the systems used to measure conflict behaviors are variable. Thus, to allow for the comparison of findings across studies, Sillars and Canary developed a broad classification system for conflict behaviors (Sillars et al., 2004; Sillars & Canary, 2013). In this system, behaviors fall along two dimensions: directness/indirectness, and cooperativeness/competitiveness, creating a total of four categories (Sillars et al., 2004; Sillars & Canary, 2013; van de Vliert & Euwema, 1994). The first is direct and cooperative behaviors (termed *negotiation*), which include analytic remarks (e.g., disclosive and descriptive statements, soliciting disclosure), conciliatory remarks (e.g., supportive remarks, concessions and acceptance of responsibility) and problem-solving exchanges (Gottman, 1979; Sillars, 1986). The second is direct and competitive (termed *direct fighting*), which encompasses confrontative remarks (e.g., criticism, rejection and hostile imperatives) and disagreement or dismissal (Sillars, 1986; Weiss, 1993). The third is indirect and cooperative (termed *nonconfrontation*), which includes denial of the conflict and topic management (e.g., changing the subject or prematurely terminating the discussion; Sillars & Canary, 2013). Finally, the fourth category is composed of indirect and competitive behaviors (termed *indirect fighting*), which include hostile jokes and questions or complete withdrawal from the interaction (Sillars, 1986; Weiss, 1993). This classification system has allowed for the comparison of findings across a range of observational studies of conflict, despite variations in their coding procedures. The present studies utilized a version of Sillars and colleagues' typology adapted for mother-child and sibling relationships, in order to ease integration into the existing literature.

Conflict behaviors that fall into Sillars and colleagues' direct and cooperative category have generally been found to be the most effective, and are associated with increased

relationship satisfaction and positive family environments (e.g., Gross & Guerrero, 2000; Koerner & Fitzpatrick, 2006; van Doorn et al., 2009). Conversely, indirect behaviors and direct competitive behaviors appear to be detrimental to conflict resolution and relationship satisfaction (e.g., Caughlin & Malis, 2004; van Doorn et al., 2009). However, researchers are becoming increasingly cognizant that no conflict behavior is universally effective or ineffective. Instead, the effectiveness, as well as the likelihood, of behaviors depends on the immediate contexts in which they occur (Sillars & Canary, 2013). The present studies therefore moved beyond categorizing behaviors as effective and ineffective, to instead consider how they play out in relation to specific emotional and relationship contexts.

Emotion in Interpersonal Conflict

Interpersonal conflict elicits strong emotions (Koerner, 2013). How people behave during conflict is closely tied to both their own emotional experience in that moment, and to the emotions expressed by their interaction partner — although most of the research to date has focused on the former. According to goal-based theories of emotion, emotions and behaviors are tied to particular goals (e.g., Christensen et al., 1995; Sanford, 2007; Stein & Levine, 1989). The most consistently studied conflict-related emotions are hostile and vulnerable emotions (Guerrero, 2013). Hostile emotions include anger, frustration, jealousy, envy, contempt and disgust. They are thought to reflect an individual's desire to meet their personal goals at all costs, and therefore to produce attacks and statements of disapproval during conflict (e.g., Guerrero et al., 2011; Lazarus, 1991). However, people can also be motivated by anger to engage in constructive behavior, such as direct and assertive communication (Canary et al., 1998). Vulnerable emotions, such as hurt and sadness, are thought to reflect an individual abandoning their personal goals and replacing them with a desire to protect the relationship, such as by

ending the conflict. As such, they often lead people to problem-solve or acquiesce, such as by apologizing, conceding, and compromising. However, they also promote avoidant responses, such as laughing or becoming quiet, and even competitive responses, such as attacking the partner and defending the self (Vangelisti & Crumley, 1998). The experience of very intense hostile and vulnerable emotions can also cause people to feel so flooded with emotion that their responses become limited to lashing out or withdrawing completely (Gottman, 1993; Tashiro & Frazier, 2007).

Although hostile and vulnerable emotions are the most studied in the context of conflict, other emotions are also commonly elicited, and the expression of a range of emotions is beneficial to conflict resolution and well-being (van Bommel et al., 2019). For example, when positive emotions occur during conflict, they are thought to reflect respect, fondness or empathy. Thus, they are associated with expressions of interpersonal warmth (e.g., active listening, smiling), signals of agreement (e.g., head nods), and cooperative behaviors (e.g., problem solving; Guerrero & Floyd, 2006). Other emotions generated during conflict include self-conscious emotions, such as guilt or embarrassment, which generally motivate people to attempt to repair the relationship (Guerrero et al., 2011), and fearful emotions, which can cause individuals to avoid expressing their views to prevent harm to themselves or their partner (Bell & Song, 2005). Finally, neutral expressions have sometimes been linked to flat emotions, such as indifference and apathy, which are thought to promote withdrawal during conflict (Sanford, 2007). On the other hand, higher rates neutral emotional expressions during mother-child conflict have also been associated with sensitivity in mothers and better socioemotional adjustment in children (Enns, 2013). These conflicting findings suggest that the role of low levels of observed emotion, such as neutral affect, should be considered more closely.

Given the range of emotions evoked by conflict and their potential to influence behavior, youths' conflict with their mothers and siblings provides a key training ground in which they learn to manage their emotions (Noller, 2005; Yap et al., 2008). During conflict, family members are tasked with the challenge of expressing their opposing views, while also regulating the associated (often negative) emotions in order to meet their goals — whether these involve getting their way, maintaining a positive relationship, or both (Low et al., 2019). Regulating emotions in service of one's goals is an important component of emotional competence (Compas et al., 2017). Ideally, individuals are able to respond to negative emotions with constructive behaviors, rather than by escalating the conflict. When negative emotions are instead intense and unregulated, they can interfere with problem-solving and flexibility, and lead individuals to rely instead on automatic and often maladaptive behaviors (Shortt & Gottman, 1997). Thus, the ability to manage emotions effectively is likely key to constructive conflict resolution. Family conflict in preadolescence and early adolescence generates especially high levels of negative emotions (Campione-Barr & Killoren, 2019; Seiffge-Krenke et al., 2010). Thus, it is likely an important context in which youth develop these abilities.

Clearly, conflict generates a wide range of emotional responses, which have important impacts on how individuals behave. However, much less is known about how individuals respond to the emotional expressions of their partner. This is a critical direction for research, as conflict is inherently bidirectional; no matter the relationship, both players have great influence over how interactions unfold, as each continuously reacts to the other (van Bommel et al., 2019). The few studies that have considered relations between one person's emotions and the other's behavior have revealed interesting links (e.g., Guerrero, 2013; Recchia & Howe, 2010). While no study to our knowledge has observed how one person's emotional expressions influences the

other's behavior in the moment, Recchia and Howe (2010) assessed links between siblings' retrospective reports of emotions perceived during conflict, and their observed behavior during subsequent negotiations. They found that children compromised more when they attributed anger to both themselves and their siblings, as opposed to themselves alone (Recchia & Howe, 2010). This suggests that indeed, both people's emotions influence how family members attempt to resolve conflict. Although this area of research remains largely untapped, there is a growing trend in the literature to recognize the dynamic and emergent patterns of interpersonal communication within relationships, as well as their influence on development (e.g., Schermerhorn et al., 2010; van Bommel et al., 2019).

Patterns of Conflict Interaction and Dynamic Systems

According to transactional theory, developmental outcomes result from the bidirectional interactions youth have with key socializing agents, including parents and siblings (Fogel, 2009). Indeed, adolescents who constructively resolve conflicts with their family members have fewer depressive symptoms, less risky behavior, higher self-esteem, and warmer and less hostile relationships (Rueter & Conger, 1995; Tucker et al., 2003). However, comparing frequencies of behaviors that are considered constructive versus destructive does not capture the dynamics that elicit these behaviors. That is, in what ways do interactions unfold, to ultimately lead to more or less effective conflict resolution? It may be, for instance, that in some relationships, perceiving negative affect in one's partner elicits empathic responses and attempts to compromise. Conversely, in other relationships, negative affect may provoke more competitive responses, leading to the escalation of negative affect and hostile behavior. In other words, patterns of behavior develop over the course of dyads' relationships, and these patterns can become entrenched, leading to global differences in constructive versus destructive conflict resolution.

The present studies were designed to fill gaps left by global assessments of behavior during conflict, by examining how dynamics unfold over the course of interactions, as individuals respond to their own and their family members' emotional expressions. Further, as these dynamics likely generalize across dyads' interactions, longitudinal links between conflict dynamics and children's socioemotional functioning were examined.

Within a dynamic systems perspective, higher-order patterns develop through the interaction of lower-order components of systems (Fogel, 2009; Hollenstein, 2013). Thus, in the context of dyadic family interactions, each individual plays an active role in determining the interpersonal patterns that arise. For instance, a mother's behavior will provoke a reaction in the child, which in turn will affect the mother's subsequent behavior. Over time, these interactions become patterns that repeat themselves and contribute to the development of both individuals. An effective way that observational researchers can study these dynamics is sequential analysis. Sequential analysis allows the *process* of interactions to be assessed, by identifying sequences of behaviors as they unfold in real time (Bakeman & Quera, 2011). As opposed to macroscopic observational methods, which assess global characteristics of interactions, sequential analysis is a microscopic approach, used to examine moment-to-moment changes in behavior. Previous research has shown that behaviors at the microscopic level are linked to functioning at the macroscopic level. For instance, one study used sequential analysis to demonstrate differences between conflict patterns of distressed and non-distressed married couples (Gottman et al., 1977). In non-distressed couples, individuals tended to respond to their partners' complaints with agreement and validation. However, in distressed couples, complaints tended to be reciprocated with further complaints, leading to escalation of the conflict (Gottman et al., 1977). Thus, specific dynamic and bidirectional patterns of behavior were linked to relationship satisfaction.

More recently, van Bommel et al. (2019) applied sequential analysis to assess negativity and positivity in mother-adolescent conflict. They found that adolescents were more likely than mothers to reciprocate negativity, whereas mothers were more likely than adolescents to respond to negativity with positivity. Mothers therefore appear to play a leading role in regulating conflict interactions. However, how individual differences in mother-child regulation relate to child outcomes was not explored. In addition, the measures of negativity and positivity used in Bommel et al. (2019) encompassed both verbal and non-verbal elements. Thus, it remains unclear how emotions and behavior are coordinated in this regulation.

In addition to being able to observe sequences of discrete events, one type of sequential analysis known as "time-window sequential analysis" allows researchers to observe contingencies between behaviors in real time, as multiple behaviors unfold simultaneously (e.g., two people's emotional expressions and verbal behaviors). Thus, it is possible to track how one individual's behavior predicts their partner's response, as well as how one's own emotions predict one's behavior. Specifically, this method can identify whether a target behavior (e.g., a verbal behavior) is more or less likely to occur within a certain window of time (e.g., 5 seconds) after another type of behavior (e.g., an emotional expression). To date, few studies have utilized time-window sequential analysis (e.g., Chorney et al., 2010; Yoder & Tapp, 2004). The present studies used this innovative approach to deepen and enrich our understanding of how conflict behaviors unfold in relation to the emotional expressions of the individuals involved.

Conflict Processes Within the Mother-Child and Sibling Relationship

Much of the research on interpersonal conflict to date has studied only a few types of relationships. Most of the earlier research focused uniquely on romantic relationships, and many of the coding systems used to examine family conflict were originally adapted from studies of

marital conflict (Sillars et al., 2004). In the past few decades, increased attention has been paid to parent-child conflict, leading to many of the findings discussed above. However, very little observational research has studied sibling conflict, especially in adolescence, and to our knowledge sequential analyses of conflict have never been applied to sibling observations. Considering multiple types of family relationships is important, because each plays a very different role in child development, as a result of differing expectations and power structures. Both parents and siblings are important socialization agents with whom children spend considerable amounts of time (Lamb et al., 2014). However, while parent-child relationships are hierarchical in nature, with parents having the authority to determine children's responsibilities and privileges, sibling relationships are both hierarchical and reciprocal (Hinde, 1979). That is, older children have some power over their younger siblings due to differences in knowledge and experience, yet conflicts are more equal given that neither has decision power (Abuhatoum & Howe, 2013). In addition, sibling relationships are often characterized by the co-occurrence of both intensely positive and negative interactions, ambivalence that is less common and considered detrimental when it occurs within parent-child relationships (Campione-Barr & Killoren, 2019). That being said, sibships are known to vary widely in quality, depending on their levels of warmth and conflict. Specifically, four types of sibling relationships are discussed in the literature: conflictual (high on conflict, low on warmth), harmonious (low on conflict, high on warmth), affectively intense (high on both warmth and conflict) and uninvolved (i.e., low on both warmth and conflict; Buist & Vermande, 2014; Killoren et al., 2017). As a result of these complexities, conflict behaviors that are adaptive during parent-child conflict may not necessarily generalize to sibling relationships.

Similarly, patterns of conflict interaction that are normative during one developmental period change as youth become older and their family relationships evolve (Abuhatoum et al., 2020; Laursen et al., 1998). Dynamic systems theorists consider certain stages of development "phase-transitions," when systems (e.g., families) are significantly reorganized to adapt to shifting demands (Granic & Patterson, 2006). Phase-transitions are marked by increased tension, which allows the system to evolve in response to new environmental pressures (Hollenstein, 2013). The onset of adolescence is a key phase-transition, characterized by a peak in family conflict (van Bommel et al., 2019). This increase in conflict is seen in both parent-child and sibling relationships, and serves to re-negotiate roles and responsibilities in response to youths' growing abilities and bids for increased autonomy (Hadiwijaya et al., 2017). Given major changes that occur during this tumultuous period, patterns of conflict that are normative in preadolescence may not generalize to early adolescence. Indeed, previous studies have shown that the transition to adolescence is marked by changes to both the content and the structure of family interactions (Granic et al., 2003; Seiffge-Krenke et al., 2010). Thus, the present studies compared patterns of mother-child conflict in preadolescence and early adolescence, as well as compared mother-child and sibling conflict. Observing the same behaviors in each relationship as well as both immediately before and after the transition to adolescence allowed for an investigation into how patterns of conflict unfold across relationships and across time.

Finally, while one primary goal was to identify overall patterns of conflict interaction, it was also expected that individual differences would be observed, and that these would be related to both individual and family-level factors. As discussed above, dynamic systems theorists argue that there are bidirectional interactions between relationship dynamics (i.e., higher-order components) and lower-order components of systems (Fogel, 2009; Hollenstein, 2013).

Children's individual characteristics, including temperament and socioemotional adjustment, are one type of lower-order component that influence family interactions (Belsky, 1984; Kuczynski & De Mol, 2015). For instance, during mother-child interactions, certain child characteristics, such as internalizing symptoms and high activity level, are associated with less adaptive behavior from both mother and child (Granic & Lamey, 2002; Karraker & Coleman, 2005). In turn, problematic family interactions during earlier childhood, such as the escalation of conflict following negative emotions, can predict increased socioemotional difficulties in adolescence (Stocker et al., 2002; Trentacosta et al., 2011). Understanding how family interactions influence psychopathological symptoms in adolescence is crucial, as adolescence is marked by increases in internalizing and externalizing symptoms that predict psychological functioning in adulthood (Kessler et al., 2005; Ormel et al., 2017). As such, the present dissertation took the important step of considering how children's characteristics predict family members' management of negative emotions during conflict and whether in turn, these conflict dynamics predict youths' internalizing and externalizing symptoms in adolescence.

Similarly, within family systems theory, the interactions seen in dyadic subsystems (e.g., mother-child subsystem, sibling subsystem) are thought to interact with one another, as well as with the larger family system (Minuchin, 1988, 2001). The nature of these interactions, however, remains unclear. There is evidence of both compensatory and spillover mechanisms within the family when one relationship is characterized by particularly negative interactions (e.g., Buist et al., 2011; Davies et al., 2019). Still, subsystems are almost exclusively studied separately, despite recent calls for more research on their interconnections (Persram et al., 2019). As such, the present dissertation considered interrelations between family members' responses to negative

emotions during conflict. In so doing, results shed light onto how patterns of conflict are linked not only to children's socioemotional development, but also to their family environment.

The Present Studies

Guided primarily by a dynamic systems perspective, the present dissertation examined bidirectional influences between children and their family members during conflict interactions. Family conflict was observed during the preadolescent and early adolescent periods, in order to ascertain how conflict dynamics shift as youth make their way across the onset of adolescence phase-transition. Using two simultaneous coding systems, conflict behaviors and emotional expressions of children and their family members were observed. Time-window sequential analysis was used to identify how emotional expressions and behavior of family members were interrelated over the course of conflict interactions, providing a comprehensive examination of how goal-based theories of emotion apply to children's conflict with their mothers and siblings. Using a novel design to observe moment-to-moment relations between emotional expressions and both the individual's own *and* their interaction partner's behavior, it was possible to assess bidirectional influences between family members on a microscopic scale. In line with the dynamic systems tenet that dyad-level dynamics are associated with individual-level variables, longitudinal associations between responses to negative emotion and children's socioemotional functioning were also considered. Bidirectional relationships were therefore also assessed at the macroscopic level, by identifying links between family members' responses to emotions and children's socioemotional functioning at various ages. Finally, guided by family systems theory, within-family associations in responses to negative emotions were also assessed, to observe how youths' responses to emotions were tied to their family members' behavior across conflict

contexts. Each study provided a unique yet complementary contribution by focusing on conflict within a specific family relationship: mother-child in the first study, and sibling in the second.

The objective of Study 1 was to examine the dynamic nature of mother-child conflict, in relation to children's socioemotional development. A subsample of mother-child dyads from the Concordia Longitudinal Research Project (Concordia Project) was studied at three time points. When children were aged 9 to 13 years, dyads were videotaped at home discussing issues that provoke conflict between them. Both mother and child behavior were observationally coded moment-to-moment using two systems: first, their verbal conflict behaviors were coded (e.g., conciliatory, avoidant, or confrontative behavior) using a system developed based on previous research (e.g., Sillars et al., 2004). Second, their emotional expressions were assessed based on non-verbal cues, using an adapted version of the Emotion Behavior Coding Scheme (Enns & Stack, 2007), developed from existing literature (e.g., Coan & Gottman, 2007; Ekman & Friesen, 1978). Time-window sequential analysis was used to identify patterns of mother and preadolescent conflict resolution, as individuals adapted their behavior to their own and to their partners' emotional expressions. Path analyses were also used to assess how individual differences in responses were related to children's temperament and internalizing and externalizing symptoms at prior, concurrent, and subsequent time points.

The objective of Study 2 was to examine conflict behaviors and emotional expression within sibling relationships. A second subsample of Concordia Project participants aged 12 to 15 years were videotaped during dyadic conflicts with their siblings and with their mothers. As in Study 1, participants were coded for their emotional expressions and conflict behaviors. Dyadic patterns of behaviors were again assessed, with a specific focus on the particularities of sibling relationships. Thus, it was possible to study the relationship-specificity of processes underlying

family conflict. Associations between family members' behavioral responses to negative emotions were also examined. This allowed for a deeper understanding of how patterns of conflict behavior are learned within the family environment, as well as whether youth behave similarly with their siblings as with their mothers. Finally, by comparing mother-child conflict across the two studies, it was possible to assess how dynamics change as youth transition from preadolescence to early adolescence.

Together, results from these two studies make a substantive contribution to the literature on family conflict, owing to the use of mixed methods (observational and questionnaire), a longitudinal design, as well as the consideration of multiple relationships and developmental periods. Above all, they utilize a truly bidirectional measurement system that takes into account the dynamic complexity of interactions. As such, results from the present studies will help inform clinical and public health programs aimed at decreasing dysfunction and strife in family relationships. By observing the *process* of conflict rather than solely global measures of behavior or dysfunction, it will be possible to identify targets for intervention and prevention that are best suited to promote healthy relationships and psychological well-being.

Chapter 2: Dissertation Study 1

Conflict Resolution and Emotional Expression in Mother-Preadolescent Dyads: Longitudinal Associations with Children's Socioemotional Development

Saskia J. Ferrar[1], Dale M. Stack[1], Daniel J. Dickson[2], Lisa A. Serbin[1]

[1]Department of Psychology
Centre for Research in Human Development
Concordia University

[2]Department of Psychology
University of Quebec at Montreal

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Correspondence to: Saskia J. Ferrar or Dale. M. Stack, Department of Psychology, Concordia University, Centre for Research in Human Development, 7141 Sherbrooke St. West, PY-170, Montreal, Quebec, Canada H4B 1R6, Telephone: 514-848-2424.
Email: saskia.ferrar@gmail.com or dale.stack@concordia.ca.

Abstract

How youth learn to manage emotions during mother-child conflict influences their socioemotional development. Ninety-four mother-preadolescent (aged 9 to 13, 57.4% female) dyads were observed during conflict discussions and completed questionnaire measures at one prior time-point (Time 1; ages 6 to 10) and one subsequent time-point (Time 3; ages 11 to 16) to the observations (Time 2). Temporal associations between individuals' emotional expressions and their own and their partners' verbal conflict behaviors were observed. Mothers and preadolescents were more attacking and assertive when angry, and more conciliatory and avoidant when sad. Neutral affect predicted the most constructive behaviors, while positive affect promoted avoidance. Responses were similar following their partners' emotions. Maternal conflict-escalating responses to anger were associated with difficult characteristics in earlier childhood and socioemotional difficulties in adolescence. Maternal and child de-escalation following sadness predicted socioemotional adjustment in adolescence. These results are discussed in relation to dynamic systems and transactional perspectives on development. They provide an in-depth understanding of the processes involved in mother-child conflict and on the influence of family dynamics on adolescent socioemotional functioning.

Mother-child conflict in preadolescence is frequent, emotional, and influences youth's socioemotional functioning in adolescence and beyond (Missotten et al., 2017). Constructive mother-child conflict teaches children to handle affective and interpersonal challenges, yet destructive conflict contributes to socioemotional problems, including internalizing and externalizing symptoms. According to dynamic systems and transactional perspectives, parent-child interactions develop as a result of the active participation of both parent and child, and over time, they affect children's socioemotional adjustment (Hollenstein, 2013; Fogel, 2009). Although some conflict resolution behaviors have been identified as more constructive than others, these behaviors have yet to be considered in close relation with individuals' changing emotions. A more detailed understanding of the links between emotion and behavior during parent-child conflict is needed, as conflict generates strong emotions that influence individuals' behavior and dyads' ability to cooperatively resolve disagreements (Guerrero, 2013; Moed et al., 2015). In the present study, the conflict behaviors and emotional expressions of mothers and preadolescents were observed during conflict discussions, and relations between emotions and behaviors were examined using sequential analysis. Path analyses were then used to investigate longitudinal antecedents and outcomes of conflict patterns with regards to youth's socioemotional development. In so doing, results shed light both on the typical interplay between emotion and behavior during parent-child conflict, and on the role of individual differences in socioemotional development.

Parent-Child Conflict During Preadolescence

Preadolescence spans from the end of middle childhood to the onset of adolescence, roughly from 10 to 12 years of age (Boldt et al., 2017). This period is marked by the highest rates of parent-child conflict, and mother-child conflict in particular (Laursen et al., 1998; Laursen &

Collins, 2004). Conflict occurs as a normative part of youth individuation, as their desire for increased autonomy coincides with their parents expecting them to take on greater responsibilities (Shanahan et al., 2007). However, families differ in the quantity and quality of conflict, and these differences have implications for youth's development. Conflict is an opportunity to re-negotiate roles and responsibilities in response to family members' changing expectations (Smetana, 2008). It also allows youth to learn to assert themselves, understand others' perspectives, and negotiate (Missotten et al., 2017). However, frequent and intense conflict is linked with poorer parent-child relationships, and predicts socioemotional difficulties in adolescence and beyond (Laursen & Hafen, 2010). This may be because frequent and intense conflict tends to be more destructive, marked by contentious and escalating exchanges and less perspective-taking and problem-solving (Branje et al., 2009; Missotten et al., 2017). Thus, parent-child conflict cannot be viewed as uniquely adaptive or maladaptive. Rather, investigating *how* conflicts unfold is key to understanding its effects on development.

Understanding the Verbal and Emotional Processes Involved in Parent-Child Conflict

According to a dynamic systems perspective, children develop adaptive and maladaptive behaviors (e.g., internalizing and externalizing problems) as a result of patterns of interaction that develop within their relationships (Hollenstein, 2013). Mother-child relationships are a central context in which this process occurs. Behaviors that occur in a mother-child interaction unfold *dynamically*, changing from moment to moment within an evolving interaction that is influenced by the behavior of both individuals. Over time, mother-child dyads develop patterns of interaction, making certain behaviors more or less likely to occur (Granic et al., 2007). The transactional model states that these patterns of interactions then influence children's functioning

beyond the mother-child context, as their behavior generalizes across relationships (Aroian et al., 2016; Sameroff, 2009).

Certain verbal conflict behaviors are considered more adaptive than others, both in terms of their ability to resolve conflict in a mutually satisfactory way, and their links with relationship quality and socioemotional functioning. Four broad categories of conflict behaviors can be found across studies (Sillars et al., 2004, Sillars & Canary, 2013). "Negotiation" includes analytic (e.g., disclosure, soliciting disclosure) and conciliatory (e.g., offering support and solutions, accepting responsibility) remarks. "Direct fighting" includes confrontative remarks (e.g., criticism, blame), rejection, and dismissal. Lastly, "nonconfrontation" and "indirect fighting" both involve avoidance and withdrawal from conflict, with cooperative and uncooperative intentions, respectively (Sillars & Canary, 2013). When assessed globally, negotiation is most effective in resolving conflict compared to the three other categories, the latter of which are also harmful to relationships and wellbeing (Koerner & Fitzpatrick, 2006; van Doorn et al., 2009).

However, it is important to consider context, which influences both the likelihood that conflict behaviors will occur, as well as how helpful they will be. According to dynamic systems, global measures cannot capture how behaviors play out in real time (Hollenstein, 2013). Instead, observational methods that consider sequential patterns of dyadic behavior are needed to determine how adaptive conflict patterns are. For example, in one study that used sequential analysis, individuals in non-distressed marriages were found to generally respond to their partners' complaints with agreement or validation. Conversely, in distressed marriages, complaints were often reciprocated with further complaints, causing conflicts to escalate (Gottman et al., 1977). Thus, complaints were not themselves harmful; rather, the immediate context in which they were voiced was more important.

A crucial aspect of context to consider when studying conflict is the emotional experience of both individuals. Interpersonal conflict is rife with emotion, with hostile and vulnerable emotions receiving the most attention (Guerrero, 2013). Hostile emotions include anger, frustration, and envy (Bell & Song, 2005). They are thought to reflect a desire to reach one's own goals, at the expense of the other's (Christensen et al., 1995; Sanford, 2007). Thus, hostile emotions are generally linked with attacking behavior and expressions of disapproval (Lazarus, 1991). However, adults can also express anger through assertive communication (Canary et al., 1998). Vulnerable emotions, such as hurt and sadness, are instead thought to occur alongside a desire to protect the relationship (Christensen et al., 1995). Thus, individuals who feel sad may adopt avoidant strategies, by limiting discussion or withdrawing (Vangelisti & Crumley, 1998). Alternatively, they might acquiesce or apologize, in an attempt to repair the relationship (Murphy & Eisenberg, 2002). There is evidence that conflict behaviors are linked to the emotions people experience. Intense hostile emotions are common during destructive and unresolved conflicts, likely because they interfere with cooperative conflict discussion (Guerrero, 2013; Murphy & Eisenberg, 2002). School-aged children who experience anger during conflict with peers report less constructive conflict behaviors, compared to those who report sadness (Murphy & Eisenberg, 2002). Further, sequential analyses have shown that the reciprocity of hostile emotions during conflict impedes mother-child dyads' ability to problem-solve (Forgatch, 1989; Moed et al., 2015). Thus, the regulation of hostile emotions between parents and their children appears to facilitate conflict resolution. Importantly, the inability to regulate negative emotions within the parent-child dyad is associated with children's difficulties with emotion regulation in other contexts (Van der Giessen et al., 2015). In the present study, bidirectional relations between mothers' and their children's emotions and conflict behaviors were assessed on

an immediate scale, in order to observe how emotions influence both individuals' own behaviors and their interaction partners' behavior as well.

Gaps in the Literature

While previous research has investigated the role of behavior and emotion in conflict resolution, no study to our knowledge has observationally assessed both verbal conflict behaviors and emotions separately *and* sequentially. This is an important missing link, given that individuals sometimes display behaviors that are incongruent with their emotions (e.g., problem-solving while angry; coercive behaviors when sad). Although the escalation of negative affect in conflict is known to be detrimental, it remains to be seen how dyads escalate or de-escalate emotionally laden conflicts using their verbal conflict behavior. In addition, little is known as to how patterns of dyadic conflict behavior that develop within the mother-child relationship are associated with youth's socioemotional development (e.g., temperament, internalizing and externalizing symptoms).

Further, gaps remain in our understanding of the links between emotion and behavior during conflict. First, aside from hostile and vulnerable emotions, little is known about the role of other emotions in conflict. Some limited research has linked positive emotions to interpersonal warmth and cooperative problem solving (Guerrero & Floyd, 2006). However, no study to our knowledge has examined the influence of neutral affect on behavior during conflict. Given that there are individual differences in the intensity of emotions expressed during conflict, it is important to consider how low levels of emotion may be behaviorally manifested (Boekaerts, 2002). The expression of neutral emotions could reflect the ability to regulate negative affect and remain calm, which might allow dyads to discuss disagreements in constructive ways (Gottman, 1993). One study reported more neutral affect during conflict between highly sensitive mothers

and children with fewer behavior problems (Enns, 2013). As such, there is evidence to support that the role of neutral affect on behavior during conflict should be considered more closely.

Second, there are likely individual differences in how people respond to emotions elicited during conflict. It might be easy for most people to generate constructive behaviors (e.g., analytic or conciliatory remarks) when their affect is neutral or positive. However, this is more difficult to accomplish when flooded with negative emotions (Forgatch, 1989). As such, when experiencing negative emotions in particular, the ability to respond with conflict de-escalating versus escalating behaviors could be indicative of emotional competence, which is linked with greater socioemotional adjustment later on (Compas et al., 2017). This study thus examined longitudinal relations between mothers' and children's responses to negative emotions and youth's internalizing and externalizing symptoms.

Third, mother-child conflict is a unique context that warrants special attention. Within their relationships, mothers hold the majority of the power and are more experienced with challenging social and emotional situations (Hinde, 1979). Thus, there may be differences in how mothers and children respond to emotion during conflict which could have particular implications for youth's socioemotional development. For example, parents who continuously reciprocate their children's negative emotions have children who rate higher on oppositional defiant symptoms (Moed et al., 2015). Although these associations have been demonstrated with externalizing problems, no study to our knowledge has assessed links between the escalation of negative affect during conflict and children's internalizing problems. Thus, our study took a further step by investigating the effects of escalating and de-escalating behaviors in response to both hostile and vulnerable emotions during mother-child conflict.

Fourth, beyond individuals' responses to their *own* emotions, how mothers and children respond to *each other's* emotions during conflict also merits attention. When parents consistently respond to their children's negative emotions in supportive ways, children learn to regulate emotions effectively (Eisenberg, 1999; Jones et al., 2002). Conversely, when responses punish, magnify or minimize children's negative emotions, they have more difficulty regulating emotions and become at risk of developing externalizing and internalizing problems (Briscoe et al., 2019; Hastings et al., 2014). Thus, our study investigated whether mothers' responses to their children's negative emotions during conflict predict internalizing and externalizing symptoms in adolescence. In addition, associations between children's responses to their mothers' negative emotions and their socioemotional symptoms were explored, as these behaviors could be indicative of youth's developing ability to manage emotionally challenging situations.

Finally, child characteristics (e.g., temperament, socioemotional difficulties) play a large role in mother-child interactions (Belsky, 1984; Kuczynski & De Mol, 2015). For instance, difficult child characteristics, such as elevated activity levels and internalizing symptoms, elicit harsher parenting, which in turn predicts more difficult child behaviors (Karraker & Coleman, 2005). One study found differences in the conflicts between preadolescent boys and their mothers as a function of the sons' symptomatology. When boys had externalizing symptoms alone, dyads engaged in consistently permissive patterns of interaction, whereas when boys had both externalizing and internalizing symptoms, conflicts devolved into mutually hostile interactions (Granic & Lamey, 2002). Given the apparent role of child characteristics in mother-child conflict, the present study examined how child activity level and internalizing symptoms predict patterns of mother-child conflict interaction, as well as how these patterns then predict socioemotional difficulties in adolescence. In so doing, bidirectional relationships between

mothers and children were assessed on a macroscopic scale (from middle childhood to adolescence) in addition to on a microscopic scale (moment-to-moment within the conflict interaction).

Current Study

The present study examined the verbal conflict behaviors and emotions of preadolescents and their mothers and their role in predicting adolescent adjustment. The first objective was to describe the tendencies of mothers and preadolescents to respond to their own and their partners' emotional expressions (i.e., sad/distressed, angry/upset, neutral, and positive affect) with each verbal conflict behavior.

As previous research suggests that anger promotes attacking and assertive conflict behavior, whereas sadness motivates both conciliatory and avoidant behavior (Canary, 1998; Murphy & Eisenberg, 2002) the following hypotheses were made:

1a) Following their *own* sad/distressed affect, participants would display more avoidance/withdrawal and conciliatory remarks.

1b) Following their angry/upset affect, participants would display more conflict-escalating (i.e., disagreement and confrontative behaviors) and analytic behaviors.

Given preliminary evidence that positive emotions promote constructive conflict resolution (Guerrero & Floyd, 2006), it was hypothesized that:

1c) Participants would display more de-escalating behaviors (i.e., analytic and conciliatory remarks) following expressions of positive affect.

No hypotheses were made regarding responses to neutral affect, nor responses to their *partners'* emotions, given the paucity of literature on these subject areas.

The second objective was to assess longitudinal associations between child temperament and internalizing symptoms in middle childhood, children's and mothers' responses to negative emotions during conflict in preadolescence, and child internalizing and externalizing symptoms in adolescence. The following hypotheses were tested using path analyses. The inclusion of specific variables in path analyses was decided based on first assessing their correlations. That is, variables that were hypothesized to be associated and also showed significant bivariate correlations were tested in path analyses.

Given evidence of the influence of difficult temperament and socioemotional symptoms in children on maladaptive parenting (Karraker & Coleman, 2005), it was hypothesized that:

2a) Child activity level and internalizing symptoms would positively predict mothers' tendency to escalate conflict following their own and their children's angry/upset affect.

Based on links between emotion socialization and emotion regulation on the development of socioemotional difficulties (Briscoe et al., 2019; Compas et al., 2017), it was in turn hypothesized that:

2b) Both mother and child escalation following their own and their partners' angry/upset affect would positively predict externalizing and internalizing symptoms in adolescence, and

2c) Child and mother de-escalation in response to their own and their partners' sad/distressed affect would negatively predict internalizing and externalizing symptoms in adolescence.

Method

Participants

The participants in the current study represent a subset of the Concordia Longitudinal Research Project (Concordia Project; Schwartzman et al., 1985; Stack et al., 2017), a prospective, longitudinal study of at-risk individuals from Montréal, Canada. In 1976-1978, children attending inner-city elementary schools in low-income neighborhoods were screened for peer-nominated aggression and social withdrawal. A sample of 1774 participants were followed until adulthood, when many of their children were recruited. The focus of the present study is a subsample of the second generation of Concordia Project participants. These participants completed videotaped interactions with their mothers in preadolescence (Time 2 of the present study). In addition, they completed questionnaire measures at one time-point prior and one time-point subsequent to the observational data collection: middle childhood (Time 1) and adolescence (Time 3). The majority of families were Euro-Canadian and French-speaking.

Preadolescent sample (observational time point; Time 2). One hundred participants, aged nine to 13 years, participated in the present study with their mothers. Six dyads were excluded due to missing or incomplete audiovisual recordings. There were 40 boys and 54 girls, and the mean age of the children was 10.80 years (SD = 0.88). The mothers had a mean age of 37.49 years (SD = 2.94) and a mean level of education of 12.14 years (SD = 2.31). The majority of children lived in two-caregiver homes (78.5%; 41.2% with married parents, 37.3% with cohabitating parents), and 21.5% of the children lived in single-caregiver homes (9.7% single parent, 5.9% separated parent, 5.9% divorced parent). Of the 94 dyads, 23 could not be observationally coded for emotional expressions during the conflict task due to problems with lighting or camera positioning. Thus, 71 dyads were coded for both verbal conflict behaviors and

emotional expressions, and 23 were coded for verbal conflict behaviors alone.

Middle childhood sample (Time 1). At Time 1, data were available for 87 (93%) of the dyads that participated at Time 2. Children were aged six to ten years (M = 7.52, SD = 0.78), and data were collected roughly three years prior to Time 2. Participants who took part at Time 1 did not differ from those who did not on any demographic variables (child age and sex, maternal age, maternal education; ps > .05).

Adolescent sample (Time 3). At Time 3, data were available for 75 (80%) of the dyads who participated at Time 2. Children were aged 11 to 16 years (M = 13.60, SD = 1.03), and data was collected roughly three years after Time 2. Dyads who participated at Time 3 did not differ from those who did not on children's internalizing and externalizing symptoms at Time 2, conflict behaviors at Time 2, or demographic variables (ps > .05).

Procedure

Time 2. This study was conducted as part of a larger project. Ethics approval was granted by the University's human research ethics review board prior to data collection. Families were contacted by telephone and provided verbal consent. Two research assistants conducted standardized home visits. After informed written consent was obtained, mother-child dyads engaged in a number of tasks that were video-recorded. Dyads first played a board game (Jenga) together. Next, they were given a set of vignettes describing situations children might find socially or emotionally challenging, and were asked to answer discussion questions. Finally, they completed a conflict task, the only task considered in the present study. Mothers and children were given a list of 18 topics that are common sources of conflict between parents and youth (e.g., chores, problems with siblings, respecting parents). They each rated, on a 5-point Likert scale, the extent to which each topic was a source of disagreement between them (1 = *never*, 5 =

always). The experimenters selected the topic rated highest by both mother and child, and dyads were instructed to discuss the topic for six minutes while videotaped. Dyads who expressed no longer being able to discuss the topic before the time elapsed (n = 41, 43.62%) were given their next highest-rated topic. Eleven dyads (11.70%) discussed three or more topics.

Times 1 and 3. Once informed consent was obtained, packages of questionnaire measures were mailed to participants, who completed these and returned them by mail.

Measures

Observational coding. Observational coding was conducted with Mangold Interact 18, software that allows for the frequency and duration of behaviors viewed in videotaped interactions to be coded in real-time. Mothers and children were both coded on two separate coding systems. Two trained coders independently coded 30% of the sample. Cohen's kappa values ranged from substantial to almost perfect on both coding systems (0.68-0.88). Coders were blind to dyads' scores on all other measures, and one coder on each coding system was blind to hypotheses. Each coding system had a different primary and secondary coder.

The Conflict Behavior Coding System assessed mothers' and children's verbal conflict behaviors. Behaviors were coded continuously for the length of the conflict task; thus, at all times, each individual's behavior was assigned one of six codes, and the code changed when a change in behavior was observed. The coding system was inspired by well-validated systems, particularly the Verbal Tactics Coding Scheme (Sillars, 1986) and the Couples Interaction Scoring System (Gottman, 1979), and was adapted to suit mother-child interactions and to fit a mutually exclusive and exhaustive format. The six codes were: analytic remarks (providing or requesting information in a non-confrontational manner), conciliatory remarks (expressing a desire to resolve the conflict in a mutually satisfactory way or by prioritizing one's partner's

desires), disagreement (disagreement with or rejection of partner's argument), confrontative remarks (attempts to achieve one's own goals or to thwart partner's goals with hostile or argumentative intent), avoidance/withdrawal acts (behaviors that minimize discussion of the conflict), and listening (individual is silent and attending to their speaking partner; not analysed in the present study). Brief operational definitions, examples, and Cohen's kappas are provided in Appendix B.

The Emotion Behavior Coding System – Adapted was used to code nonverbal emotional expressions. The coding system was adapted from the Emotion Behavior Coding System (Enns & Stack, 2007), which was designed based on existing literature (e.g., Batum & Yagmurlu, 2007; Moed et al., 2015; Perez & Riggio, 2003). Codes were adapted to be mutually exclusive and exhaustive. Emotions were coded continuously for the length of the task, and the code changed when a change in affect was observed. Individuals were assigned one of four codes: smile/positive (SP), frown/upset (FU), sad/distressed (SD), and neutral (NE) affect. Codes were assigned primarily based on facial expression, with tone of voice and body language being used when clarification was necessary (e.g., to differentiate a sarcastic smile from positive affect). Brief operational definitions, examples, and Cohen's kappas are provided in Appendix B. The order in which mothers and children were coded was counterbalanced.

Demographic information. Child age, sex, and other information was collected using the Demographic Information Questionnaire, which has been used effectively in past Concordia Project studies (e.g., Briscoe al., 2019).

Child temperament. Mothers completed the Emotionality Activity Sociability Scale, a measure of temperament (EAS; Buss & Plomin, 1984) at Time 1. The Activity subscale, measuring the tendency to be restless or energetic, was used, given its links with more hostile parenting (Morris

et al., 2002). Items are rated on a Likert scale from 1 (“my child’s behavior is never like this”) to 5 (“my child’s behavior is always like this”). The EAS has been validated for the measurement of temperament from infancy to adulthood, including in school-age children (Walker et al., 2017). It has good test-retest reliability and stability from preschool to school age (Bould et al., 2013; Spence et al., 2013). In addition, the measure has good predictive and concurrent validity (Walker et al., 2017). The Cronbach alpha for the Activity subscale was .64, which is considered acceptable and is consistent with the internal consistency reported in previous studies (Walker et al., 2017).

Mother-reported internalizing and externalizing symptoms. Mothers completed the Child Behavior Checklist (CBCL; Achenbach, 1991) at Times 1 and 2. They were asked to report whether descriptions were representative of their child, from 0 (not at all true) to 2 (very true). In this study, the Internalizing and Externalizing scales were used. The CBCL has good test–retest reliability (Achenbach, 1991). The Cronbach alpha of the Internalizing scale was .91 at Time 1 and .87 at Time 2. The Cronbach alpha of the Externalizing scale was .89 at Time 1 and .89 at Time 2.

Self-reported internalizing and externalizing symptoms. The Youth Self-Report (Achenbach, 1991) was used at Time 3 given evidence that by adolescence, children may be more accurate reporters of their symptoms (Youngstrom et al., 2000). Adolescents were asked whether descriptors were representative of themselves, ranging from 0 (not at all true) to 2 (very true). In the present study, the Internalizing and Externalizing scales were used. The Cronbach alphas were .85 and .87 for the Internalizing and Externalizing scales, respectively.

Plan of Analysis

Prior to conducting analyses, outliers were converted to the most extreme non-outlier in the dataset (Tabachnick & Fidell, 2013). None of the variables had significant skewness or kurtosis.

Mothers' and Children's Responses to Their Own and Their Partners' Emotions

Time-window sequential analysis was used to assess tendencies of mothers and preadolescents to respond to their own and their partners' emotional expressions (i.e., sad/distressed, angry/upset, neutral, and positive affect) with each verbal conflict behavior. Analyses were conducted using *Generalized Sequential Querier 5.1.23* (GSEQ; Bakeman & Quera, 2016), respecting accepted procedures for time-window sequential analysis (Bakeman & Quera, 2011; Chorney et al., 2010). Time windows were specified as 5 seconds following the onset of specific emotional expressions (i.e., "given" behaviors). Frequencies of conflict behaviors (i.e., "target" behaviors) that occurred within those windows were tallied. Each contingency had a base rate above the recommended cut-off of 5 (Bakeman & Quera, 2011). Pooled odds ratios were calculated for each contingency to examine behavioral tendencies across the sample. Statistically significant odds above 1 indicate that the target behavior is more likely to occur following the given behavior; odds ratios below one indicate that the target behavior is less likely to occur following the given behavior. Odds ratios with 95% confidence intervals that do not include 1 are considered statistically significant at the .05 level.

Associations Between Responses to Negative Emotions and Children's Socioemotional Development

Longitudinal associations between child temperament and internalizing symptoms in middle childhood, children's and mothers' responses to negative emotions (SD and FU) during

conflict in preadolescence, and child internalizing and externalizing symptoms in adolescence were assessed. First, target behaviors were collapsed into two categories: escalating (i.e., disagreement and confrontative remarks, "direct fighting" behaviors) and de-escalating (analytic and conciliatory remarks, "negotiation" behaviors). This decision was made in order to test hypotheses while limiting the number of analyses, as these two larger constructs can be distinguished based on their influence on conflict resolution (direct fighting escalates conflict, whereas negotiation de-escalates conflict and promotes resolution; Koerner & Fitzpatrick, 2006; Sillars & Canary, 2013; van Doorn et al., 2009). Based on hypotheses, emotion-behavior contingencies of interest were escalating and de-escalating behaviors following individuals' own and their partners' SD and FU. Time-window sequential analysis was conducted using GSEQ to compute Yule's Q values for each dyad, for each contingency of interest. Yule's Q is an effect size that ranges from -1 to +1, with 0 indicating no effect, negative values indicating a negative relationship, and positive values indicating a positive relationship. For example, if a dyad's Yule's Q for child de-escalating following mother's SD is 0.6, this indicates that the child is more likely to use de-escalating behaviors following her mother's expression of SD. Yule's Qs are less skewed than odds ratios, and can be used as continuous variables in subsequent analyses (Bakeman & Quera, 2011). They can be calculated if both the given behavior and the target behavior occurred within the dyad's interaction. Descriptive statistics for Yule's Q variables are shown in Table 2.

Next, hypothesized associations between Yule's Qs and child temperament and internalizing and externalizing symptoms were assessed using bivariate correlations. Correlations are reported in Table 3. Yule's Q variables that were not correlated with any non-Yule's Q variables were omitted from the table. Child age and maternal education were also omitted, as

they were not correlated with any other variables. Only statistically significant hypothesized correlations are described below. Path analyses were then used to model these associations, using *Mplus Version 8* (Muthén & Muthén, 2019). Missing data ranged from 2.1% to 38.3% across the three time points on variables on interest. Little's missing completely at random test indicated that data was missing at random ($p > .05$). Thus, full information maximization likelihood (FIML) was used to estimate models. Models were also run excluding dyads that were missing values on relevant Yule's Q variables. However, all associations remained the same; thus, models estimated with FIML are reported. Tests of indirect effects were conducted in Mplus using bootstrapping (2000 samples), following recommended procedures (Preacher & Hayes, 2008).

Results

Mothers' and Children's Responses to Their Own and Their Partners' Emotions

Results of time-window sequential analyses are shown in Table 1.

Behavioral responses to their own emotions. After frowning/upset affect (FU), both mothers and children used more confrontative remarks, disagreement, and to a lesser extent, analytic remarks. After sad/distressed affect (SD), both avoided or withdrew more, and made more conciliatory remarks and fewer confrontative remarks. Following their own neutral affect (NE), both used more analytic and conciliatory remarks. In response to their own positive affect (SP), both avoided or withdrew more. Mothers also made more conciliatory remarks following FU, whereas children made fewer conciliatory remarks following FU. Mothers avoided/withdrew less following FU, whereas children avoided/withdrew less following NE. Children also made more analytic and conciliatory remarks following their own SP.

Behavioral responses to their partners' emotions. Mothers and children responded in similar ways to each other's emotions than to their own. They both responded to their partners' FU with increased confrontative remarks, disagreements, and analytic remarks, although odds ratios were lower than following their own FU. Following their partners' SD, they both made more conciliatory and analytic remarks. In response to their partners' NE, they both made more analytic and conciliatory remarks, and fewer confrontative remarks. Following their partners' SP, both used more analytic remarks and avoidance/withdrawal. Mothers alone were more likely to use conciliatory remarks following their children's FU. In response to their partners' SD, children showed more avoidance/withdrawal, whereas mothers used more confrontative remarks and fewer disagreements. Following their partners' SP, mothers used more conciliatory remarks and disagreement, while children used fewer confrontative remarks.

Associations Between Responses to Negative Emotions and Children's Socioemotional Development

Longitudinal associations between temperament, socioemotional symptoms, and mother escalation following FU. There was a pattern of significant correlations that was consistent with the hypothesis that child activity level and internalizing symptoms would positively predict mothers' tendency to escalate conflict following their own FU, and that in turn, this escalation would positively predict adolescent externalizing and internalizing symptoms. Child activity level at Time 1 correlated positively with mothers' escalation following their own FU ($r = .29$, $p < .05$) at Time 2 and with adolescent externalizing symptoms at Time 3 ($r = .33$, $p < .01$). There was a trend in the association between child internalizing symptoms at Time 1 and mothers' escalation following their own FU at Time 2 ($r = .26$, $p = .06$). Mothers' escalation following

their own FU at Time 2 correlated positively with adolescent internalizing (r = .40, p < .01) and externalizing symptoms at Time 3 (r = .35, p < .05).

Because these correlations indicated that mothers' tendency to escalate following their own FU was related to children's prior characteristics and later symptomatology, path analyses were used to further investigate these relationships, controlling for Time 1 and Time 2 externalizing symptoms, and Time 2 internalizing symptoms. In addition, maternal escalation following FU was explored as a mediator of the links from activity level and internalizing symptoms to later symptomatology. Results are shown in Figure 1. The model was fully specified; thus, model fit was perfect. The model accounted for 19.6% of the variance in mothers' escalation of FU at Time 2, 25.8% of the variance in internalizing symptoms at Time 2, 32.8% of the variance in externalizing symptoms at Time 2, 26.5% of the variance in child internalizing symptoms at Time 3, and 23.5% of the variance in child externalizing symptoms at Time 3. The path from child activity level at Time 1 to mothers' escalation of their own FU at Time 2 was positive and statistically significant (β=0.36, SE=0.15, p=0.01). The path from mothers' escalation of FU at Time 2 to externalizing symptoms at Time 3 was also positive and statistically significant (β=0.28, SE=0.12, p=0.02). However, the indirect effect of activity level at Time 1 to externalizing symptoms at Time 3 through mothers' escalation of FU at Time 2 was not significant (β=0.10, p=0.10, 95% CI = .000 to 0.202).

The direct effect of internalizing symptoms at Time 1 to internalizing symptoms at Time 3 was not significant (β=0.19, SE=0.17, p=0.27). However, the path from internalizing symptoms at Time 1 to mothers' escalation of FU at Time 2 was positive and statistically significant (β=0.47, SE=0.19, p=0.02). The path from mothers' escalation of FU at Time 2 to internalizing symptoms at Time 3 was also positive and statistically significant (β=0.31,

SE=0.13, p=0.02). The indirect effect of internalizing symptoms at Time 1 to internalizing symptoms at Time 3 through mothers' escalation of FU at Time 2 was positive and statistically significant (β=0.24, p=0.01, 95% CI = 0.086 to 0.399), suggesting that the stability in internalizing symptoms from Time 1 to Time 3 is accounted for by the fact that children with internalizing symptoms elicit more maternal escalation of FU, which in turn contributes to increased levels of internalizing symptoms in adolescence. Results did not differ in supplemental models controlling for child sex and maternal education.

Longitudinal associations between child and mother de-escalation following SD and socioemotional symptoms. There was a pattern of significant associations that was consistent with the hypothesis that child and mother de-escalation in response to their own and their partners' SD would negatively predict adolescent internalizing and externalizing symptoms. Children's de-escalation following their own SD at Time 2 correlated negatively with their internalizing (r =-.28, p<.05) and externalizing symptoms at Time 3 (r=-.42, p<.01). Mothers' de-escalation following their own SD at Time 2 correlated negatively with adolescents' externalizing symptoms at Time 3 (r=-.34, p< .05). Mothers' de-escalation following their children's SD correlated negatively with externalizing symptoms at Time 3 (r=-.32, p<.05). Children's de-escalation following their mothers' SD correlated negatively with their internalizing symptoms at Time 3 (r=-.33, p<.05).

Path analyses were run to identify models that accounted for these associations. Two models were retained. In the first model, longitudinal associations between children's tendency to respond to their own SD with de-escalation and avoidance at Time 2 and their externalizing symptoms at Time 3 were assessed, controlling for Time 2 externalizing symptoms. Children's tendency to avoid/withdraw following their own SD was included because additional analyses

revealed a negative relationship with externalizing symptoms at Time 3. The model was fully specified; thus, model fit was perfect. The model accounted for 26.3% of the variance in Time 3 externalizing symptoms. Results are shown in Figure 2. The path from externalizing symptoms at Time 2 to externalizing symptoms at Time 3 was positive and statistically significant (β=0.25, SE=0.12, *p*=0.04). The path from child de-escalation following their own SD at Time 2 to externalizing symptoms at Time 3 was negative and statistically significant (β=-0.30, SE=0.11, *p*=0.002). The path from child avoidance/withdrawal following their own SD at Time 2 to externalizing symptoms at Time 3 was negative and statistically significant (β=-0.28, SE=0.12, *p*=0.03). Results did not differ when controlling for child sex and maternal education.

In the second model, longitudinal associations between mothers' and children's tendency to respond to their partners' SD with de-escalation at Time 2 and adolescent internalizing and externalizing symptoms at Time 3 were assessed, controlling for internalizing and externalizing symptoms at Time 2. The model was fully specified; thus, model fit was perfect. The model accounted for 17.0% of the variance in internalizing symptoms at Time 3 and 30.4% of the variance in externalizing symptoms at Time 3. The results are shown in Figure 3. The paths from internalizing symptoms (β=0.16, SE=0.12, *p*=0.25) and externalizing symptoms (β=0.20, SE=0.13, *p*=0.15) at Time 2 to internalizing symptoms at Time 3 were not significant. The path from children's tendency to de-escalate following their mothers' SD at Time 2 to internalizing symptoms at Time 3 was negative and statistically significant (β=-0.29, SE=0.12, *p*=0.003). The path from mothers' tendency to de-escalate following their children's SD at Time 2 to internalizing symptoms at Time 3 was not significant (β=-0.09, SE=0.13, *p*=.47). The path from externalizing symptoms at Time 2 to externalizing symptoms at Time 3 was positive and significant (β=0.45, SE=0.11, *p*=0.000). The path from internalizing symptoms at Time 2 to

externalizing symptoms at Time 3 was negative and significant (β=-0.24, SE=0.11, *p*=0.04). The path from mothers' tendency to de-escalate following their children's SD at Time 2 to externalizing symptoms at Time 3 was negative and significant (β=-0.37, SE=0.11, *p*=0.001). The path from children's de-escalation following their mothers' SD at Time 2 to externalizing symptoms at Time 3 was not significant (β=-0.18, SE=0.12, *p*=0.22). Results did not differ when controlling for child sex and maternal education.

Discussion

Guided by a dynamic systems perspective, the present study provided significant nuance to our understanding of mother-child conflict, by addressing the bidirectional nature of these interactions on both microscopic and macroscopic scales. First, the results from the present study provide a detailed overview of moment-to-moment links between emotion and behavior during mother-preadolescent conflict. They demonstrate that behaviors used by mothers and children during conflict are influenced by both their *own emotions* and the *emotional expressions of their partners*. Second, the results identified that on the long-term, family conflict dynamics are both influenced by children's temperament and internalizing symptoms in earlier childhood, as well as predict internalizing and externalizing symptoms in adolescence. In so doing, they demonstrate the importance of mother-child regulation of conflict emotions for youth's socioemotional development.

Behavioral Responses to One's Own Emotional Expressions During Conflict

This was the first study to systematically assess sequential relations between emotional expression and verbal behavior during mother-child conflict. With respect to individuals' behavior in the context of their *own* negative emotions, results support and extend conclusions from existing theory and research (e.g., Guerrero, 2013; Sanford, 2007). First, both mothers and

children responded to angry affect with more confrontation, disagreement, and, to a lesser extent, analytic remarks. Anger is thought to generate attacking behavior and expressions of disapproval, but also assertive communication (Canary et al., 1998). It mobilizes people towards reaching their own goals, which can involve both "winning" the argument and having their voices heard (Christensen et al., 1995). Sadness during conflict has instead been associated with relationship-repairing motives, manifested both in problem-solving or acquiescing and conflict avoidance (Murphy & Eisenberg, 2002; Vangelisti & Crumley, 1998). Indeed, mothers and children were more likely to avoid or withdraw and attempt conciliation following sad affect, and they also used fewer confrontative remarks. This further reinforces the idea that vulnerable emotions prompt de-escalating behaviors that reduce relationship damage. These results show that theorized links between negative emotions and conflict behavior apply to the mother-child context and can be observed on a microscopic scale.

Results also shed light on the roles of neutral and positive emotions, which have received far less attention in the conflict literature. Interestingly, neutral affect was associated with some of the highest rates of analytic and conciliatory remarks, behaviors considered the most constructive during conflict (Koerner & Fitzpatrick, 2006; van Doorn et al., 2009). Neutral affect may reflect the ability to regulate negative emotions in order to calmly discuss and negotiate. Indeed, remaining calm during parent-child disagreements is linked to greater socioemotional adjustment in early adolescents, and is a key part of conflict resolution interventions (Oruche et al., 2014). Positive affect was followed by increased avoidance in both children and mothers. This often occurred when participants laughed and joked together. It has been argued that while humor can interfere with conflict resolution, it can also pause heated conflicts and defuse hostile emotions, allowing dyads to resume their discussion once calm (Norrick & Spitz, 2008). Thus,

this brief avoidance may indirectly promote productive conflict discussion. Despite being frequently overlooked, neutral and positive emotions appear to play key roles during conflict.

By observing both mothers and preadolescents, comparisons could be made between conflict partners of unequal maturity and power. While they responded in similar ways to their own emotions overall, mothers made more conciliatory remarks following angry affect, while children made fewer conciliatory remarks. Mothers may have a greater ability to use anger to motivate collaborative discussion. As increases in perspective-taking and empathy occur throughout adolescence, preadolescents may have a limited ability to forgo their own interests in order to suggest mutually beneficial solutions (Van der Graaff et al., 2014). Further, given the power differential between them (Hinde, 1979), mothers may be more inclined to attempt compromises given that they can ultimately enforce their preferred solutions. In addition, children responded to their positive affect with increased analytic and conciliatory remarks, whereas mothers did not. Positive emotions during conflict have previously been associated with cooperation and support in adults (Guerrero & Floyd, 2006). The fact that these associations were not found in mothers may be partially explained by mothers spending less time overall expressing positive affect. As discussed earlier, results suggest that neutral affect may in fact promote more constructive discussion, with positive affect instead diffusing conflict and providing relief rather than contributing directly to conflict resolution.

Behavioral Responses to the Other Person's Emotional Expressions During Conflict

To our knowledge, this was also the first study to examine on a microscopic scale how individuals' affect predicts their *interaction partners'* behavior during mother-child conflict. In almost every instance, results suggested that participants were motivated by their partners' emotions in similar ways as by their own, although links were less pronounced. For example,

while experiencing sadness may be a particularly strong motivator for a mother to repair damage to her relationship, seeing her child sad could similarly motivate her to attempt to repair the relationship. Alternatively, these findings could also result from affect mirroring; seeing her child sad may cause the mother to feel sad, which in turn could motivate her to use conciliatory behavior. Further research into effects of interaction partners' affect on conflict behavior is needed to clarify these findings.

In addition to many similarities, two differences were observed between mothers' and children's responses to the others' emotions. First, children frequently avoided or withdrew following their mothers' sad affect, whereas the reverse was not true. This could be because children become especially distressed when they observe their mothers in distress, and are not as equipped to address it (Frankel et al., 1992). Conversely, mothers are more regularly confronted with their children's sadness, and develop active methods of responding (Morris et al., 2011). Second, mothers used more confrontative remarks following their children's sad affect. This result was unexpected, and may be a result of the at-risk nature of the sample, as harsher parenting is often seen in families of lower socioeconomic status (Gülseven et al., 2018). According to the emotion socialization literature, this type of parental invalidation of negative emotions predicts emotional dysregulation in youth (Briscoe et al., 2019).

Overall, these results highlight the bidirectional nature of conflict, demonstrating several ways in which the *other person*'s emotional expressions influences how one behaves during conflict. These findings are in line with the transactional model, which posits that child development is the result of the continuous and bidirectional interactions between the child and their environment (Sameroff, 2009). Specifically, these results demonstrate the interdependence between mothers and children, whose behavior continuously shapes one another over the course

of their interactions. As such, they reinforce that children's development is driven by the evolving dynamic between mothers and children over time. These novel findings warrant further investigation, as they add key contextual information to our understanding of mother-child conflict.

Longitudinal Associations Between Child Characteristics and Mother Escalation Following Angry Affect

The second objective was to assess relations between dyadic behavior following negative emotions and children's socioemotional development. The first model demonstrated longitudinal links between activity level and internalizing symptoms in middle childhood, mothers' tendency to escalate conflict when angry in preadolescence, and internalizing and externalizing symptoms in adolescence. These results are in line with a dynamic systems perspective, showing that both children and mothers contribute to their interactions, which in turn influence child outcomes (Hollenstein, 2013). First, mothers who rated their children as having a higher activity level and more internalizing symptoms during middle childhood escalated the conflict more when angry. These could be child-driven effects, as mothers may experience increased frustration and stress due to challenging interactions with their active or emotional children (Vaughan et al., 2013). Of course, child characteristics in middle childhood could themselves be the result of intergenerational transfer, via both genetics and socialization (Clifford et al., 2015; Crawford et al., 2011). Mothers' ratings of child characteristics may also be influenced by their own distress (Kroes et al., 2003). Future studies using more datapoints and incorporating actor-partner interdependence models and behavioral genetics would aid in clarifying the contributions of various pathways.

In turn, children whose mothers escalated conflict when angry reported increased externalizing and internalizing symptoms in adolescence. Mothers who cannot regulate their angry affect and instead escalate the conflict model unconstructive conflict resolution skills and poor emotion regulation. This puts their children at risk of developing internalizing and externalizing symptoms (Compas et al., 2017). Indeed, the tendency of mothers to escalate conflict when upset impedes dyads' ability to problem-solve, and prevents mutually satisfactory resolutions (Moed et al., 2015; Forgatch, 1989). In turn, lack of resolution leads to longer, more frequent, and more hostile conflicts, specifically the types of conflicts that are associated with increased psychopathology in youth (Missotten et al., 2017). Our findings help explain why intense conflicts with parents predict long-term maladjustment, and underline the benefits of maternal emotion regulation during challenging mother-child interactions. In addition, mothers' tendency to escalate conflict when angry mediated the relationship between youth's internalizing problems at the first and third time points. A growing literature is demonstrating that children's internalizing symptoms are involved in bidirectional relations with parenting. Fanti and colleagues (2011) reported bidirectional associations between fathers' and children's internalizing symptoms from preadolescence to mid-adolescence. These findings support the transactional model, in which the development and maintenance of child psychopathology occurs due to reciprocal exchanges between parent and child (Sameroff, 2009).

Although mothers' escalation of their own angry affect was longitudinally linked with child activity level and internalizing symptoms, these associations were not found with the escalation of their children's angry affect, nor with the children's escalation in response to either individuals' angry affect. This pattern of results suggests that mothers' regulation of angry affect is particularly important, in line with recent literature indicating that maternal conflict escalation

is especially detrimental both to conflict resolution and to children's socioemotional development, given their role as caregivers and socializers (Moed et al., 2015).

Longitudinal Associations Between Responses to Sad Affect and Adolescent Adjustment

Results from the second and third path models also identified novel relations between dyadic behavior following negative emotions and internalizing and externalizing symptoms in adolescence. In line with hypotheses, the second model showed that children's tendency to de-escalate conflict in response to their own sad affect during preadolescence predicted decreased externalizing symptoms in adolescence. Children who are able to use their vulnerable affect as a motivator to resolve conflict may have especially strong prosocial tendencies and effective emotion regulation abilities. Prosocial behavior has been shown to be protective against the development of externalizing symptoms (Flouri & Sarmadi, 2016; Nantel-Vivier et al., 2014). Similarly, the ability to regulate vulnerable emotions prevents them from building up and being expressed as externalizing behavior (Sullivan et al., 2010). These findings point to a need for future research to directly investigate links between motives, emotion regulation and behavior during conflict. The second model also showed that children who avoided or withdrew from conflict when sad endorsed fewer externalizing symptoms in adolescence. Although this finding was not predicted, children who are especially avoidant in difficult situations may be shy or inhibited, temperamental characteristics that have been found to protect against externalizing symptoms (Leve et al., 2005). Overall, this model demonstrated that children's behavior when sad is related to their subsequent externalizing symptoms. Surprisingly, there were no associations between children's responses to their sad affect and internalizing symptoms. This may be because the intensity of sadness during the conflict task appeared relatively low; perhaps responses to more intense vulnerable emotions are particularly important in predicting

internalizing symptoms. Future studies could address this question by using procedures that elicit stronger vulnerable emotions or last longer in time, and by including measures of emotional intensity.

Finally, the third model demonstrated that mothers' and preadolescents' responses to each other's sad affect during conflict predicts socioemotional symptoms in adolescence. First, children whose mothers used more de-escalating behaviors following their sad affect had fewer externalizing symptoms in adolescence. In the emotion socialization literature, it is argued that when mothers respond to children's vulnerable affect in constructive and supportive ways, they learn that their emotions are understood and taken into consideration. In addition, mothers model prosocial responses to others' emotions (Eisenberg, 1999; Jones et al., 2002). This allows children to learn to regulate emotions and respond prosocially in stressful interpersonal situations. In turn, these children are at a decreased risk of developing externalizing symptoms (Aldao et al., 2016). Second, children who made more de-escalating statements following their mothers' displays of sad affect had fewer internalizing symptoms in adolescence. As discussed earlier, mothers' sad affect commonly elicited avoidance in children, perhaps because children are not equipped to manage their mothers' distress, and they may become distressed in response (Frankel et al., 1992). Thus, children who are instead able to respond to their mothers' vulnerable affect with de-escalating behavior might be less easily upset or particularly strong at regulating negative emotions, characteristics that would prove protective against internalizing symptoms in adolescence (Aldao et al., 2016; Kopala-Sibley et al., 2017).

Although many hypotheses were supported, mothers' de-escalation following children's sad affect was not associated with children's internalizing symptoms, nor was child de-escalation following mothers' sad affect associated with externalizing symptoms. It could be that relations

between responses to others' vulnerable emotions and children's socioemotional outcomes are highly specific. Alternatively, as mentioned above, the vulnerable emotions elicited by the conflict task used in our study may be insufficiently intense to bring these relationships to light. The present study provided a novel analytic method that future studies can apply to build on these findings.

Limitations and Future Directions

Alongside several contributions, results should be considered in light of certain limitations. While observation is an ideal method of measuring verbal behavior, the ability to infer emotions is more limited (Schirmer & Adolphs, 2017). Similarly, without direct assessment of motives and emotion regulation, interpretations related to their roles in relations between affect and behavior are speculative. Future studies could address these challenges by including video-recall, where participants review recordings of their conflicts and report on their emotions and thoughts during the interactions (Cohen et al., 2012). Assessing the intensity of emotions in addition to quality, using a combination of self-report, observation and physiological measures, may also help explain how the same emotion can lead to diverse courses of action (Luong et al., 2018). For example, low levels of anger may motivate individuals to act assertively, with only higher levels interfering with problem-solving (Guerrero, 2013). In addition, although observational data allows for effective sequential analysis of smaller samples, these findings should be replicated in a larger sample, as greater power would increase the ability to detect results in path analyses. In addition, results from the path analyses should be interpreted with caution given that some models were fully specified, and observational measures were limited to the preadolescent time point. Finally, in the present study, the focus was placed on how emotions influence behavior, yet these relations are clearly bidirectional. Other studies have chosen to

instead investigate the influence of behavior on emotion during conflict (e.g., Chaplin et al., 2012). Ideally, future methodologies will allow researchers to assess the mutual influences between emotion and behavior in real time.

Clinical Implications

The results from the present study have important clinical implications. First, findings demonstrated that moment-to-moment, emotional expressions influence conflict behavior, with anger and sadness often making less constructive behaviors more likely to occur. Yet at the same time, individual differences in responses to negative emotions emerged, and these individual differences were linked to youth's socioemotional functioning. These results are consistent with a large body of evidence showing that the ability to regulate negative emotions in challenging social situations in order to select behaviors that are in the service of one's goals protect against socioemotional difficulties (Compas et al., 2017). A range of prevention and intervention programs for youth with socioemotional vulnerabilities include emotion regulation training as a key component (e.g., Derella et al., 2019; Rathus & Miller, 2014; Trosper et al., 2009), and the present findings support this direction.

Beyond youths' own emotion regulation, results also underline the crucial role of mothers in managing emotions during interactions with their children (Moed et al., 2015). An important predictor of children's emotion regulation is emotion socialization, whereby parents teach their children to express, understand and regulate their emotions (Denham et al., 2015; Eisenberg et al., 1998). Emotion socialization occurs in part through parents' responses to their children's negative emotions. These include supportive responses, which communicate to the child that their emotions are valid and acceptable (e.g., comforting, encouraging, or offering support), and nonsupportive responses, which discourage the emotional expression (e.g., punishing or

minimizing; Root & Denham, 2010). Overall, supportive responses contribute to greater socioemotional functioning in youth (Briscoe et al., 2019; Denham et al., 1997). A number of interventions aimed at improving children's socioemotional skills therefore target emotion socialization, by teaching parents to respond to their children's negative emotions in ways that support their experience rather than escalate the situation (e.g., Porzig-Drummond et al., 2014). Our results lend further support to this goal, as we found that maternal de-escalation following preadolescents' expressions of sadness predicted fewer externalizing symptoms in adolescence.

However, results from the present study also illustrate that responding supportively to youth's negative emotions is difficult for mothers in situations as challenging as conflict, given that mothers were more likely to escalate conflict when their children appeared angry and made more confrontative remarks when their children appeared sad. These nonsupportive responses may be explained by the fact that, unlike situations in which only the child is upset, conflict generates negative emotions for both mother *and* child. As such, mothers have the added challenge of managing their *own* negative emotions. Indeed, there is recent evidence that mothers' emotion socialization behavior is tied to their own emotion regulation abilities (Aydin, 2010; Rhoades et al., 2017). In the present study, we found that mothers' tendency to escalate conflict when angry was linked to more negative ratings of their children in earlier childhood, as well as their children reporting more internalizing and externalizing symptoms in adolescence. Therefore, to promote both constructive conflict resolution and youth adjustment, especially with temperamentally difficult children, programs should target parental emotion regulation, in addition to emotion socialization and youth's emotion regulation (Hajal & Paley, 2020). In fact, children with behavior problems were recently shown to benefit less from parental training programs when their parents were emotionally dysregulated (Zachary et al., 2019). This

underscores the bidirectional and reciprocal nature of parent-child difficulties, and demonstrates the importance of targeting both members of the dyad within prevention and intervention efforts.

Conclusion

Mother-child conflict is an important context in which youth learn to manage affective and interpersonal challenges, yet destructive conflict behavior contributes to socioemotional problems. Some conflict resolution behaviors are known to be more adaptive than others, yet the interplay between behavior and emotion during mother-child conflict is less understood. Results from the present study provide significant advancements to the literature on mother-child conflict, and on the influence of family dynamics on adolescent socioemotional functioning. They provide a detailed overview of the relations between mothers' and children's behavior and the emotions they display, as well as the emotions expressed by the other. They show that conflict behaviors cannot be considered in isolation, as they are continuously influenced by the individuals' own emotions, the emotional expressions of their interaction partners, in addition to both people's individual characteristics. By shedding light on normative mother-child conflict processes, findings provide a comparison for studies of higher-risk or clinical samples. Indeed, the present study also identified longitudinal relations between dyads' responses to emotions and children's prior and subsequent socioemotional functioning. Findings are well-aligned with dynamic systems and transactional perspectives on child development, demonstrating that both mother and child contribute to their dyadic patterns of conflict interaction, which in turn influence youth's functioning in adolescence and beyond. These results can be used to help identify dyads who are developing patterns that pose a risk to children's socioemotional adjustment. As research in this area grows, evidence may be used to help design prevention and

intervention programs aimed at promoting healthy parent-child relationships and socioemotional development.

Table 1

Time-Window Sequential Analysis of Children's and Mothers' Responses to Their Own and Their Partners' Emotions

Target behavior	Child analytic remark		Child avoidance/ withdrawal act		Child conciliatory remark		Child confrontative remark		Child disagreement	
Given emotional expression	Odds	95% CI	Odds	95% CI	Odds	95% CI	Odds	95% CI	Odds	95% CI
Child frown/upset	2.35*	[2.15, 2.57]	0.98	[0.75, 1.28]	0.76*	[0.63, 0.92]	4.71*	[3.09, 7.16]	4.57*	[3.85, 5.44]
Child sad/distressed	1.02	[0.91, 1.14]	1.78*	[1.45, 2.20]	1.46*	[1.26, 1.68]	0.08*	[0.01, 0.56]	0.81	[0.61, 1.06]
Child neutral	1.58*	[1.46, 1.70]	0.62*	[0.50, 0.76]	1.69*	[1.51, 1.89]	0.30*	[0.16, 0.58]	0.87	[0.72, 1.05]
Child smile/positive	1.11*	[1.01, 1.22]	1.97*	[1.64, 2.36]	1.17*	[1.03, 1.34]	0.65	[0.35, 1.19]	1.09	[0.90, 1.25]
Mother frown/upset	1.36*	[1.24, 1.48]	1.12	[0.91, 1.37]	0.95	[0.83, 1.09]	1.98*	[1.28, 3.05]	1.86*	[1.55, 2.23]
Mother sad/distressed	1.19*	[1.04, 1.37]	1.75*	[1.35, 2.28]	1.36*	[1.13, 1.64]	0.15	[0.02, 1.07]	1.12	[0.81, 1.53]
Mother neutral	1.55*	[1.44, 1.67]	0.94	[0.79, 1.12]	1.66*	[1.49, 1.85]	0.47*	[0.28, 0.76]	1.06	[0.89, 1.25]
Mother smile/positive	1.16*	[1.04, 1.29]	1.66*	[1.35, 2.05]	0.94	[0.78, 1.29]	0.31*	[0.11, 0.85]	1.00	[0.78, 1.29]
Target behavior	Mother analytic remark		Mother avoidance/ withdrawal act		Mother conciliatory remark		Mother confrontative remark		Mother disagreement	
Given emotional expression	Odds	95% CI	Odds	95% CI	Odds	95% CI	Odds	95% CI	Odds	95% CI
Mother frown/upset	1.82*	[1.70, 1.95]	0.60*	[0.39, 0.94]	1.14*	[1.02, 1.28]	4.98*	[3.63, 6.85]	2.79*	[2.34, 3.34]
Mother sad/distressed	1.13	[1.00, 1.28]	2.09*	[1.36, 3.21]	1.59*	[1.36, 1.86]	0.36*	[0.13, 0.98]	0.86	[0.60, 1.25]
Mother neutral	1.41*	[1.33, 1.51]	1.10	[0.81, 1.48]	1.92*	[1.75, 2.11]	0.28*	[0.18, 0.45]	0.92	[0.76, 1.10]
Mother smile/positive	1.06	[0.97, 1.17]	2.51*	[1.81, 3.49]	1.03	[0.90, 1.19]	0.59	[0.33, 1.06]	1.25	[0.98, 1.60]
Child frown/upset	1.30*	[1.19, 1.43]	0.76	[0.46, 1.26]	1.22*	[1.07, 1.40]	2.05*	[1.39, 3.02]	2.94*	[2.42, 3.58]
Child sad/distressed	1.18*	[1.08, 1.29]	1.05	[0.68, 1.63]	1.43*	[1.26, 1.62]	1.53*	[1.01, 2.32]	0.67*	[0.49, 0.92]
Child neutral	1.44*	[1.35, 1.54]	1.34	[0.99, 1.82]	1.51*	[1.37, 1.66]	0.58*	[0.39, 0.87]	0.84	[0.69, 1.03]
Child smile/positive	1.21*	[1.12, 1.31]	1.76*	[1.28, 2.43]	1.20*	[1.07, 1.35]	0.89	[0.58, 1.35]	1.35*	[1.10, 1.66]

* $p < .05$

Table 2

Descriptive Statistics for Yule's Q Values for Each Contingency of Interest

Contingency – Yule's Q	*N* (% of sample)	*M*	*SD*
Child frown/upset → child escalate	57 (80.3%)	.24	.75
Child frown/upset → child de-escalate	65 (91.5%)	.22	.24
Child sad/distressed → child escalate	59 (83.1%)	-.45	.70
Child sad/distressed → child de-escalate	68 (95.8%)	-.02	.39
Mother frown/upset → mother escalate	62 (87.3%)	.46	.60
Mother frown/upset → mother de-escalate	71 (100.0%)	.23	.16
Mother sad/distressed → mother escalate	51 (71.8%)	-.50	.65
Mother sad/distressed → mother de-escalate	58 (81.7%)	.03	.39
Child frown/upset → mother escalate	59 (83.1%)	.01	.74
Child frown/upset → mother de-escalate	65 (91.5%)	.07	.21
Child sad/distressed → mother escalate	60 (84.5%)	-.21	.67
Child sad/distressed → mother de-escalate	68 (95.8%)	.12	.18
Mother frown/upset → child escalate	59 (83.1%)	.10	.69
Mother frown/upset → child de-escalate	71 (100.0%)	.11	.21
Mother sad/distressed → child escalate	49 (69.0%)	-.42	.75
Mother sad/distressed → child de-escalate	58 (81.7%)	-.09	.50

Table 3

Bivariate Correlations Between Study Variables

Variable	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Child sex	-.20	-.22*	-.31**	-.12	-.20	.01	-.24*	-.12	.09	.03	-.09	.08	.07	.10	.26*	-.00	-.06
2. Activity level (T1)	-	-.15	.17	-.11	.21	.18	.33**	.29*	-.31*	-.01	-.07	-.10	-.19	.00	-.22	-.38**	.25
3. Internalizing symptoms (T1)		-	.65**	.54**	.40**	.28*	.09	.26	.09	.02	.16	.01	.33*	-.02	.01	-.06	-.02
4. Externalizing symptoms (T1)			-	.35**	.60**	.19	.31*	.21	.01	.01	.17	-.05	.17	.01	-.15	.04	.08
5. Internalizing symptoms (T2)				-	.49**	.20	-.09	.21	-.14	.16	.24	.03	.18	.02	-.17	-.14	.12
6. Externalizing symptoms (T2)					-	.24*	.31**	.33**	-.30*	-.05	.31*	-.20	.14	.10	-.11	-.02	.00
7. Internalizing symptoms (T3)						-	.58*	.40*	.19	-.25	.12	-.28*	.15	-.09	.05	.14	-.33*
8. Externalizing symptoms (T3)							-	.36*	-.03	-.34*	.01	-.42**	-.04	-.32*	-.12	.14	-.27
9. YQ mother FU → mother ESC								-	-.38**	-.10	.13	.00	.21	-.12	-.20	-.27	-.07
10. YQ mother SD → mother ESC									-	.19	-.06	.02	.12	.00	.32*	.65**	-.08
11. YQ mother SD → mother DE										-	-.05	.26	-.13	.14	.04	.10	.61**
12. YQ child FU → child ESC											-	-.07	.17	-.04	-.33*	.05	-.11
13. YQ child SD → child DE												-	.03	.14	-.09	-.08	.29*
14. YQ child SD → mother ESC													-	.10	.15	.15	-.28*
15. YQ child SD → mother DE														-	.22	-.11	.10
16. YQ mother FU → child DE															-	.17	-.07
17. YQ mother SD → child ESC																-	-.30*
18. YQ mother SD → child DE																	-

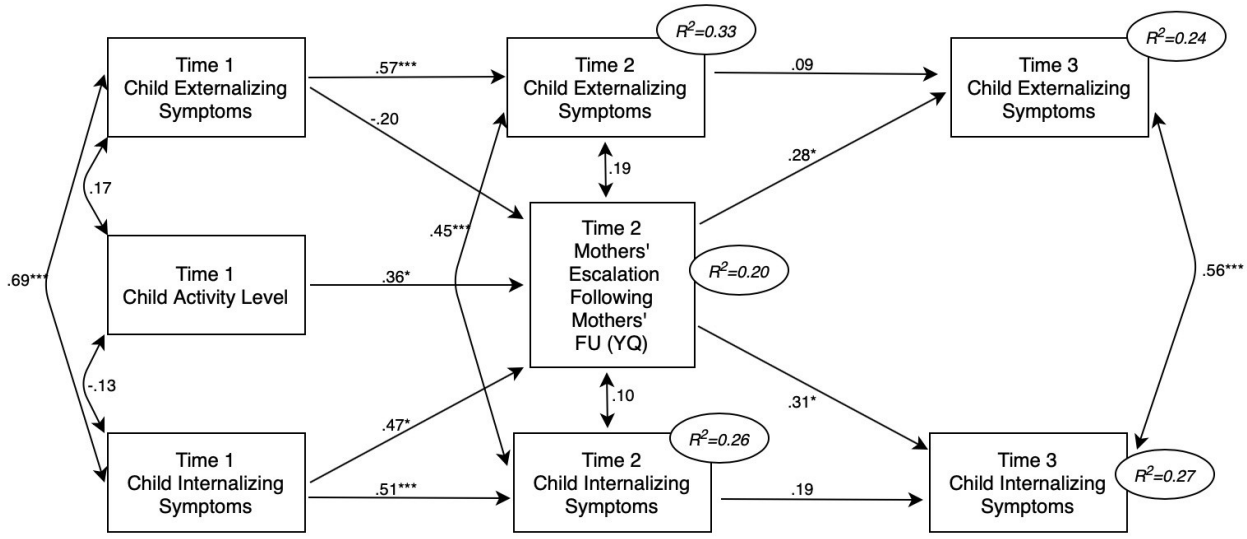
Note. T1= Time 1; T2 = Time 2; T3 = Time 3; YQ = Yule's Q; FU = frown/upset; SD = sad/distressed; ESC = escalate; DE = de-escalate

E.g., YQ mother FU → mother ESC = Yule's Q for tendency of mother to escalate in response to maternal expression of frown/upset affect.

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

Figure 1

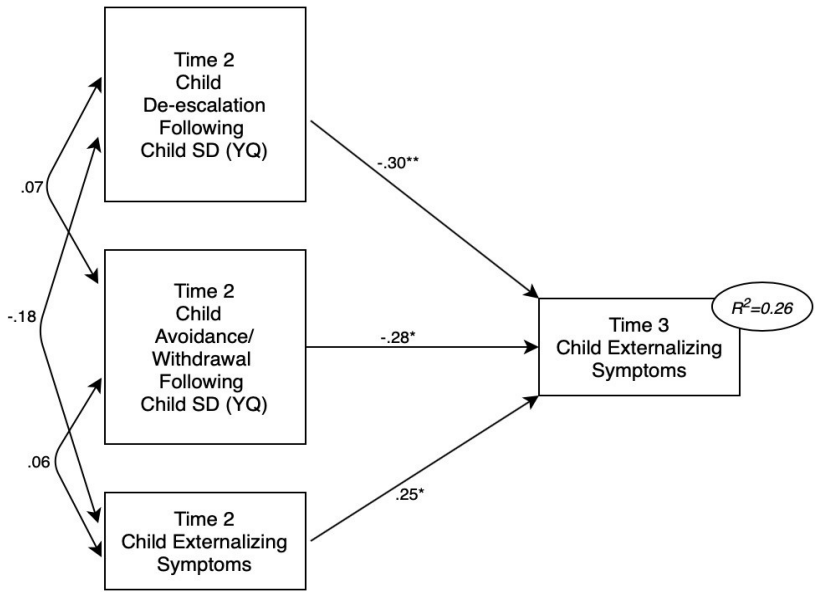
Longitudinal Associations Between Children's Activity Level, Mothers' Escalation Responses to Frown/Upset Affect and Children's Internalizing and Externalizing Symptoms



Note. N = 94. YQ = Yule's Q. Stability paths from Time 1 to Time 3 were specified but were not statistically significant and are not depicted.
*p < .05, **p < .01, ***p < .001.

Figure 2

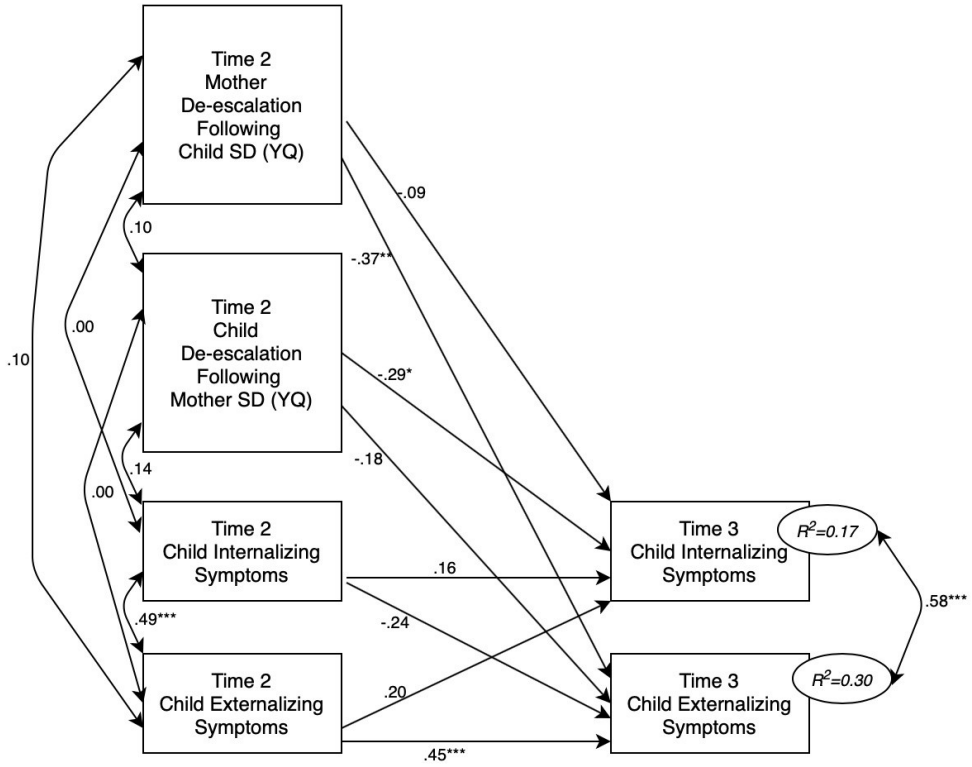
Longitudinal Associations Between Children's De-Escalation and Avoidance/Withdrawal Responses to Sad/Distressed Affect and Their Subsequent Externalizing Symptoms



Note. $N = 94$. YQ = Yule's Q.
*$p < .05$. **$p < .01$.

Figure 3

Longitudinal Associations Between Individuals' De-Escalation Responses to Their Partners' Sad/Distressed Affect and Children's Subsequent Internalizing and Externalizing Symptoms



Note. $N = 94$. YQ = Yule's Q.
$^*p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Chapter 3: Transition Statement Between Studies 1 and 2

Results from Study 1 contributed to the literature on family conflict by demonstrating temporal relations between the behavior of mothers and preadolescents during observed conflict discussions and both individuals' emotional expressions. Using a microscopic approach, results extended previous research on negative emotions, showing that during mother-child conflict, anger motivates behaviors that further individuals' personal goals, whereas sadness pushes individuals to attempt to spare or repair the relationship. Further, the results clarified the understudied influence of neutral and positive emotions during conflict, as well as the emotional expressions of individuals' interaction partners. Finally, results revealed the significance of mothers' and preadolescents' responses to negative emotions during conflict, by demonstrating that individual differences are tied to children's socioemotional development. Specifically, findings illustrated that both mothers' and children's ability to de-escalate, rather than escalate conflict following negative emotions is linked to youths' socioemotional adjustment (i.e., activity level and internalizing and externalizing symptoms) during middle childhood and adolescence. However, it is important to note that Study 1 was limited to conflict in one type of family relationship during preadolescence.

Study 2 built on results from Study 1 by examining the interconnections between emotion and behavior during dyadic conflict between early adolescents and *two* of their family members (i.e., their siblings and mothers). Siblings are chronically understudied despite their major presence in youths' lives and the fact that conflict is often central to their relationships. Thus, using a parallel approach to Study 1, Study 2 assessed similarities and differences between family members' behaviors during conflict across these two types of conflict, again in relation to the emotional expressions of both partners. In addition, by studying mother-child conflict during

early adolescence, Study 2 complemented Study 1 by enabling the comparison of mother-child conflict before and after a significant stage in mother-child relationships, namely the transition to adolescence. Finally, Study 2 was also designed to ascertain whether there are within-family and across-context similarities in individuals' responses to negative emotions. Given evidence from Study 1 that responses to negative emotions predict youths' socioemotional adjustment, as a next step, it was important to investigate whether youths' responses to negative emotions are linked to the overall family context. According to family systems theory, individual family members and dyadic subsystems mutually influence once another (Minuchin, 1988, 2001). Thus, Study 2 sought to investigate interconnections between family members' behaviors, which could serve as evidence that youth potentially learn these behaviors through their interactions with their family members.

Chapter 4: Dissertation Study 2

Conflict Resolution and Emotional Expression in Sibling and Mother-Adolescent Dyads: Within-Family and Across-Context Similarities

Saskia J. Ferrar, Dale M. Stack, Lisa A. Serbin

Department of Psychology
Centre for Research in Human Development
Concordia University

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Correspondence to: Saskia J. Ferrar or Dale. M. Stack, Department of Psychology, Concordia University, Centre for Research in Human Development, 7141 Sherbrooke St. West, PY-170, Montreal, Quebec, Canada H4B 1R6, Telephone: 514-848-2424
Email: saskia.ferrar@gmail.com or dale.stack@concordia.ca

Abstract

Early adolescents (aged 12 to 15 years) were observed during dyadic conflict discussions with their siblings (n = 23) and their mothers (n = 32). The verbal conflict behaviors and emotional expressions of both individuals in each conflict discussion were coded. Sequential analyses were used to describe temporal associations between individuals' emotional expressions and their own and their partners' verbal conflict behaviors. In addition, within-family and across-context similarities in behavior were examined. Results revealed that while many links between emotion and behavior were consistent with previous research (e.g., attack/assert when angry, withdraw/concede when sad), several differences in behavior emerged depending on the relationship (sibling versus mother-adolescent) and position in the family (e.g., youth, mother). Further, many within-family similarities were observed in responses to emotion, while adolescents showed few similarities in their behavior across contexts. Results are discussed in relation to the developmental context of early adolescence and family systems theory.

Siblings form some of the most enduring and influential bonds, yet these continue to be understudied relative to other relationships. Sibling relationships are uniquely emotional, as they are characterized by both strong love and support as well as great conflict and hostility. Early adolescents' ability to manage these emotions and resolve conflict with their siblings contributes to the quality of their relationships and their socioemotional adjustment (Buist et al., 2013; Campione-Barr et al., 2014). However, little is known as to how early adolescents and their siblings behave in relation to emotions generated by conflict, as well as how these patterns of behavior develop. According to family systems theory, relationships within the family are interconnected; as such, patterns of behavior may be similar across early adolescents' conflicts with their siblings and with their mothers (Minuchin, 1988, 2001; Noller, 2005). In the present study, behaviors and emotional expressions were observed during dyadic conflict between early adolescents and their siblings and mothers. A microscopic approach was used to assess early adolescents' and their family members' responses to their own and each other's emotions during conflict. Within-family and across-context similarities in behavior were also assessed. Results provide a detailed picture of the links between emotion and behavior of early adolescents during sibling conflict, as well as a deeper understanding of the interconnections between family relationships.

Siblings have a unique influence on youths' social, emotional, and cognitive development (Dirks et al., 2015). In ways that differ from parents and peers, they provide "support, guidance, and companionship, as well as intense emotional experiences [that] range from intense love to intense hostility" (Noller, 2005, p. 2). Unsurprisingly, then, sibling relationship quality predicts internalizing and externalizing problems across childhood and adolescence, above and beyond parent-child relationships (Solmeyer et al., 2014; Whiteman et al., 2015). A meta-analysis found

that while conflict, warmth, and parental differential treatment all predicted internalizing and externalizing problems, frequency and intensity of *conflict* was the strongest predictor (Buist et al., 2013). As the transition to adolescence is a period of heightened risk for psychopathology (Kessler et al., 2005), sibling conflict during this period warrants greater attention.

Conflict in Sibling Relationships

While intense conflict is predictive of maladjustment, it is also a normative part of sibling relationships (Campione-Barr & Killoren, 2019). Siblings are not chosen, they spend the most time together, and their relationships are characterized by uninhibited affect and behavior. As a result, they are often the most conflictual of all youths' relationships (Furman & Burhmester, 1985; Punch, 2008). Early adolescence is marked by particularly frequent sibling conflict, as youths' need for autonomy grows and must be negotiated within the contexts of shared space and resources, as well as increasingly egalitarian sibling relationships (Abuhatoum et al., 2020; Davies et al., 2019). That said, not all forms of conflict are equal. Constructive conflict is characterized by attempts to reason, understand the other's perspective, and generate solutions, whereas destructive conflict involves coercion, dismissal of the other's perspective, and escalating levels of negative affect (Deutsch, 1973). While much of the sibling literature has measured conflict as a single, negative phenomenon, studies that consider this distinction show that destructive conflict is uniquely tied to adjustment problems and poor relationship quality (Killoren et al., 2008; Recchia & Howe, 2009). This is likely because destructive behaviors are reinforced within the dyad over time, and youth who develop these maladaptive patterns with their siblings miss out on opportunities afforded by constructive conflict (Stocker et al., 2002).

Conversely, constructive conflict resolution with siblings teaches youth cooperative and prosocial behavior (Lindell et al., 2014; Noller, 2005). Conflicts in which siblings attempt to

reason, understand the other's perspective, provide support, and problem-solve result in more compromises and are associated with greater intimacy and warmth (Killoren et al., 2008; Ross et al., 2006). As sibling relationships are generally permanent, they serve as a safe practice ground in which to engage in conflict without risking relationship dissolution (Recchia et al., 2013). Given that siblings share power more equally than in parent-child relationships, their conflict also allows them to practice resolution tactics that are more applicable to peer relations (DeHart, 1999). Thus, intense conflict with siblings in preadolescence is associated with peer difficulties in adolescence (Bank et al., 2004). In addition, adults report using similar strategies in conflict with romantic partners as they used with their siblings in adolescence (Shalash et al., 2013). Understanding the processes involved in sibling conflict is therefore an important avenue of research, as behaviors may generalize to relationships outside the family.

To date, the adolescent sibling conflict literature has relied almost exclusively on self- and parent-reports. This may partially explain the emphasis on the negative effects of conflict, as questionnaire measures tend to focus on the frequency and intensity of disagreements (e.g., Buist & Vermande, 2014; Solmeyer et al., 2014). Observational studies offer a richer account of *how* disagreements are resolved, and have been useful in describing sibling conflict in earlier childhood. For example, children have been shown to develop more sophisticated conflict behaviors from early to middle childhood (Abuhatoum et al., 2020). Early adolescence is an important developmental period in which to observe sibling interactions, given the high rates of conflict and the fact that strategies likely change as youths' perspective-taking and emotion regulation abilities continue to advance (Humphrey & Dumontheil, 2016; Morris et al., 2017). The only observational study of adolescent sibling conflict that we know of supported the idea that destructive sibling conflict alone predicts maladaptive outcomes (Campione-Barr et al.,

2014). This highlights the need for further observational research, in order to expand our understanding of the processes involved in destructive and constructive sibling conflict. The present study addressed these limitations, using sequential analyses of naturalistic conflict discussions between early adolescents and their siblings to uncover how the behaviors of both siblings unfold in relation with the emotional context of the interaction.

Emotion in Family Conflict

The emotional climate of conflict interactions, including the affect expressed by both individuals, has an important influence on youth behavior. In an observational study of sibling conflict in middle childhood, Recchia and Howe (2010) found that children who believed that they alone felt angry during conflict with their siblings were less likely to compromise when attempting to resolve the conflict, compared to those who perceived that both they and their siblings felt angry. In addition, compromises were more likely when children reported sadness. These findings are in line with goal-based theories of emotion, that associate anger with a desire to reach one's personal goals, which are perceived to be attainable. Conversely, sadness is associated with the abandonment of unattainable personal goals, and a refocus on attempting to repair damage to the relationship (Raffaelli, 1992; Sanford, 2007).

Recchia and Howe (2010) identified key links between emotion and behavior during sibling conflict. However, they used retrospective reporting of children's emotional experiences, which do not take into account how moment-to-moment changes in affect can influence changes in behavior. In an observational study of mother-preadolescent conflict, Ferrar et al. (2020) used sequential analysis to identify how emotions and behaviors of mothers and children were linked at a microscopic level. They found that anger predicted increased destructive behaviors and assertive communication immediately after, whereas sadness was associated with more

avoidance and withdrawal, as well as more conciliatory behavior. They also showed that neutral affect predicted the most constructive conflict behavior, suggesting that regulating negative emotions facilitates effective conflict resolution (Ferrar et al., 2020; Gottman, 1993). Positive affect predicted both more avoidance (e.g., joking, off-topic discussion), and in children, constructive behavior. Finally, they reported that children and mothers responded in similar ways to each other's emotions as they did to their own, supporting Recchia and Howe (2010)'s findings which suggested that interpersonal partners' emotions also motivate behavior. Given that significant changes occur to youths' relationships and socioemotional abilities across childhood, applying this methodology to conflict in early adolescence is an essential step, to identify how moment-to-moment changes in both individuals' emotions predict behavior across developmental periods and relationships. Sequential analysis of observed behaviors is an ideal method, as it allows for the measurement of links between emotion and behavior at a microscopic level, and can be applied to a sample of any size (Yoder & Tapp, 2004).

Identifying moment-to-moment associations between emotion and behavior in early adolescent *sibling* conflict is especially critical, as sibling relationships are unique in several ways. First, unlike mother-child relationships, sibships are relatively egalitarian, especially by adolescence, when imbalances in knowledge and experience decrease (Lindell & Campione-Barr, 2017). Parent-child conflict usually ends in win-loss outcomes favoring the parent, whereas sibling conflict often results in standoffs, with youth reporting high rates of passive strategies such as avoidance and withdrawal (Raffaelli, 1992; Recchia et al., 2010). Second, sibling relationships evoke particularly intense and wide-ranging emotions, which could provoke stronger or more variable reactions to one another (Persram et al., 2019; Shortt & Gottman, 1997). Third, their relationships are especially uninhibited, with youth being less driven to

regulate themselves when interacting with their siblings, compared to with their parents or peers (Punch, 2008). This includes being less concerned about hurting their siblings or temporarily damaging their relationship (Dirks et al., 2015; Recchia et al., 2013). Given the particularities of sibling relationships, a deeper understanding of how youth behave in relation to their own and their siblings' emotions during conflict is needed.

The Sibling Relationship as Part of the Larger Family

Beyond illustrating how early adolescents as a group respond to emotion during sibling conflict, a final question concerns how individual youth *learn* these behavioral patterns. According to family systems theory, dyadic subsystems within the family (e.g., the sibling subsystem, the mother-child subsystem) are interdependent, mutually influencing one another over time (Minuchin, 1988, 2001). Still, parent-child and sibling relationships are most often studied separately. There has been a call for more research to consider both subsystems in conjunction, in order to better understand their interrelations (Bank et al., 2004; Buist & Vermande, 2014). While it is recognized that subsystems influence one other, the ways in which this occurs is less clear. On the one hand, there is evidence of *compensation*: for instance, close sibling relationships are protective in the context of poor parenting or interparental conflict (Davies et al., 2019; Whiteman et al., 2011). Conversely, studies have found positive associations between relationship quality in parent-child and sibling relationships, providing support instead for *congruence* across family relationships (Jenkins et al., 2012; Stormshak et al., 2009). These results are often understood in terms of the "spillover" hypothesis, namely, that emotions experienced in one subsystem spread to others (Engfer, 1988; Low et al., 2019).

Studies of conflict behavior specifically have found greater evidence for congruence, rather than compensation (Buist et al., 2011; Noller, 2005). Adolescents report similar

communication patterns in conflicts with their parents as with their siblings (Noller et al., 2000). Likewise, preadolescents and their family members report similar use of constructive and destructive conflict tactics across all subsystems (i.e., parent-child, sibling and marital; Rinaldi & Howe, 2003). Noller and colleagues have termed this phenomenon "interaction-based transmission," arguing that children learn patterns of conflict behavior through interactions with their parents, and then carry over these behaviors to their conflicts with their siblings (Noller, 2005; Noller et al., 2000). The idea of congruence in conflict behavior is in line with dynamic systems and transactional perspectives, which posit that children learn behavioral patterns through interactions with their family members, and these behavioral patterns influence their functioning in other settings (Hollenstein, 2013; Sameroff, 2009). In the context of destructive conflict, this could involve a spillover of negative affect, reinforcement of maladaptive tactics, as well as a lack of opportunity to develop more constructive conflict resolution patterns.

As mentioned earlier, studies of sibling conflict in adolescence have relied almost exclusively on questionnaires, and this includes those that found similarities in conflict behavior across family subsystems (Noller et al., 2000; Rinaldi & Howe, 2003). The present study therefore assessed whether family members showed similarities in their observed responses to negative emotions during conflict, as well as whether early adolescents demonstrated similar behaviors across contexts (i.e., sibling and mother-adolescent conflicts). The focus on responses to *negative* emotions in evaluating similarities was informed by evidence that negative interpersonal interactions have greater effects than positive interactions (Baumeister et al., 2001). It has also been argued that the management of negative emotions during conflict is especially important (Shortt & Gottman, 1997). First, conflict almost always necessitates the communication of a negative emotion or attitude, given that opposition is inherent to conflict

(Shantz, 1987). Second, uninhibited, reciprocal and escalating negative affect are characteristic of destructive conflict, which is linked with individual maladjustment and relationship distress (Killoren et al., 2008, Ross et al., 2006). Indeed, past research has highlighted the particular role of destructive conflict between siblings in adolescent outcomes (Campione-Barr et al., 2014; Solmeyer et al., 2014). Thus, we were particularly interested in assessing evidence for within-family transmission of behavioral responses to negative emotions.

The Present Study

In the present study, the emotional expressions and verbal behaviors of early adolescents (referred to as "focal adolescents") and their siblings and mothers were observed during conflict discussions. The first objective was to identify and compare the links between emotion and behavior in sibling and mother-adolescent conflict. Specifically, the temporal relationships between emotional expressions (i.e., sad/distressed, frowning/upset, neutral, and positive affect) and individuals' own and their partners' subsequent verbal conflict behaviors were assessed separately for: 1) focal adolescents interacting with their siblings, 2) sibling children interacting with the focal adolescents, 3) focal adolescents interacting with their mothers, and 4) mothers interacting with the focal adolescents. It was expected that links between emotions and behaviors documented in other relationships and during other developmental periods (Recchia & Howe, 2010; Ferrar et al., 2020) would extend to individuals' responses to their own emotions during sibling and mother-child conflict in early adolescence. That is, it was hypothesized that participants would use more destructive (i.e., escalating) and assertive behavior following angry affect (displayed by frowning/upset expressions); use more conciliatory and avoidant behavior following sad affect; use more constructive (i.e., de-escalating) behavior following neutral affect; and use more constructive and avoidant behavior following positive affect. Following their

partners' affect, it was hypothesized that mothers and adolescents would show similar, yet weaker associations between affect and behavior. No hypotheses were made with regards to youths' responses to their siblings' affect, given the paucity of literature on this subject.

The second objective was to assess within-family and across-context similarities in responses to negative (i.e., angry and sad) affect, given the particular role of negative emotion regulation during conflict (Shortt & Gottman, 1997; Solmeyer et al., 2014). Specifically, the relationships between 1) the behavior of individuals within the same family, and 2) the behavior of focal adolescents across conflict contexts (i.e., sibling and mother-adolescent conflict) were assessed. As self-report studies of family conflict have found congruence between tactics used across family subsystems (Noller et al., 2000; Rinaldi & Howe, 2003), positive associations were expected between equivalent behaviors (e.g., tendency to escalate conflict following angry affect) of family members and within adolescents across contexts.

Method

Participants

The participants in the present study were a subset of the Concordia Longitudinal Research Project (Concordia Project; Schwartzman et al., 1985; Serbin et al., 1998; Stack et al., 2017), a prospective, longitudinal study of the intergenerational transfer of socioeconomic and psychosocial risk. The focus of the current study was a subsample of the second generation of participants, who completed videotaped interactions with their mothers and one of their siblings in early adolescence. Thirty-two offspring of original Concordia Project participants, aged 12 to 15 years, participated (i.e., "focal adolescents"). There were 22 girls and 10 boys, with a mean age of 13.87 years (SD = 0.84). Their mothers had a mean age of 42.64 years (SD = 3.41) and a mean level of education of 13.11 years (i.e., two years post-secondary; SD = 2.61). All focal

adolescents were observed with their mothers, and those with a sibling in the home were also observed in interaction with a sibling (*n* = 23; 14 girls and 9 boys). When they lived with more than one sibling, the sibling who was younger and/or closest in age was selected. The "sibling children" were aged 8 to 20 years (*M* = 14.10, *SD* = 3.88), and were 13 girls and 10 boys. Of the 23 sibling pairs, 11 were mixed-gender, 8 were girl-girl, and 4 were boy-boy. The age difference between the siblings ranged from 0 (one set of twins) to 5.82 years (*M* = 3.29, *SD* = 1.68). Thus, while the sibling children had a wider age range than focal adolescents, the age gap between siblings was minimized in the selection of participating siblings when possible.

Procedure

Ethics approval was granted by the University's human research ethics review board prior to data collection. Families were contacted by telephone, and verbal consent was obtained at this time. Standard home visits were conducted by a trained research assistant. After informed written consent was obtained, sibling dyads and mother-adolescent dyads engaged in a number of tasks. In the present study, only the sibling conflict task and the mother-adolescent conflict task were used. Participants were given lists of 10 topics that are common sources of conflict between siblings (e.g., respect of privacy, sharing of computer, chore sharing) and 18 topics that are common sources of conflict between parents and adolescents (e.g., chores, respecting rules, choice of friends). In each case, both individuals rated separately, on a 5-point Likert scale, the extent to which each topic was a source of disagreement between them (1 = *never* to 5 = *always)*. For the sibling conflict task, the experimenter selected the topic rated highest by both siblings, and dyads were instructed to discuss the topic for six minutes while videotaped. For the mother-adolescent conflict task, the experimenter selected two topics rated highest by both mother and adolescent, and dyads were instructed to discuss each topic for six minutes while videotaped. In

the present study, only one mother-adolescent conflict discussion (the discussion of the higher-rated topic) was used. Dyads who expressed no longer being able to discuss their topic before the task elapsed (sibling dyads: n = 12, 52.17%; mother-adolescent dyads: n = 6, 18.75%) were given their next highest-rated topic. Three sibling dyads (13.04%) discussed three topics. None of the mother-adolescent dyads discussed more than two topics.

Measures

Demographic Information

Participant age, sex, and maternal education was collected using the Demographic Information Questionnaire, which has been used effectively in past Concordia Project studies (e.g., Briscoe al., 2019).

Observational Coding

Observational coding was conducted with Mangold INTERACT 18. The same two coding systems were used to code the sibling conflict task and the mother-adolescent conflict task. Both individuals in each task were coded continuously with each coding system. Two trained researchers independently coded 30% of each sample (mother-adolescent and sibling). Cohen's kappa values ranged from substantial to high on both coding systems, for both samples (.68 to .87; see Appendix E). Raters were blind to dyads' scores on all other measures, and one coder on each coding system was blind to hypotheses. The two coding systems had different primary and secondary coders. The order in which participants were coded was counterbalanced.

The Conflict Behavior Coding System assessed participants' verbal conflict behaviors. Behaviors were coded continuously for the length of the conflict task. The coding system was inspired by well-validated systems (e.g., Gottman, 1979; Sillars, 1986), and was adapted to suit sibling and mother-child interactions as well as a mutually exclusive and exhaustive format. The

six codes were: listening (silent and attending to speaking partner), analytic remarks (providing or requesting information in a non-confrontational manner), conciliatory remarks (expressing a desire to resolve the conflict in a mutually satisfactory way or by prioritizing partner's desires), disagreement (disagreement with or rejection of the partner's argument), confrontative remarks (attempts to achieve one's own goals or to thwart partner's goals with hostile or argumentative intent), and avoidance/withdrawal acts (behaviors that minimize discussion of the conflict).

The Emotion Behavior Coding System – Adapted was used to code nonverbal emotional expressions. The coding system was adapted from the Emotion Behavior Coding System (Enns & Stack, 2007), which was designed based on existing literature (e.g., Batum & Yagmurlu, 2007; Perez & Riggio, 2003). Additional specification of operational definitions were made based on the coding system used in Moed et al. (2015), and codes were adapted to be mutually exclusive and exhaustive. Emotions were coded continuously, as one of four codes: smile/positive (SP), frown/upset (FU; i.e., angry), sad/distressed (SD), and neutral (NE) affect. Codes were assigned primarily based on facial expression, with tone of voice and body language being used when clarification was necessary (e.g., to differentiate a sarcastic smile from positive affect).

Plan of Analysis

Objective 1

Time-window sequential analysis was conducted using *Generalized Sequential Querier 5.1.23* (Bakeman & Quera, 2016), respecting accepted procedures (Bakeman & Quera, 2011; Yoder & Tapp, 2004). Temporal relationships between emotional expressions and individuals' own and their partners' subsequent verbal conflict behaviors were assessed separately for: 1) focal adolescents interacting with their siblings, 2) sibling children interacting with focal adolescents, 3) focal adolescents interacting with their mothers, and 4) mothers interacting with

focal adolescents. Time windows were specified as 5-second intervals after the onset of specific emotional expressions ("given" behaviors). Conflict behaviors ("targets") that occurred within those windows were tallied for ensuing analyses. Pooled odds ratios were calculated for each contingency with a base rate above the recommended cut-off 5 (Bakeman & Quera, 2011). Odds ratios with 95% confidence intervals that did not include 1 were considered statistically significant at the .05 level. Statistically significant odds above 1 indicate that the target is more likely to occur after the given behavior; odds ratios below 1 indicate that the target is less likely to occur after the given behavior.

Objective 2

To assess within-family and across-context relations between responses to negative emotions, target behaviors were collapsed into three categories: escalate (disagreement or confrontative remarks), de-escalate (analytic or conciliatory remarks) and avoid/withdraw. Yule's Q values were computed for each dyad, for each contingency of interest. Based on hypotheses, contingencies of interest were the temporal relationships between each negative emotional expression (i.e., FU and SD) and each category of behavior (escalate, de-escalate, and avoid/withdraw).Yule's Q is an effect size that ranges from -1 to +1, with 0 indicating no effect, negative values indicating a negative relationship, and positive values indicating a positive relationship. For example, if a dyad's Yule's Q for adolescent de-escalating following sibling SD is 0.6, the adolescent is more likely to use de-escalating behaviors following her sibling's expression of SD. Yule's Qs are less skewed than odds ratios, and can be used as continuous variables in subsequent analyses (Bakeman & Quera, 2011). They can only be calculated if both the given and the target behavior occurred within the dyad's interaction. Descriptive statistics for Yule's Q variables are shown in Appendix F. Partial correlations were then used to assess 1)

relations between Yule's Qs pertaining to equivalent responses to emotions of participants within the same family, and 2) relations between Yule's Qs pertaining to equivalent responses to emotions of focal adolescents in the two conflict contexts. Focal adolescent age and sex were entered as controls in all analyses, and sibling child age and sex were also controlled in analyses involving the sibling conflict task.

Results

Objective 1

Results of time-window sequential analyses assessing temporal relationships between 1) adolescents' and their siblings' affect, and their own and their siblings' verbal conflict behaviors, and 2) adolescents' and their mothers' affect, and their own and their partners' verbal conflict behaviors, are shown in Tables 1 and 2, respectively. Three contingencies in the mother-adolescent task (*adolescent SD → adolescent confrontative remark, mother NE → adolescent confrontative remark,* and *adolescent SD → mother confrontative remark*) were excluded as they did not meet the minimum base rate of 5 (Bakeman & Quera, 2011).

Children's Responses to Their Own Emotions During Sibling Conflict

Focal adolescents and sibling children responded in similar ways to their own emotions during sibling conflict. Following FU, they were more likely to make confrontative remarks, disagree, and make analytic remarks, and were less likely to avoid/withdraw. Following SD, they avoided/withdrew more, and sibling children made more conciliatory remarks. Following their NE, both groups made more conciliatory remarks. Focal adolescents also made more analytic remarks and disagreed less. Following their SP, both groups avoided/withdrew more. Focal adolescents also made fewer analytic remarks, and siblings were less likely to disagree.

Children's Responses to Their Siblings' Emotions

Both similarities and differences were seen in children's responses to their siblings' emotions. Following their siblings' FU, both groups were more likely to disagree. Sibling children also made more confrontative remarks following focal adolescents' FU, as well as following focal adolescents' SD. Following their siblings' NE, both groups were more likely to make analytic remarks and avoid/withdraw. Focal adolescents also made more conciliatory remarks. Finally, following their siblings' SP, focal adolescents made more analytic remarks and disagreed less.

Adolescents' and Mothers' Responses to Their Own Emotions During Mother-Child Conflict

During mother-adolescent conflict, both groups were more likely to disagree and make confrontative and analytic remarks, and were less likely to avoid/withdraw following their own FU. Adolescents also made fewer conciliatory remarks following their FU. Following SD, both adolescents and mothers made more conciliatory remarks and disagreed less. Adolescents also avoided/withdrew more and made fewer analytic remarks. The reverse was true of mothers, who made more analytic remarks and avoided/withdrew less following their SD. Following their NE, both mothers and adolescents disagreed less. Adolescents also avoided/withdrew less, whereas mothers avoided/withdrew more. Finally, following their SP, mothers and adolescents disagreed less. Mothers also made fewer analytic remarks and avoided/withdrew more.

Adolescents' and Mother's Responses to Their Partners' Emotions

Following their partners' FU, both mothers and adolescents disagreed more. Adolescents also made more confrontative remarks and avoided/withdrew less following their mothers' FU, whereas mothers avoided/withdrew more following adolescents' FU. Following their partners' SD, both mothers and adolescents disagreed less. Adolescents also avoided/withdrew more,

whereas mothers made more analytic remarks. Following their partners' NE, both groups made more analytic remarks. Adolescents also avoided/withdrew more and disagreed less following their mothers' NE. Mothers made more conciliatory remarks following adolescents' NE.

Objective 2

As stated above, Yule's Q values could only be calculated if both the given and the target behavior occurred within the dyad's interaction. *N*s of each Yule's Q, along with means and standard deviations, are shown in Appendix F. Eight contingencies (*mother FU → mother avoid/withdraw, mother SD → mother avoid/withdraw, adolescent FU → mother avoid/withdraw, adolescent SD → mother avoid/withdraw*, *focal adolescent SD → focal adolescent avoid/withdraw, sibling child SD → sibling child avoid/withdraw, focal adolescent SD → sibling child avoid/withdraw, sibling child SD → focal adolescent avoid/withdraw*) were excluded from analyses because Yule's Q values could not be computed for >50% of the sample. Prior to conducting correlational analyses, the normality of the distribution of each Yule's Q variable was assessed and outliers were converted to the most extreme non-outlier in the dataset (Tabachnick & Fidell, 2013). Some variables remained significantly skewed (see Appendix G). However, this was expected given that many of these behaviors, such as participants appearing sad/distressed or avoiding/withdrawing, were naturally infrequent. As such, the data was not transformed. Results of all partial correlations are presented in Tables 3 to 7. Only statistically significant hypothesized correlations are described below.

Within-Family Similarity in Responses to Frown/Upset Affect

There was a pattern of statistically significant associations that was consistent with the hypothesis that family members would show similarities in their verbal behaviors following the expression of FU. Table 3 shows results concerning the tendency to escalate following FU. In

mother-adolescent conflict, adolescents' tendency to escalate following their own FU correlated positively with mothers' escalation following their adolescents' FU ($r = .85$, $p < .001$). Similarly, mothers' tendency to escalate following their own FU correlated positively with adolescents' escalation following their mothers' FU ($r = .49$, $p < .01$). Focal adolescents' tendency to escalate following their own FU in the sibling conflict was positively associated with mothers' escalation following their own FU ($r = .48$, $p < .05$), as well as with mothers' escalation following adolescents' FU ($r = .45$, $p < .05$). Two trends emerged in the sibling task: 1) focal adolescents' tendency to escalate following their own FU correlated positively with their siblings' escalation following focal adolescents' FU ($r = .39$, $p < .10$), and 2) sibling children's tendency to escalate following their own FU correlated positively with focal adolescents' escalation following siblings' FU ($r = .38$, $p < .10$).

Family members also showed similarities in de-escalation following FU (see Table 4). In the mother-adolescent conflict, maternal de-escalation following their own FU was positively correlated with adolescents' de-escalation following their own FU ($r = .35$, $p < .05$). There was a trend in the association between adolescent de-escalation following their own FU and maternal de-escalation following their adolescents' FU ($r = .31$, $p < .10$). In the sibling task, focal adolescents' de-escalation following their own FU correlated positively with siblings' de-escalation following their own FU ($r = .58$, $p < .05$). Siblings' de-escalation following their own FU was also associated with their de-escalation following focal adolescents' FU ($r = .56$, $p < .05$), as well as with mothers' de-escalation following focal adolescents' FU ($r = .37$, $p < .10$).

Further evidence of reciprocal exchanges was seen in avoid/withdraw responses to FU during sibling conflict (see Table 5). Focal adolescents' avoid/withdraw responses to their own FU was associated with sibling avoidance/withdrawal following focal adolescents' FU ($r = .49$, p

< .05). The reverse was also true: siblings' avoid/withdraw responses to their own FU was associated with focal adolescent avoidance/withdrawal following siblings' FU ($r = .70$, $p < .01$).

Within-Family Similarity in Responses to Sad/Distressed Affect

There was also a pattern of associations that was in line with the hypothesis that family members would behave similarly following SD. Results pertaining to escalation following SD again suggested a pattern of reciprocal exchanges (see Table 6). During mother-adolescent conflict, adolescent escalation following their own SD correlated positively with mothers' escalation following adolescents' SD ($r = .64$, $p < .001$). The reverse was also true: mothers' escalation following their own SD correlated with adolescents' escalation following mothers' SD ($r = .65$, $p < .001$). In the sibling task, sibling escalation following their own SD was positively correlated with focal adolescents' escalation following siblings' SD ($r = .60$, $p < .05$). There was also similarity between siblings, across tasks: focal adolescent escalation following their own SD during mother-adolescent conflict was associated with sibling escalation following focal adolescents' SD ($r = .91$, $p < .01$).

Family members also showed similarities in de-escalation following SD (see Table 7). During mother-adolescent conflict, adolescents' de-escalation following their own SD correlated positively with mothers' de-escalation following adolescents' SD ($r = .37$, $p < .05$). There was also a trend in the association between mothers' de-escalation following their adolescents' SD and their de-escalation following their own SD ($r = .27$, $p < .10$). Across tasks, adolescents' de-escalation following their mothers' SD was positively correlated with their siblings' de-escalation following their own SD ($r = .84$, $p < .01$).

Finally, there was evidence of within-person similarity in youths' avoidance/withdrawal responses to SD in the mother-adolescent task. Adolescents' avoidance/withdrawal following

their own SD was associated with their tendency to avoid/withdraw following their mothers' SD ($r = .83$, $p < .001$).

Across-Context Similarities in Focal Adolescents' Responses to Negative Affect

There was some limited support for the hypothesis that focal adolescents would respond similarly to negative affect in the two conflicts (i.e., mother-adolescent and sibling conflicts). First, adolescents' escalation following their mothers' SD and their escalation in response to their siblings' SD were positively correlated ($r = .78$, $p < .05$). Second, their escalation following their mothers' FU and their escalation following their own FU during the sibling conflict were positively correlated ($r = .71$, $p < .001$). Third, their avoidance/withdrawal following their mothers' FU was associated with their avoidance/withdrawal following their own FU during sibling conflict ($r = .74$, $p < .01$).

Discussion

The present study observed temporal relations between emotion and verbal behavior during early adolescents' conflict with their siblings and mothers. Results identified how, overall, adolescents, siblings, and mothers behave in response to their own and their partners' emotions. As well as supporting goal-based theories of emotion (Sanford, 2007; Stein & Levine, 1989), results pinpoint several aspects of conflict that appear unique to each type of relationship during early adolescence. In addition, within-family and across-context similarities in responses to negative emotions were assessed. Findings provided evidence of congruence, suggesting that patterns of conflict behavior are shared within families (Buist et al., 2011; Noller, 2005).

Youth Behavior Following Their Own Affect During Sibling Conflict

This was the first study to identify moment-to-moment links between emotional expressions and behavior during sibling conflict. As hypothesized, youth behavior following

their *own* negative affect was largely in line with goal-based theories of emotions (Sanford, 2007). First, youth used more escalating behavior (disagreement, confrontation) and analytic remarks following angry (frown/upset) affect. Anger is thought to motivate people to reach their personal goals, through both attack and assertive communication (Canary et al., 1998). It mobilizes them *towards* conflict, which explains why youth were also less likely to avoid or withdraw. This finding is consistent with Ferrar et al.'s (2020) study of mother-preadolescent conflict, suggesting that anger reduces avoidance across age groups and family relationships. Conversely, following sad affect, youth were more likely to avoid. Sadness is believed to motivate withdrawal from personal goals, replacing them with a desire to end conflict and repair relationship damage (Recchia & Howe, 2010; Stein & Levine, 1989). Indeed, sibling children attempted more conciliation following expressions of sadness, although focal adolescents did not. As conflict is particularly intense during early adolescence, youth may be less inclined to attempt conciliation even when sad (Campione-Barr & Killoren, 2019). As the sibling group had a broader age range, this could suggest that aside from the tense early adolescent period, children are indeed motivated by sadness to resolve sibling conflict amicably.

This study was also novel in its consideration of non-negative emotions in sibling conflict. The hypothesis that the most constructive behaviors would follow neutral affect was generally supported. Both groups used more conciliation following neutral affect, and focal adolescents also made more analytic statements and disagreed less. There is increasing evidence of the benefits of neutral emotions in conflict resolution (e.g., Enns, 2013; Ferrar et al., 2020). Although the expression of negative emotions is often necessary during conflict, intense negative affect interferes with problem-solving and perspective-taking (Guerrero, 2013; Moed et al., 2015). Thus, regulating these emotions facilitates effective communication. While this has been

shown in other relationships, these findings demonstrate that similar processes are at play during sibling conflict. As expected, youths' positive emotions were linked to increased conflict avoidance. However, they did not seem to predict more constructive conflict resolution (Guerrero & Floyd, 2006). Siblings can rapidly shift from intensely positive to intensely negative interactions. Thus, positive affect during sibling conflict may function exclusively to lighten the mood and offer a break from intense conflict (Norrick & Spitz, 2008).

Youth Behavior Following Their Siblings' Affect During Conflict

In order to further understand how the emotional climate of sibling conflict influences behavior, relations between youths' affect and their *siblings'* behavior were examined. Results were less consistent than responses to their own emotions, perhaps because sibships are highly variable and elicit a wide range of uninhibited affect and behavior (Furman & Buhrmester, 1985; Punch, 2008). Following their siblings' angry affect, both groups disagreed more, and the sibling group used more confrontation. Thus, links between sibling anger and conflict escalation are present, but are less pronounced than links with youths' own emotions. This may be because siblings' anger sends a signal that they too have a perspective worth defending (Recchia & Howe, 2010; van Bommel et al., 2019). The only relation between sad affect and sibling behavior was that siblings used more confrontation following focal adolescents' sadness. Instead of evoking sympathy, sibling sadness may have been perceived as a chance to double down on their own personal efforts, "kicking them when they are down." Indeed, youth are more comfortable being aggressive with their siblings than with peers or parents, due to reduced risk of negative consequences (Campione-Barr & Killoren, 2019; Recchia et al., 2013). However, as this result was only found in the sibling group, interpretations should be made with caution.

In response to their siblings' neutral affect, both groups used more analytic behavior, and focal adolescents attempted more conciliation. These findings reinforce that a calm emotional climate can promote assertive and constructive communication. Conversely, both groups also avoided conflict more often following their siblings' neutral expressions. Passive strategies are particularly common during sibling conflict, and youth report that their disagreements are often left unresolved (Raffaelli, 1992; Recchia et al., 2010). It is perhaps unsurprising that they use their default strategy when their siblings appear neutral. Finally, only focal adolescents' behavior was linked to their siblings' positive affect, which elicited more analytic remarks and less disagreement. This suggests that by early adolescence, youth are encouraged by their siblings' positive affect to engage in constructive conflict resolution, as has been documented in adults interacting with their spouses and children (Ferrar et al., 2020; Guerrero & Floyd, 2006). The sibling group may not have showed this same pattern due to their wider age range, with some children preadolescent or younger. The fact that neither group responded to sibling positive affect with increased avoidance suggests that joking during conflict is an individual tactic used to defuse tense conflict, rather than a dyadic exchange coordinated between siblings.

Mother and Adolescent Behavior Following Their Own Affect During Conflict

Observing both sibling and mother-adolescent conflict in the same youth allowed for the comparison of behavior across contexts. As hypothesized, mothers' and youths' responses to their own negative affect were consistent with goal-based theories of emotions (Sanford, 2007; Stein & Levine, 1989). They used more conflict-escalating and assertive behaviors when angry, as well as less avoidance. Following sad affect, they made more conciliatory remarks and disagreed less, and youth avoided more. The roles of negative emotions during conflict thus

appear robust across family relationships and developmental periods (Ferrar et al., 2020; Guerrero, 2013; Recchia & Howe, 2010).

It was expected that neutral and positive affect would predict more constructive behaviors, and that positive affect would also predict more avoidance. These hypotheses were only partially supported in the mother-adolescent context. Neither neutral nor positive affect were associated with increased analytic or conciliatory remarks. Between preadolescence and adolescence, mother-child conflict is characterized by increased negative affect and decreased positive affect (Laursen et al., 1998; Seiffge-Krenke et al., 2010). Thus, conflict resolution between mothers and adolescents may be primarily driven by negative emotions. However, youth avoided less following their own neutral affect, whereas mothers avoided more. This could reflect changes to youths' autonomy in early adolescence. As youth seek more independence (Hadiwijaya et al., 2017), they may be less likely to back down when discussing an issue that is important to them. Conversely, mothers may provide their youth increased autonomy by letting go of issues more easily (Darling et al., 2008). Finally, mothers avoided more following positive affect, but adolescents did not. Adolescents may be less willing to stray conflict with their mothers to engage in humor, determined to have their goals addressed (Hofer et al., 2013).

Mother and Adolescent Behavior Following Their Partners' Affect During Conflict

With respect to mother and adolescent behavior following each other's negative affect, results generally supported hypotheses. That is, links between emotion and behavior were similar to, but less pronounced than links between their own emotions and behavior. Angry (frown/upset) affect predicted more escalating behavior in the other person. Sad affect predicted more constructive behavior (less disagreement, more analytic remarks), and in youth, more avoidance. Interestingly, whereas mothers' angry affect predicted less youth avoidance, youths'

angry affect predicted more maternal avoidance. These findings reinforce the argument that adolescents are driven *towards* conflict, keen on having their goals met, while mothers withdraw, allowing them this increased autonomy (Darling et al., 2008; Hadiwijaya et al., 2017).

As hypothesized, neutral affect predicted more constructive behavior in the other person, with both groups using more analytic remarks, youth disagreeing less, and mothers being more conciliatory. Youth also avoided more following maternal neutral affect, which could be due to mothers themselves avoiding when neutral, pulling the adolescents away from the discussion. Finally, no associations were found between positive affect and the other's conflict behavior. Negative interactions tend to have a greater impact than positive ones, and this may be especially true of mother-child conflict during this strained period, when negativity between mothers and children peaks (Baumeister et al., 2001; Laursen et al., 1998; Seiffge-Krenke et al., 2010).

Within-Family and Across-Context Similarity in Responses to Negative Emotions

Given the particular roles of negative emotion in conflict (Shantz, 1987; Shortt & Gottman, 1997), the second objective addressed whether youths' responses to negative emotional expressions were linked to those of their family members. Understanding how responses to negative emotions during conflict develop is important, as they are predictive of psychological adjustment (Ferrar et al., 2020; Moed et al., 2015). According to family systems theory, subsystems are tied to one other; however, the nature of these ties is not entirely clear (Minuchin, 1988, 2001). Results from the present study support the congruence hypothesis. Many positive associations between family members' responses to angry and sad affect emerged, both within interactions (e.g., similarity between siblings in the sibling conflict) and across relationships (e.g., similarity between maternal behavior in mother-adolescent conflict and adolescent behavior in sibling conflict). Several mechanisms can explain these similarities. From a social

learning perspective, youth learn through observation and reinforcement, much of which occurs in the home (Bandura, 1977). Dynamic systems theorists argue that patterns of behavior develop through interactions with family members, and these interactions influence youths' behavior in other relationships (Hollenstein, 2013; Sameroff, 2009). When considering the role of emotional interactions in particular, the spillover effect also comes into play. According to this perspective, negatively-valenced interactions are transferred within the family. For example, escalation of negative emotion between an adolescent and their mother may color their attitudes towards the entire family, affecting their interactions with their siblings (Engfer, 1988; Low et al., 2019).

While these mechanisms help explain why behavior is similar between family members and across subsystems, it is important to stress that the cross-sectional nature of this study precludes assumptions on the direction of effects. Noller and colleagues' (Noller, 2005; Noller et al., 2000) model of interaction-based transmission posits that youth develop their conflict styles through parent-child conflict, which they then transfer to conflict with their siblings. However, sibling interactions could also spill into parent-child relationships, especially since parents often intervene in sibling disputes (Persram et al., 2019). Longitudinal studies of both parent-child and sibling conflict are needed to clarify how within-family transmission occurs.

An unanticipated yet consistent finding was that many of the within-family associations involved reciprocal patterns of behavior when one individual displayed a negative emotion. For example, focal adolescents' tendency to avoid when angry was associated with their siblings' tendency to avoid when the focal adolescents were angry, and the reverse was also true. Similarly, adolescents' escalation when they appeared sad correlated with mothers' escalation when the adolescents were sad, and the opposite association also emerged. Proponents of dynamic systems argue that repeated reciprocal exchanges absorb dyads, limiting their ability to

act in ways that would shift their interaction in a new direction (Hollenstein, 2013). Certain cycles are especially problematic, such as when both individuals continuously escalate the conflict when upset, in an effort to overpower the other (Moed et al., 2015). Reciprocated negative emotional exchanges within the family are linked to social problems, suggesting that youth internalize maladaptive exchanges and apply them to interactions outside the family (Compton et al., 2003; Patterson, 1980). Coercive cycles are thought to become particularly ingrained when they occur in multiple family subsystems (Bank et al., 2004), and this might often be the case, given that within-family similarities also spanned across relationships.

Despite considerable evidence for congruence between family members, only a few across-context associations in focal adolescents' responses to negative emotions emerged. First, adolescents who tended to escalate conflict when their mothers appeared sad also tended to escalate when their siblings appeared sad. Second, adolescents' tendency to escalate following their mothers' angry affect was associated with their tendency to escalate following their own angry affect during sibling conflict. Third, avoidance following their mothers' angry affect was associated with avoidance following their own angry affect during sibling conflict. Thus, consistent with self-report studies, some of youths' conflict patterns generalized across family relationships (Noller et al., 2000). However, the low number of associations indicates that overall, early adolescents act differently depending on with whom they are interacting. Results from the first objective suggested that youth are particularly motivated to engage in conflict with their mothers when the emotional climate is negative, perhaps because at this age, they are challenging parents' authority (Hadiwijaya et al., 2017; van Bommel et al., 2019). Conversely, their interactions with their siblings were more constructive when interactions were neutral and positive. Increasingly egalitarian sibling relationships may lend themselves to a greater use of

tactics needed to resolve conflict in peer and romantic relationships (Laursen et al., 2001; Recchia et al., 2013). This reinforces the idea that sibling interactions are particularly important for the development of social skills needed for relationships outside the family (DeHart, 1999). Differences in youth behavior across family relationships thus highlight the need for increased attention to sibling relationships and their unique role in adolescent development.

Limitations and Directions for Future Research

Alongside several contributions, the results of the present study should be considered in light of certain limitations. Although observational data allows for effective sequential analysis of small samples, it would be beneficial to replicate these findings in a larger sample, and to consider the role of individual characteristics. For instance, power constraints precluded comparisons of sibling dyads based on gender constellation. That said, the influence of gender constellation in sibling interactions has been inconsistent in the literature, with many studies of conflict behavior finding no effects (Campione-Barr & Killoren, 2019; Recchia & Howe, 2010). Second, as the adolescent sample was drawn from a larger project, their siblings' ages could not be controlled as systematically as studies that target pairs with specific ages. Although the impacts of age and birth order decrease with age, some studies of adolescent conflict have found differences; thus, future studies should consider this possibility (Campione-Barr et al., 2014; Killoren et al., 2008). Finally, as mentioned earlier, the direction of associations could not be identified using the present cross-sectional design; studies that combine longitudinal and observational methods are needed to clarify this point. This design would also permit researchers to assess how patterns of sibling conflict predict youths' socioemotional functioning over time.

Together, results from the present study significantly advance our knowledge of sibling conflict in adolescence as well as its links to parent-adolescent conflict. The observational and

sequential design allowed for a thorough investigation into how family members engage in conflict, in relation to the emotional climate of the interactions. Results demonstrate that some associations between emotion and behavior appear across contexts, likely reflecting basic psychological phenomena (e.g., a tendency to approach conflict when angry and to withdraw when sad). Conversely, conflict patterns also show important differences depending on the type of relationship. Further, findings contribute to family systems research, showing that family members are similar in their responses to negative emotion during conflict, whereas adolescent behavior is not necessarily consistent across relationships. Overall, results from this study provide an in-depth understanding of typical family conflict to which high-risk and clinical samples can be compared, and can help identify targets for clinical intervention. In particular, similarities between family members suggest that when addressing inherently social difficulties such as destructive conflict, family interventions may provide the best possible results.

Table 1

Time-Window Sequential Analysis of Focal Adolescents' and Siblings' Responses to Their Own and Their Partners' Emotions

Target behavior	Focal adol analytic remark		Focal adol avoidance/ withdrawal act		Focal adol conciliatory remark		Focal adol confrontative remark		Focal adol disagreement	
Given emotional expression	Odds	95% CI	Odds	95% CI	Odds	95% CI	Odds	95% CI	Odds	95% CI
Focal adol frown/upset	1.72*	[1.44, 2.04]	0.48*	[0.27, 0.85]	1.11	[0.81, 1.51]	2.21*	[1.26, 3.87]	2.96*	[2.41, 3.65]
Focal adol sad/distressed	1.00	[0.70, 1.43]	1.99*	[1.15, 3.45]	1.22	[0.72, 2.02]	0.74	[0.18, 3.01]	0.66	[0.37, 1.18]
Focal adol neutral	1.29*	[1.11, 1.49]	1.12	[0.83, 1.53]	1.28*	[1.02, 1.61]	1.17	[0.70, 1.94]	0.73*	[0.60, 0.90]
Focal adol smile/positive affect	0.82*	[0.68, 0.99]	1.77*	[1.28, 2.46]	1.06	[0.81, 1.40]	0.93	[0.49, 1.75]	0.97	[0.76, 1.23]
Sibling frown/upset	0.85	[0.69, 1.05]	0.65	[0.40, 1.05]	1.01	[0.75, 1.37]	1.66	[0.93, 2.98]	2.71*	[2.20, 3.33]
Sibling sad/distressed	1.32	[0.91, 1.91]	0.58	[0.18, 1.81]	0.97	[0.50, 1.89]	0.53	[0.07, 3.79]	0.88	[0.48, 1.61]
Sibling neutral	1.30*	[1.12, 1.51]	1.55*	[1.14, 2.11]	1.33*	[1.06, 1.67]	1.42	[0.86, 2.36]	0.93	[0.76, 1.14]
Sibling smile/positive affect	1.26*	[1.07, 1.49]	1.39	[0.99, 1.95]	1.26	[0.97, 1.63]	0.69	[0.35, 1.37]	0.65*	[0.50, 0.85]
Target behavior	Sibling analytic remark		Sibling avoidance/ withdrawal act		Sibling conciliatory remark		Sibling confrontative remark		Sibling disagreement	
Given emotional expression	Odds	95% CI	Odds	95% CI	Odds	95% CI	Odds	95% CI	Odds	95% CI
Sibling frown/upset	1.89*	[1.61, 2.23]	0.44*	[0.24, 0.79]	0.92	[0.66, 1.27]	3.73*	[2.52, 5.51]	2.80*	[2.25, 3.49]
Sibling sad/distressed	1.26	[0.87, 1.84]	2.25*	[1.18, 4.28]	1.91*	[1.15, 3.16]	0.61	[0.15, 2.49]	0.82	[0.42, 1.59]
Sibling neutral	1.03	[0.89, 1.20]	1.15	[0.83, 1.58]	1.33*	[1.05, 1.68]	0.70	[0.47, 1.04]	0.99	[0.80, 1.23]
Sibling smile/positive affect	0.87	[0.73, 1.04]	1.72*	[1.22, 2.42]	1.08	[0.82, 1.43]	0.73	[0.44, 1.22]	0.65*	[0.48, 0.86]
Focal adol frown/upset	1.00	[0.82, 1.23]	0.92	[0.58, 1.47]	1.14	[0.83, 1.56]	2.19*	[1.43, 3.37]	2.38*	[1.89, 3.00]
Focal adol sad/distressed	1.09	[0.78, 1.52]	0.29	[0.07, 1.18]	1.40	[0.85, 2.28]	2.04*	[1.03, 4.05]	0.56	[0.29, 1.09]
Focal adol neutral	1.25*	[1.08, 1.45]	1.61*	[1.17, 2.23]	1.27	[1.00, 1.60]	0.92	[0.62, 1.36]	0.93	[0.76, 1.16]
Focal adol smile/positive affect	1.10	[0.93, 1.31]	1.19	[0.82, 1.74]	1.00	[0.75, 1.34]	0.63	[0.37, 1.09]	0.91	[0.70, 1.19]

Note. adol = adolescent, * $p < .05$.

Table 2

Time-Window Sequential Analysis of Focal Adolescents' and Mothers' Responses to Their own and Their Partners' Emotions

Target behavior	Focal adol analytic remark		Focal adol avoidance/ withdrawal act		Focal adol conciliatory remark		Focal adol confrontative remark		Focal adol disagreement	
Given emotional expression	Odds	95% CI	Odds	95% CI	Odds	95% CI	Odds	95% CI	Odds	95% CI
Focal adol frown/upset	1.98*	[1.73, 2.26]	0.36*	[0.20, 0.65]	1.02	[0.83, 1.25]	5.93*	[1.88, 18.67]	3.51*	[2.93, 4.20]
Focal adol sad/distressed	0.78*	[0.65, 0.93]	3.60*	[2.61, 4.96]	1.40*	[1.16, 1.70]	N/A	N/A	0.65*	[0.49, 0.85]
Focal adol neutral	1.10	[0.96, 1.26]	0.67*	[0.45, 0.98]	1.19	[1.00, 1.41]	0.49	[0.11, 2.22]	0.70*	[0.56, 0.87]
Focal adol smile/positive affect	0.95	[0.81, 1.12]	1.18	[0.81, 1.72]	1.01	[0.83, 1.24]	1.33	[0.36, 4.91]	0.65*	[0.50, 0.84]
Mother frown/upset	1.09	[0.95, 1.24]	0.56*	[0.38, 0.84]	1.11	[0.94, 1.32]	4.64*	[1.40, 15.40]	2.60*	[2.18, 3.11]
Mother sad/distressed	0.92	[0.77, 1.11]	1.76*	[1.20, 2.58]	1.22	[0.99, 1.52]	2.06	[0.56, 7.59]	0.74*	[0.56, 0.99]
Mother neutral	1.53*	[1.34, 1.73]	1.48*	[1.07, 2.04]	1.01	[0.84, 1.20]	N/A	N/A	0.63*	[0.51, 0.79]
Mother smile/positive affect	0.88	[0.72, 1.06]	1.39	[0.92, 2.09]	1.09	[0.87, 1.37]	0.56	[0.07, 4.35]	0.93	[0.71, 1.21]
Target behavior	Mother analytic remark		Mother avoidance/ withdrawal act		Mother conciliatory remark		Mother confrontative remark		Mother disagreement	
Given emotional expression	Odds	95% CI	Odds	95% CI	Odds	95% CI	Odds	95% CI	Odds	95% CI
Mother frown/upset	1.64*	[1.49, 1.81]	0.43*	[0.26, 0.70]	1.13	[0.97, 1.31]	6.18*	[1.64, 23.30]	4.27*	[3.45, 5.28]
Mother sad/distressed	1.24*	[1.09, 1.41]	0.43*	[0.21, 0.89]	1.23*	[1.02, 1.49]	0.62	[0.08, 4.82]	0.62*	[0.44, 0.88]
Mother neutral	0.91	[0.82, 1.02]	2.79*	[1.95, 3.98]	1.15	[0.99, 1.34]	0.23	[0.03, 1.79]	0.41*	[0.31, 0.54]
Mother smile/positive affect	0.84*	[0.72, 0.98]	1.76*	[1.15, 2.70]	0.98	[0.80, 1.21]	0.62	[0.08, 4.83]	0.68*	[0.49, 0.96]
Focal adol frown/upset	1.11	[0.98, 1.25]	1.64*	[1.10, 2.43]	0.97	[0.81, 1.17]	2.42	[0.71, 8.26]	2.66*	[2.16, 3.29]
Focal adol sad/distressed	1.18*	[1.05, 1.34]	1.16	[0.74, 1.81]	1.18	[0.98, 1.40]	N/A	N/A	0.56*	[0.40, 0.77]
Focal adol neutral	1.20*	[1.08, 1.33]	1.28	[0.88, 1.85]	1.34*	[1.16, 1.56]	0.24	[0.03, 1.90]	0.97	[0.78, 1.22]
Focal adol smile/positive affect	0.98	[0.87, 1.11]	0.83	[0.52, 1.33]	1.12	[0.95, 1.33]	2.28	[0.67, 7.78]	0.88	[0.79, 1.01]

Note. adol = adolescent, * $p < .05$.

Table 3

Partial Correlations Between Family Members' Escalation Following Frown/Upset Affect Yule's Qs

Variable	1	2	3	4	5	6	7
1. Mother FU → Mother Esc	-						
2. Adol FU → Adol Esc	.20	-					
3. Adol FU → Mother Esc	.15	.85***	-				
4. Mother FU → Adol Esc	.49**	.05	.13	-			
5. Focal Adol FU → Focal Adol Esc	.48*	.26	.45*	.71***	-		
6. Sibling FU → Sibling Esc	.18	-.31	.10	-.10	.00	-	
7. Sibling FU → Focal Adol Esc	.24	-.41	-.03	-.02	-.01	.38†	-
8. Focal Adol FU → Sibling Esc	.30	.15	-.14	.14	.39†	-.16	.10

Note. Adol = Adolescent; FU = Frown/Upset Affect; Esc = Escalate.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4

Partial Correlations Between Family Members' De-escalation Following Frown/Upset Affect Yule's Qs

Variable	1	2	3	4	5	6	7
1. Mother FU → Mother De-esc	-						
2. Adol FU → Adol De-esc	.35*	-					
3. Adol FU → Mother De-esc	.20	.31†	-				
4. Mother FU → Adol De-esc	.17	-.17	.02	-			
5. Focal Adol FU → Focal Adol De-esc	.10	.17	.25	-.25	-		
6. Sibling FU → Sibling De-esc	-.27	-.42	.37†	.21	.58*	-	
7. Sibling FU → Focal Adol De-esc	.12	.27	-.08	-.16	.04	-.27	-
8. Focal Adol FU → Sibling De-esc	.02	.24	.24	-.17	.08	.56*	.12

Note. Adol = Adolescent; FU = Frown/Upset Affect; De-esc = De-escalate.
† $p < .10$. * $p < .05$.

Table 5

Partial Correlations Between Family Members' Avoidance/Withdrawal Following Frown/Upset Affect Yule's Qs

Variable	1	2	3	4	5
1. Adol FU → Adol AW	-				
2. Mother FU → Adol AW	.20	-			
3. Focal Adol FU → Focal Adol AW	-.01	.75**	-		
4. Sibling FU → Sibling AW	-.26	-.04	.26	-	
5. Sibling FU → Focal Adol AW	-.16	-.24	-.14	.70**	-
6. Focal Adol FU → Sibling AW	.11	.34	.49*	.24	-.20

Note. Adol = Adolescent; FU = Frown/Upset Affect; AW = Avoid/Withdraw.
* $p < .05$. ** $p < .01$.

Table 6

Partial Correlations Between Family Members' Escalation Following Sad/Distressed Affect Yule's Qs

Variable	1	2	3	4	5	6	7
1. Mother SD → Mother Esc	-						
2. Adol SD → Adol Esc	-.20	-					
3. Adol SD → Mother Esc	.09	.64***	-				
4. Mother SD → Adol Esc	.65***	-.27	.01	-			
5. Focal Adol SD → Focal Adol Esc	-.20	-.10	-.17	.27	-		
6. Sibling SD → Sibling Esc	.33	-.43	-.53	.22	-.35	-	
7. Sibling SD → Focal Adol Esc	.52	-.33	-.22	.78*	-.49	.60*	-
8. Focal Adol SD → Sibling Esc	-.95*	.92**	-.50	-.59	.43	-.27	-.79*

Note. Adol = Adolescent; SD = Sad/Distressed Affect; Esc = Escalate.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 7

Partial Correlations Between Family Members' De-escalation Following Sad/Distressed Affect Yule's Qs

Variable	1	2	3	4	5	6	7
1. Mother SD → Mother De-esc	-						
2. Adol SD → Adol De-esc	-.08	-					
3. Adol SD → Mother De-esc	.27†	.37*	-				
4. Mother SD → Adol De-esc	-.47**	.05	-.03	-			
5. Focal Adol SD → Focal Adol De-esc	-.34	-.04	-.37	-.14	-		
6. Sibling SD → Sibling De-esc	-.47	-.26	-.34	.84**	.15	-	
7. Sibling SD → Focal Adol De-esc	.14	.28	.02	.41	-.85*	-.09	-
8. Focal Adol SD → Sibling De-esc	-.49	.01	-.39	-.13	-.26	-.35	.45

Note. Adol = Adolescent; SD = Sad/Distressed Affect; De-esc = De-escalate.
† $p < .10$. * $p < .05$. ** $p < .01$.

Chapter 5: General Discussion

Dynamic systems, transactional, and family systems perspectives all concur that when studying development, the exchanges between children and their family members should be considered continuously, as interactions shift over time and influence children's behavior both during the interaction and beyond (Fogel, 2009; Hollenstein, 2013; Minuchin, 2001). Yet within the preadolescent and adolescent conflict literature, behavior is typically considered in isolation from the contexts in which it occurs. This dissertation aimed to shed light on the intricate dynamics within family conflict, and how these dynamics come to shape youth behavior and socioemotional adjustment. The studies used mixed-method (observational, self-report) and multi-informant (mother and youth) procedures, and observed family conflict at two developmental periods (preadolescence and early adolescence) and in two different family relationships (mother-child and sibling). The results from the present studies illustrate multiple ways in which contextual factors influence family conflict, as well as how family conflict in turn influences socioemotional development.

First, the studies used a unique approach to show that on an immediate scale, the emotional expressions of both individuals predicted how conflict unfolded. Most consistent across developmental periods and family relationships were links between negative affect and behavior. In line with goal-based theories of emotion, angry expressions in both individuals promoted more conflict-escalating behaviors (Guerrero et al., 2011; Lazarus, 1991). Unregulated hostile emotions therefore seem to hinder productive conflict resolution; however, these emotions are very common during conflict, and need to be expressed in some way (Guerrero, 2013). In fact, across studies, both individuals' angry affect also promoted more assertive communication. Sad emotions can also be useful during conflict, as they predicted more

conciliatory behaviors, which help resolve disagreements; however, they also promoted conflict avoidance. This avoidance likely prevents conflict resolution, but might protect the relationship from further damage. Sadness is thought to motivate individuals to forgo their personal goals in favor of mending their relationship (Murphy & Eisenberg, 2002; Vangelisti & Crumley, 1998).

Conversely, positive affect, which was previously thought to promote supportive and cooperative conflict discussion (Guerrero & Floyd, 2006), did so inconsistently across these studies. Instead, positive affect frequently predicted conflict avoidance, although the type of avoidance may be qualitatively different than the withdrawal that followed sad affect; rather, this pattern was often observed when family members made friendly jokes, perhaps to defuse tension (Norrick & Spitz, 2008). These results suggest interesting avenues for future research into avoidance and withdrawal during conflict: how does the role of avoidance differ depending on the emotional context, what are the outcomes of each form of avoidance, and do these outcomes vary according to individual- or family-level variables? Finally, neutral affect, largely ignored by conflict researchers to date, often predicted the most conflict de-escalating behaviors, pointing to the role of emotion regulation as an effective precursor to constructive conflict discussion (Gottman, 1993; Oruche et al., 2014). This consistent result likely stems in part from the studies' conflict procedure, as family members were asked to discuss common issues of disagreement, rather than being observed when spontaneous arguments erupted. Indeed, conflicts are rarely resolved in the heat of the moment, likely because of the high levels of negative emotions involved (Dersley & Wootton, 2001; Siddiqui & Ross, 1999).

While several links between emotion and behavior were consistent across groups (i.e., mothers, preadolescents, early adolescents, and siblings), several differences also occurred, revealing two more contextual variables that influence conflict dynamics: developmental timing

and type of relationship. Dynamics systems theorists consider the onset of adolescence a phase-transition that places significant stress on the mother-child dyad (Granic & Patterson, 2006). During this period, the structure of their interactions is reorganized to adapt to the child's changing characteristics (Hollenstein, 2013). By observing mother-child conflict before (in Study 1) and after (in Study 2) this phase transition, we were able to closely examine how conflict dynamics are altered. Whereas positive and especially neutral affect played important roles in conflict resolution between mothers and preadolescents, they appeared to be less involved in early adolescence. Instead, conflict between early adolescents and their mothers seemed primarily driven by negative affect. This may be because negativity between mothers and children peak at the onset of adolescence (Seiffge-Krenke et al., 2010). In addition, adolescents approached the conflict more readily (avoiding less), while their mothers retreated (avoiding more) across several emotional contexts. These responses could be explained by the fact that in early adolescence, youth make increasing demands for independence, and mothers often adapt their behavior to support their autonomy (De Goede et al., 2009; Grunzeweig, 2011; Hadiwijaya et al., 2017). Observing moment-to-moment links between behavior and affect illustrated how the transition to adolescence impacts the mother-child dyad on a microscopic scale.

The inclusion of siblings was a significant strength of the present dissertation, as Study 2 was one of the first observational studies of sibling conflict in adolescence. This study generated a number of important findings that future studies should build on to broaden our understanding of adolescent sibling conflict. Of note, they helped qualify two of the unique features of sibling relationships recognized by sibling researchers. First, sibling relationships are often characterized simultaneously by support and aggression (Campione-Barr & Killoren, 2019; Noller, 2005). Findings from Study 2 elucidated how this ambivalence plays out during conflict. On the one

hand, neutral and positive emotional climates between siblings generated frequent de-escalation behaviors in early adolescents, unlike with their mothers at the same age. They were also able to defuse tension by joking with their siblings. On the other hand, escalating behaviors were common when the emotional climate was angry, and sibling children showed some evidence of aggression, making twice as many confrontative remarks when focal adolescents appeared sad.

Second, the quality of sibling relationships is known to vary greatly across dyads. Whereas some sibling relationships are intensely hostile, others are harmonious, others still are high on both warmth and conflict (termed "affectively intense"), and some are uninvolved (i.e., low on both warmth and conflict; Buist & Vermande, 2014; Killoren et al., 2017). This may explain why fewer consistent links between emotion and behavior were found in sibling conflict compared to mother-child conflict, especially with regards to siblings' responses to each other's emotions. Perhaps rather than *one* set of normative sibling conflict dynamics, there are *several*, depending on the nature of their relationship. Additional research is needed to examine how sibling relationship qualities are associated with conflict dynamics. The focal adolescents' siblings in Study 2 also had a wide age range, which might have further contributed to a less consistent pattern of results. Future studies can complement our findings by using samples with more restricted age groups and by observing conflict at multiple time points, to assess how interactions evolve over time. The present dissertation was innovative both in its methodology and its inclusion of multiple relationships across the transition to adolescence, and has the potential to stimulate interest into the role of emotional expression in family conflict across relationships and across development.

Guided by family systems theory (Minuchin, 1988, 2001), Study 2 also illustrated how family members' behavior is interconnected. Specifically, findings identified two further

contextual variables that predict individuals' responses to emotional expressions: the families from which dyads are drawn, and the behavior of their interaction partner. In line with the congruence hypothesis, youth responded in similar ways to negative emotional expressions as their family members, both within and across dyadic relationships (e.g., Jenkins et al., 2012; Noller, 2005). In addition, within conflict discussions, patterns of reciprocal behaviors seemed to emerge when one person in the dyad displayed a negative emotion. Consistent with family systems, family members' behavior may be more important in predicting youths' behavior than their individual characteristics, as they showed few similarities in their responses to emotions across the two conflict contexts. Like most studies that have considered family conflict in multiple relationships, however, Study 2 was cross-sectional. Longitudinal studies of parent-child and sibling conflict are needed in order to clarify the direction of these associations.

Finally, results from longitudinal analyses in Study 1 demonstrated that although emotional context is rarely considered when assessing behavior during conflict, it warrants greater attention. In line with transactional and dynamic systems perspectives, bidirectional associations were found between mother-child conflict dynamics and youths' socioemotional development (Fogel, 2009; Hollenstein, 2013). Mothers of children with increased internalizing symptoms and activity level in middle childhood escalated conflict more often when angry with their preadolescents. In turn, this type of maternal escalation predicted increased internalizing and externalizing symptoms in adolescence, and mediated the association between internalizing symptoms at the earlier and later time points. Children's responses to their own sad affect, as well as mothers' and children's responses to each other's sad affect, were also predictive of adjustment in adolescence, with de-escalation and avoidance predicting fewer internalizing and externalizing symptoms. While the mechanisms behind these associations remain unclear,

conflict-escalating behaviors are thought to intensify negative emotions and prevent constructive conflict resolution (Patterson, 1982). Conversely, the ability to regulate negative emotions in order to respond in more constructive ways is protective against socioemotional difficulties (Compas et al., 2017). Future research is warranted to illustrate how this occurs. Specifically, grid-sequence analysis could be applied to examine how behaviors triggered by emotions lead to the up- or down-regulation of said emotions, as well as how these processes influence the dyad's ability to resolve disagreements (Brinberg et al., 2017). Using this methodology within longitudinal studies of conflict would be ideal, to identify how the history of the dyad and of their dynamics influence their interactions.

The present dissertation with its series of two studies moved research on family conflict several steps forward. By applying an innovative methodology to observed conflict, results from these studies demonstrated that theorized links between emotions and behavior can be observed on a microscopic scale during conflict between children and their family members (e.g., Guerrero, 2013). In addition to supporting existing theories on the roles of negative emotions during conflict, they provided a closer look at neutral and positive emotions, and extended attention to the influence of the *other person*'s emotional expressions. Further, they qualified our understanding of the links between emotion and behavior, showing that developmental period, type of relationship, individual characteristics, and family dynamics can alter these associations. Thus, conflict cannot be considered a homogeneous phenomenon; instead, contextual variables must be considered more closely, as they can influence whether conflict becomes constructive or destructive in nature (Laursen & Hafen, 2010). Finally, results also indicated that family members' responses to emotions predict youth internalizing and externalizing symptoms, suggesting that more attention should be paid to the regulation of emotion during conflict

resolution. As discussed below, by identifying how children's experiences with emotion during conflict influence their socioemotional development, findings from the present dissertation make important contributions that suggest a number of applied implications and clinical applications.

The results from the present dissertation also point to several directions for future research. Given that links between emotional expressions and behavior differed depending on several contextual variables, further contexts should be explored in future studies. As the participants in the present studies were drawn from primarily Caucasian French-Canadian families, the present findings may not generalize to other cultures. Thus, the field would benefit from cross-cultural research on the interplay between emotion and conflict resolution. In addition, conflict discussions were limited to mother-child and sibling dyads; it would be valuable to apply the present methodology to interactions including fathers, as well as to triadic or whole-family observations (Della Porta et al., 2019; Persram et al., 2019). Every family member contributes to the dynamics within the home, and the place of fathers in these dynamics remains understudied (Little et al., 2019; Ravindran et al., 2019). Likewise, it would be beneficial to observe emotional expressions and behavior during conflict with peers, who play an increasing role in development as of middle childhood (Furman & Buhrmester, 1992). Observing conflict with both peers and family members would help identify the particular influence of each in youth development, and would also further clarify how family conflict influences peer relations (Bank et al., 2004; Carson et al., 1996). Again, this line of research would be aided by longitudinal and observational studies of conflict, which would help parse out antecedents and consequences of conflict dynamics.

Relatedly, it would be interesting for future studies to consider other predictors and outcomes of responses to emotion during conflict, including youths' social skills and relationship

quality. While associations between family conflict and social competence are often assumed, results in the literature are mixed (e.g., Burke et al., 2012; Koblinsky et al., 2006; Openshaw et al., 1992). Investigating the role of emotion regulation during conflict may help explain conflicting results. Relationship quality, on the other hand, has frequently been linked to frequency and intensity of conflict, yet the mechanisms behind these associations are not entirely clear (Lindell et al., 2014; Killoren et al., 2008; Sillars & Canary, 2013). Assessing responses to emotion in conjunction with relationship quality could reveal how conflicts become particularly frequent and intense in distressed relationships. Further, responses to emotion may also vary according to the topic of conflict discussions. Campione-Barr et al. (2014) found that adolescent siblings' conflict discussions pertaining to issues of intrinsic harm were discussed in particularly destructive ways. In turn, issues of intrinsic harm were associated with lower relationship quality (Campione-Barr et al., 2014). As the role of conflict topic could not be investigated in the present studies due to power constraints, its influence on emotions and responses to emotion will be an interesting direction for future research. Lastly, as will be discussed below, the mechanisms underlying links between emotional expressions and behavior, as well as between these dynamics and youth adjustment, could not be determined in the present studies. Longitudinal studies with repeated observational measurements coupled with self-report and video-recall procedures (e.g., measures of thoughts, motives, and emotions) will allow for a greater understanding of the processes underlying these associations.

Clinical Implications

The results from the present dissertation have several clinical implications. First, findings demonstrated moment-to-moment associations between emotion and behavior that appear to generalize across families. However, individual differences in responses to negative emotions

also emerged, and these differences were linked to youths' socioemotional functioning. These results are in line with evidence that the ability to regulate negative emotions is protective against internalizing and externalizing problems (Compas et al., 2017). Several prevention and intervention programs for youth with socioemotional vulnerabilities include emotion regulation training as a central component (e.g., Derella et al., 2019; Rathus & Miller, 2014; Trosper et al., 2009), and the results from the present dissertation support this objective.

At the same time, results also underline the crucial role of mothers' emotion socialization behaviors in their interactions with their children (Denham et al., 2015; Eisenberg et al., 1998). When mothers respond to their youths' negative emotions with supportive responses, which validate their experiences (e.g., by comforting, encouraging, or offering support), as opposed to nonsupportive responses (e.g., punishing or minimizing), they promote greater socioemotional functioning in youth (Briscoe et al., 2019; Denham et al., 1997). A number of interventions aimed at improving children's socioemotional skills target emotion socialization, by teaching parents to respond to their children's negative emotions in ways that support their experience rather than escalate challenging situations (e.g., Porzig-Drummond et al., 2014). Our results in Study 1 lend further support to this target, as we found that maternal de-escalation following preadolescents' expressions of sadness predicted fewer externalizing symptoms in adolescence.

In situations as challenging as conflict, however, mothers may need to regulate *their own* emotions in order to respond supportively to their children. Across both studies, mothers were more likely to escalate conflict when their children appeared angry. Mothers in Study 1 also made more confrontative remarks when their children appeared sad. These nonsupportive responses may have occurred because during conflict with their children, mothers also experience their own negative emotions. Indeed, there is recent evidence that maternal emotion

socialization is associated with mothers' own emotion regulation abilities (Hajal & Paley, 2020). For example, mothers with weaker emotion regulation abilities respond in more nonsupportive ways to their children's emotions and rate their children as more temperamentally reactive (Aydin, 2010). Further, one study found that anger predicted harsh parenting only when parents were also highly impulsive (Rhoades et al., 2017). Moreover, we found that mothers' tendency to escalate conflict when angry was linked to more negative ratings of their children in earlier childhood, as well as their children reporting more internalizing and externalizing symptoms in adolescence. In addition, children with behavior problems appear to benefit less from parental training programs when their parents are themselves emotionally dysregulated (Zachary et al., 2019). Therefore, interventions aimed at promoting constructive conflict resolution and youth adjustment should target parental emotion regulation, as well as emotion socialization and youth emotion regulation (Hajal & Paley, 2020). Given the bidirectional and reciprocal nature of parent-child difficulties, it appears crucial that prevention and intervention efforts target both members of the dyad.

As such, it is encouraging that a growing number of youth interventions include specific components geared towards improving parental emotion regulation (Hajal & Paley, 2020). These programs recognize that in order to break patterns of escalating parent-child dysfunction, parents need to keep their own emotions at a manageable level. Of particular note, *Tuning in to Kids* is an intervention designed to improve parental emotion socialization, based entirely on emotion socialization theory (Havighurst et al., 2013, Havighurst & Kehoe, 2017). It includes a module dedicated to improving parents' own emotional awareness and regulation. *Tuning in to Kids* has been found to be effective at improving parental emotion socialization and decreasing children's dysregulation (Havighurst et al., 2010, 2013). Although it was designed for parents of

preschoolers, *Tuning in to Kids* is also the only intervention of this kind to be adapted for parents of adolescents (*Tuning in to Teens*), with promising results (Havighurst et al., 2015). This is important, because as highlighted by the present studies, the transition to adolescence poses a new set of challenges to parents. Their ability to respond to their own and their preadolescents' negative emotions with behaviors that de-escalate conflict predicts greater socioemotional functioning in adolescents. Thus, strengthening these abilities would be beneficial to youth in the long term.

It is important to recognize, however, that although the present studies observed how behaviors followed emotional expressions, they did not assess emotion regulation directly. Future research should attempt to clarify how links between emotions and behavior are prevented or enhanced by individual and dyadic emotion regulation, as family members attempt to modify their emotions and behavior in service of their goals (e.g., resolution of conflict). These mechanisms could be elucidated using a combination of self-reports on emotions and motives throughout conflict and of perceptions of the other person's emotions and motives (e.g., through video-recall procedures), combined with physiological measures of emotional reactivity (e.g., Cohen et al., 2012; Luong et al., 2018). Identifying the specific role of emotion regulation in conflict management will allow for more specific targets to be identified that could improve relationships between youth and their family members.

In addition to the roles of emotion regulation and socialization in conflict resolution, the present set of studies also underscored the importance of the family context in understanding individual behavior (Minuchin, 2001). Results from Study 2 showed many within-family similarities in responses to negative emotions, yet few similarities in how youth behaved with their two family members. Thus, when attempting to understand the role of emotion during

conflict, we must go beyond group patterns and individual differences. These implications are in line with family systems theory, which argues that individuals' behavior, as well as patterns of behavior within dyadic subsystems, cannot be considered in isolation; instead, they must be understood as part of the entire family system (Minuchin, 2001). Several clinical interventions have grown from systems theory, including most notably, structural family therapy.

Unlike most interventions, which consider one individual as the target for treatment, structural family therapy treats the entire family (Minuchin, 1972). According to this perspective, even if certain children are more difficult to parent (e.g., highly active or emotional children), it is the family dynamics that develop and that are repeated over time that maintain problems. As such, the therapist observes the entire family, with a focus on the process rather than content of interactions (Minuchin & Fishman, 1981). A primary goal of treatment is to identify repetitive, rigid patterns of transactions, and to destabilize these patterns so that the family develops more flexible ways of interacting (Minuchin, 1972; Minuchin & Barcai, 1969). The results of the present studies concur that problematic conflict behavior can be found in the dynamic interactions between family members. Rather than specific behaviors or emotions making conflict destructive, problems lie in the dynamics that play out between family members. Although structural family therapy does not emphasize the particular role of emotions in family conflict, the present findings suggest that the ways emotions are handled might be a key aspect of family dynamics that warrant further attention.

In the present studies, it was not possible to consider the role of rigidity in conflict dynamics, but this is an important avenue to explore further. State space grid analysis could be used to address this question, as this type of analysis assesses flexibility and rigidity in interactions (Hollenstein, 2013; Hollenstein et al., 2016). While it is still in its infancy, time-

lagged state space grid analysis can track temporal relations between dyadic and triadic states, allowing for the identification of families that become stuck in rigid patterns of responding to emotions (Hollenstein, 2013). A particular direction for research stems from our findings that suggested frequent reciprocity in behavior when one person displayed a negative emotion. This could represent a type of rigid pattern of behavior that develops within subsystems, and should be examined further when tracking family interactions. Applying this method to repeated observations of the same families would further help to identify rigid and potentially maladaptive patterns of responding.

Importantly, within systems theory and structural family therapy, the family system is considered living and evolving. Thus, patterns of interaction change as the system is met with new demands (e.g., a child reaching adolescence), and at times, dysfunction results from the system not adapting accordingly (Colapinto, 2019). Another direction for future research is to examine the role of family history in conflict dynamics. By using observational methods at multiple time points within a longitudinal design, it would be possible to identify how conflict dynamics develop over time, and therefore to test whether problematic dynamics develop from a failure to adapt. For example, across the two present studies, we identified differences in typical conflict dynamics between mothers and children before and after the onset of adolescence. By studying the same families at these two developmental periods, future research could isolate whether maladaptive patterns of responding observed in early adolescence represent rigid patterns of behaviors that functioned well in earlier childhood. Relatedly, as mentioned earlier, in order to continue to test and expand systems theory and structural family therapy, research should move beyond dyads to observe triads and whole families during conflict (Persram et al., 2019).

An emerging intervention that deserves special mention is *Families Overcoming Under Stress* (*FOCUS*; Lester et al., 2016a). *FOCUS* is a family intervention based on systems theory, that incorporates training in emotion regulation, emotion socialization, communication, and problem-solving. It was developed for military families, and has been adapted for families facing a range of stressors, including medical challenges and placement in foster care. Based on the idea that dysregulation experienced by one individual influences their entire family system, the program teaches emotion regulation skills to every member of the family. In addition, therapists facilitate discussions of emotions to increase emotional understanding and communication between family members (Lester et al., 2016b). Findings from the present set of studies suggest that such an approach may be useful for families of all backgrounds, to help family members better understand their own and each other's emotions, and respond appropriately.

Finally, it is worth noting the relative paucity of programs specifically targeting sibling conflict. Of those that exist, some involve working directly with individual children or siblings to improve social skills (e.g., perspective taking, conflict resolution) and increase warmth, whereas others target parents, as mediators of sibling conflict (Tucker & Finkelhor, 2017). Efficacy studies demonstrate some benefits of these interventions, but most lack follow-up and measures of longer-term outcomes (e.g., Kennedy & Kramer, 2008; Thomas & Roberts, 2009). While results from the present dissertation illustrated typical patterns of conflict, as well as significant variability in dynamics, longitudinal research on sibling conflict is sorely needed, to identify which patterns are particularly problematic and should be targets for intervention. Given that sibling conflict is likely reinforced by the larger family context, however, these interventions would perhaps be best incorporated into interventions targeting the entire family. Conversely, identifying patterns of conflict that instead predict positive family functioning and psychological

adjustment will help inform prevention programs and public health initiatives aimed at promoting healthy family relationships.

Conclusions

Taken together, the results from the present studies provide a detailed account of the interplay between emotional expressions and behavior during family conflict between youth and their family members, as they transition across the often-tumultuous onset of adolescence. The intricate dynamics of family conflict were captured using a combination of observational and sequential methods, questionnaire measures, and a longitudinal design. As such, results shed light on how constructive and destructive conflict behaviors are influenced by several contextual variables, including emotional expressions, relationship type, and developmental period. The consideration of both mother-child and sibling conflict as well children's socioemotional functioning across multiple age points illustrated how dyadic conflict is linked to both family and individual functioning, and how it predicts youth development over time. In so doing, findings from this dissertation can help inform targets for intervention, prevention, and public health initiatives aimed at promoting adaptive family conflict communication, setting youth up for healthy relationships across the lifespan.

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Appendix A

Study 1: Informed Consent Forms

L'INDIVIDU DANS SON MILIEU: Les parents et leurs enfants

Directeurs du projet: - Lisa A. Serbin, Ph.D.
- Dale M. Stack, Ph.D.

Formulaire de consentement (SSHRC-2)

Je, soussigné(e), autorise les chercheurs du projet *L'individu dans son milieu* de l'université Concordia à rencontrer mon enfant _____ à l'école, en deux sessions, durant la période de classe. Je comprends que mon enfant remplira des tests de fonctionnement intellectuel et académique ainsi que des questionnaires sur son comportement et son tempérament. J'autorise également les chercheurs à recueillir des informations sur la vie scolaire de mon enfant de la part de son professeur et à avoir une copie du dernier bulletin de l'année en cours. Finalement, lors d'une troisième visite, je consens à rencontrer les chercheurs de l'université Concordia à la maison avec mon enfant afin de remplir des questionnaires additionnels portant sur notre vie familiale et de recueillir des échantillons de salive sur moi-même, lors de la rencontre, et sur mon enfant, lors de la rencontre et pendant deux jours de la semaine. J'accepte aussi d'être filmé(e) avec mon enfant lors d'une session incluant un jeu et des discussions portant sur des résolutions de problèmes.

Je comprends que toute l'information recueillie demeurera confidentielle et qu'elle ne servira qu'à des fins de recherche. Cependant, si après évaluation des examens votre enfant raquerait une attention spéciale, les chercheurs de l'université Concordia s'engagent à faire le suivi de la rencontre afin de référer les services nécessaires.

Dans l'éventualité où j'aurais des questions concernant cette recherche, je pourrai m'adresser soit à Mina Popliger ou bien à Jean-François Rhéaume au (514) 848-2253.

Nom: _____ Date_____
EN LETTRES MOULÉES

Signature:_____

****

Nom de l'enseignant/e:

Année: _____

Nom du directeur/de la directrice: _____

Nom de l'école: _____

Numéro de téléphone: (_____)_____
Code régional

Adresse: _____
rue

_____
ville code postal

L'INDIVIDU DANS SON MILIEU: Les parents et leurs enfants

Directrices du projet SSHRC3/Mills: - Lisa A. Serbin, Ph.D.
- Dale M. Stack, Ph.D.

Formulaire de consentement

Je,_____, soussigné(e), autorise les chercheurs du projet *«L'individu dans son milieu»* de l'université Concordia à rencontrer mon enfant _____ à l'école, en deux visites, durant la période de classe. Je comprends que mon enfant remplira des tests de fonctionnement intellectuel et académique ainsi que des questionnaires sur son comportement et son tempérament. J'autorise également les chercheurs à recueillir des informations sur la vie scolaire de mon enfant de la part de son professeur et à avoir une copie du dernier bulletin de l'année en cours. Finalement, je consens à ce que les chercheurs recueillent des échantillons de salive sur mon enfant pendant deux jours de la semaine.

Ma participation consiste à remplir et à retourner deux séries de questionnaires, après quoi je recevrai par courrier pour chaque série de questionnaires un chèque de $35.00, et ce pour un montant total de $70.00. Concernant la participation de mon enfant, il recevra un montant total de $45.00 qui lui sera remis de la façon suivante : un chèque de $15.00 ou un certificat cadeau d'un montant équivalent lui sera remis lors de chaque rencontre à l'école ainsi que pour les questionnaires qu'il a à remplir et à retourner. Par ailleurs, un autre montant de $5.00 lui sera également accordé si mon enfant à dû compléter des questionnaires de rattrapage.

Je comprends que ma participation à cette étude est volontaire et que je peux m'y soustraire ainsi que mon enfant en tout temps et cela, sans avoir à donner d'autres explications. De plus, le montant accordé pour ma participation et celle de mon enfant sera proportionnel au nombre de partie complétée au protocole de recherche.

J'autorise également les chercheurs de l'université Concordia à prendre une photo numérique du visage de mon enfant. Cette photo sera gardée confidentielle dans le dossier de mon enfant et ne servira qu'à identifier mon enfant.

Je comprends que toute l'information recueillie demeurera confidentielle et qu'elle ne servira qu'à des fins de recherche. Cependant, si après évaluation des examens votre enfant requérait une attention spéciale, les chercheurs de l'université Concordia s'engagent à faire le suivi de la rencontre afin de référer les services nécessaires. Toutefois, en accord avec la loi sur la protection de la jeunesse, toute information laissant croire à de l'abus physique ou sexuel doit être rapportée à l'Office de la protection de la jeunesse.

Dans certains cas, si mon enfant présente une problématique particulière, la coordonnatrice du projet, Dre Nadine Girouard, entrera en communication avec moi pour y donner suite. Le cas échéant, il pourra y avoir deux entrevues téléphoniques, une avec moi et une autre avec mon enfant, ou même une visite à la maison.

Dans l'éventualité où j'aurais des questions concernant cette recherche, je pourrai m'adresser soit à Julie Aouad ou bien au Dre Nadine Girouard au (514) 848-2424 extension 2254. De plus, si j'ai des questions au sujet de mes droits et ceux de mon enfant à titre de participant(e) volontaire ou une plainte à formuler, je peux appeler au bureau de la recherche de l'Université au (514) 848-2424, poste 7481**.** Mme Adela Reid sera la personne-ressource de ma famille pour ce projet.

Nom: _____ Date:
EN LETTRES MOULÉES

Signature:

Appendix B

Study 1: Brief Operational Definitions and

Kappa Coefficients for the Conflict Behavior Coding System and

the Emotion Behavior Coding System (Enns & Stack, 2007) – Adapted

Code	Operational Definition	Kappa - Mother	Kappa - Child
Conflict Behavior Coding System			
Listen	Individual is silent, with no clear evidence that they are not attending to their speaking partner.	.86	.88
Analytic Remarks	Providing or requesting information about the conflict in a non-confrontational manner (e.g., descriptive or qualifying statements, disclosure, soliciting information or disclosure).	.75	.77
Conciliatory Remarks	Statements or questions that express a desire to resolve the conflict in a mutually satisfactory way or by prioritizing one's partner's desires over one's own (e.g., supportive remarks, concessions, acceptance of responsibility, problem-solving).	.74	.78
Disagreement	Statement of disagreement, rhetorical questions that imply disagreement, or rejections of the value of the partner's argument (e.g., disagreement over facts, questions that imply disagreement, "yes, but…").	.69	.71
Confrontative Remarks	Attempts to achieve one's own goals or to thwart one's partner' goals, with clear hostile, argumentative or defiant intent (e.g., blame, hostile imperatives, hostile jokes or questioning).	.76	.78
Avoidance/ Withdrawal	Behaviors that minimize explicit discussion of the conflict (e.g., actively avoiding listening to speaking partner, denial that conflict exists, under-responsiveness, topic shifting, non-hostile joking).	.68	.75
Emotion Behavior Coding System – Adapted			
Smile/Positive (SP)	Facial expressions of amusement, satisfaction, affection, excitement, surprise combined with positive affect, characterized by a lateral and upward movement of the lips and cheeks.	.83	.81
Frown/Upset (FU)	Facial expressions of anger, dissatisfaction, annoyance or exasperation, characterized by brows sharply down, wrinkled forehead, narrowed eyes, lips pressed together tightly and/or mouth drawn downward.	.74	.72
Sad/Distressed (SD)	Facial expressions of unhappiness, despair, anxiety, or distress, characterized by brows drawn together, squinted eyes, eyes cast downward, downward-turned mouth, a pout, and/or raised eyelids.	.70	.71
Neutral (NE)	Facial expressions showing a lack of emotion (i.e., do not qualify as any of the abovementioned expressions), characterized by straight but relaxed mouth, relaxed eyebrows, and a smooth forehead.	.72	.70

Appendix C

Study 1: Correlation Table Between all Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1. Child sex	-	-.15	.03	-.20	-.22*	-.31**	-.12	-.20	.01	-.24*	-.12	-.04	.09	.03	.14	.17	-.09	-.05	.08	.05	.07	.10	.03	-.15	-.08	.26*	.13	-.00	-.06	.07
2. Child age (T2)		-	-.15	-.16	.07	.09	.05	.12	.09	.13	.12	.15	.05	.00	-.14	.22	.07	-.08	.01	.09	-.10	-.12	.04	.08	.27*	-.06	.10	.21	.02	-.10
3. Maternal education (years)			-	-.08	-.02	-.13	.02	-.12	.11	-.14	-.12	.07	.02	-.01	-.14	-.05	-.11	-.11	.16	-.01	-.25	.03	-.11	-.05	-.18	.13	-.01	-.16	.09	.09
4. Activity level (T1)				-	-.15	.17	-.11	.21	.18	.33**	.29*	-.12	-.31*	-.01	-.09	-.05	-.07	.06	-.10	-.11	-.19	.00	-.07	.10	-.18	-.22	.05	-.38**	.25	-.04
5. Internalizing symptoms (T1)					-	.65**	.54**	.40**	.28*	.09	.26	.04	.09	.02	-.18	-.14	.16	-.06	.01	.03	.33*	-.02	.02	-.15	.04	.01	-.12	-.06	-.02	.11
6. Externalizing symptoms (T1)						-	.35**	.60**	.19	.31*	.21	.02	.01	.01	-.31*	.01	.17	.02	-.05	-.05	.17	.01	-.01	-.02	.05	-.15	-.28*	.04	.08	.23
7. Internalizing symptoms (T2)							-	.49**	.20	-.09	.21	-.16	-.14	.16	-.29*	-.11	.24	.10	.03	.18	.18	.02	.14	-.12	-.11	-.17	.05	-.14	.12	.14
8. Externalizing symptoms (T2)								-	.24*	.31**	.33**	-.11	-.30*	-.05	-.11	-.12	.31*	.06	-.20	.05	.14	.10	.14	.02	-.02	-.11	-.03	-.02	.00	.05
9. Internalizing symptoms (T3)									-	.58*	.40*	-.24	.19	-.25	-.23	.09	.12	-.11	-.28*	.18	.15	-.09	.24	-.24	-.11	.05	.06	.14	-.33*	.15
10. Externalizing symptoms (T3)										-	.36*	.22	-.03	-.34*	-.07	.20	.01	-.27	-.42**	.06	-.04	-.32*	.10	-.10	.09	-.12	-.02	.14	-.27	.03
11. YQ mFUmES											-	-.19	-.38**	-.10	.13	-.08	.13	-.01	.00	.19	.21	-.12	.10	-.21	.36**	-.20	.07	-.27	-.07	-.13
12. YQ mFUmDE												-	.18	-.05	.06	.22	-.10	-.03	.05	-.12	.19	.21	-.10	.10	.21	.44**	-.12	.05	.01	.20
13. YQ mSDmES													-	.19	-.23	.11	-.06	.15	.02	-.02	.12	.00	.14	.00	-.29	.32*	-.01	.65**	-.08	.27
14. YQ mSDmDE														-	.10	-.28*	-.05	.12	.26	-.23	-.13	.14	-.10	-.04	.16	.04	-.07	.10	.61**	.14

15. YQ cFUcAW	-	-.35**	-.03	.13	.14	-.14	.06	.32*	.01	-.06	.23	.02	.41**	-.20	.09	.09
16. YQ cFUcDE		-	.03	-.01	-.30*	-.09	-.04	-.11	.20	.13	-.09	.04	.13	-.07	-.16	.24
17. YQ cFUcES			-	.00	-.07	-.16	.17	-.04	.50**	.22	.02	-.33*	-.06	.05	-.11	-.08
18. YQ cSDcAW				-	.08	-.06	.18	.19	.12	-.20	.02	-.10	.35**	-.02	.15	.45**
19. YQ cSDcDE					-	-.06	.03	.14	-.15	-.17	.20	-.09	-.03	-.08	.29*	.07
20. YQ cSDcES						-	.22	.11	-.06	-.17	-.03	-.02	.01	.25	-.23	.00
21. YQ cSDmES							-	.10	.03	-.16	.09	.15	.00	.15	-.28*	-.04
22. YQ cSDmDE								-	-.11	-.08	.13	.22	.24	-.11	.10	.22
23. YQ cFUmES									-	-.07	.16	-.23	.21	-.03	-.21	.12
24. YQ cFUmDE										-	-.21	-.08	-.15	.22	.09	-.29
25. YQ mFUcES											-	-.02	-.04	-.16	.05	.07
26. YQ mFUcDE												-	-.10	.17	-.07	.06
27. YQ mFUcAW													-	-.13	.06	.04
28. YQ mSDcES														-	-.30*	-.03
29. YQ mSDcDE															-	-.14
30. YQ mSDcAW																-

Note. T1= Time 1; T2 = Time 2; T3 = Time 3; YQ = Yule's Q; m = mother; c = child; FU = frown/upset; SD = sad/distressed; NE = neutral affect; SP = smile/positive affect; ES = escalate; DE = de-escalate; AW = avoid/withdraw; AN = analytic remark; CO = conciliatory remark. E.g., YQ mSDcAW = Yule's Q for tendency of child to avoid/withdraw in response to maternal expression of sadness/distress.

*$p < 0.05$, **$p < 0.01$.

Appendix D

Study 2: Informed Consent Form

L'INDIVIDU DANS SON MILIEU: Les parents et leurs enfants
Directrices du projet: Dale M. Stack, Ph.D. et Lisa A. Serbin, Ph.D.

Formulaire de consentement

Je,_____, soussigné(e), autorise les chercheurs du projet *L'individu dans son milieu* de l'université Concordia à rencontrer mon enfant, _____ ,à l'école durant la période de classe. Je suis informée que, durant la rencontre à l'école, mon enfant sera évalué au niveau de son fonctionnement intellectuel et académique. J'autorise également les chercheurs à recueillir des informations sur la vie scolaire de mon enfant de la part de son professeur et à obtenir une copie du dernier bulletin de l'année en cours.

Je consens également à rencontrer les chercheurs de l'Université Concordia à mon domicile avec mon enfant afin de compléter divers questionnaires sur son comportement et son tempérament. J'accepte que mon enfant soit filmé avec moi lors d'une séance incluant un jeu et des discussions portant sur des résolutions de problèmes. J'accepte également que mon enfant soit filmé avec soit son frère ou sa sœur lors de deux séances de discussion.

Ma participation consiste à remplir et à retourner une série de questionnaires, après quoi je recevrai par courrier pour cette série de questionnaires un chèque de $20.00. Concernant la participation de mon enfant, il recevra un montant total de $45.00 qui lui sera remis de la façon suivante : un chèque de $15.00 lui sera remis lors de la rencontre à l'école et un chèque de $30.00 pour les questionnaires qu'il a à remplir et à retourner.

Je comprends que toutes les informations que nous fournissons, qu'elles soient écrites, verbales, enregistrées ou filmées, sont strictement confidentielles et qu'elles ne serviront qu'à des fins de recherche. Cependant, si après évaluation des examens, mon enfant requérait une attention spéciale, les chercheurs de l'Université Concordia s'engagent à faire le suivi de la rencontre afin de référer les services nécessaires. Dans toutes les circonstances, je suis assuré(e) que l'anonymat sera conservé. Toutefois, selon la loi sur la protection de la jeunesse, toute information indiquant de l'abus physique ou sexuel devra être divulguée à l'Office de la protection de la jeunesse.

Dans l'éventualité où j'aurais des questions concernant cette recherche, je pourrai m'adresser soit à Joelle Bélisle-Cuillerier au (514) 848-2424 extension 7547 ou bien au Alessandra Rivizzigno au (514) 848-2424 extension 2254. De plus, si j'ai des questions au sujet de mes droits et ceux de mon enfant à titre de participant(e) volontaire ou une plainte à formuler, je peux appeler au bureau de la recherche de l'Université au (514) 848-2424, poste 7481.

Nom: _____ Date: _____
EN LETTRES MOULÉES

Signature: _____

Appendix E

Study 2: Kappa Coefficients Reflecting Inter-Rater Reliability on the Conflict Behavior Coding System and the Emotion Behavior Coding System – Adapted (Enns & Stack, 2007; Ferrar et al., resubmitted)

Behavioral Code	Sibling Conflict Kappa: Focal Adolescent	Sibling Conflict Kappa: Sibling Child	Mother-Adolescent Conflict Kappa: Mother	Mother-Adolescent Conflict Kappa: Adolescent
Conflict Behavior Coding System				
Listen	.85	.87	.87	.87
Analytic Remarks	.76	.80	.75	.77
Conciliatory Remarks	.72	.77	.76	.78
Disagreement	.81	.79	.73	.74
Confrontative Remarks	.75	.75	.75	N/A*
Avoidance/ Withdrawal Acts	.76	.83	.73	.74
Emotion Behavior Coding System				
Smile/Positive (SP)	.79	.79	.83	.84
Frown/Upset (FU)	.73	.75	.83	.81
Sad/Distressed (SD)	.82	.68	.82	.80
Neutral (NE)	.72	.74	.79	.77

*This behavior did not occur in any of the videos double-coded to assess inter-rater reliability.

Appendix F

Study 2: Descriptive statistics for Yule's Q values of contingencies of interest

Descriptive Statistics for Yule's Q Values of Contingencies of Interest (Sibling Task)

Contingency – Yule's Q	*N* (% of sample)	*M*	*SD*
Focal adolescent frown/upset → focal adolescent escalate	21 (91.3%)	.29	.52
Focal adolescent frown/upset → focal adolescent de-escalate	21 (91.3%)	.24	.21
Focal adolescent frown/upset → focal adolescent avoid/withdraw	19 (82.6%)	-.73	.41
Focal adolescent sad/distressed → focal adolescent escalate	12 (52.2%)	-.13	.83
Focal adolescent sad/distressed → focal adolescent de-escalate	12 (52.2%)	-.04	.50
Focal adolescent sad/distressed → focal adolescent avoid/withdraw	11* (47.8%)	-.45	.77
Sibling child frown/upset → sibling child escalate	21 (91.3%)	.29	.51
Sibling child frown/upset → sibling child de-escalate	21 (91.3%)	.12	.41
Sibling child frown/upset → sibling child avoid/withdraw	19 (82.6%)	-.49	.67
Sibling child sad/distressed → sibling child escalate	13 (56.5%)	-.36	.73
Sibling child sad/distressed → sibling child de-escalate	13 (56.5%)	.01	.51
Sibling child sad/distressed → sibling child avoid/withdraw	11* (47.8%)	-.46	.76
Focal adolescent frown/upset → sibling child escalate	21 (91.3%)	.08	.62
Focal adolescent frown/upset → sibling child de-escalate	21 (91.3%)	.01	.34
Focal adolescent frown/upset → sibling child avoid/withdraw	19 (82.6%)	-.36	.60
Focal adolescent sad/distressed → sibling child escalate	12 (52.2%)	-.45	.82
Focal adolescent sad/distressed → sibling child de-escalate	12 (52.2%)	.14	.41
Focal adolescent sad/distressed → sibling child avoid/withdraw	11* (47.8%)	-.86	.46
Sibling frown/upset → focal adolescent escalate	21 (91.3%)	.29	.51
Sibling frown/upset → focal adolescent de-escalate	21 (91.3%)	.12	.41
Sibling frown/upset → focal adolescent avoid/withdraw	19 (82.6%)	-.49	.67
Sibling sad/distressed → focal adolescent escalate	13 (56.5%)	-.36	.73
Sibling sad/distressed → focal adolescent de-escalate	13 (56.5%)	.01	.51
Sibling sad/distressed → focal child avoid/withdraw	11* (47.8%)	-.46	.76

* Yule's Q could not be computed for > 50% of the sample; thus, contingencies dropped from subsequent analyses.

Descriptive Statistics for Yule's Q Values of Contingencies of Interest (Mother-Adolescent Task)

Contingency – Yule's Q	*N* (% of sample)	*M*	*SD*
Adolescent frown/upset → adolescent escalate	30 (93.7%)	.26	.64
Adolescent frown/upset → adolescent de-escalate	31 (96.9%)	.25	.27
Adolescent frown/upset → adolescent avoid/withdraw	22 (68.8%)	-.73	.46
Adolescent sad/distressed → adolescent escalate	30 (93.7%)	-.28	.71
Adolescent sad/distressed → adolescent de-escalate	31(96.9%)	-.12	.40
Adolescent sad/distressed → adolescent avoid/withdraw	22 (68.8%)	-.07	.82
Mother frown/upset → mother escalate	28 (87.5%)	.39	.52
Mother frown/upset → mother de-escalate	32 (100%)	.19	.14
Mother frown/upset → mother avoid/withdraw	15* (46.9%)	-.41	.62
Mother sad/distressed → mother escalate	25 (78.1%)	-.56	.54
Mother sad/distressed → mother de-escalate	28 (87.5%)	.14	.21
Mother sad/distressed → mother avoid/withdraw	14* (43.8%)	-.52	.69
Adolescent frown/upset → mother escalate	28 (87.5%)	.24	.64
Adolescent frown/upset → mother de-escalate	31 (96.9%)	.01	.20
Adolescent frown/upset → mother avoid/withdraw	15* (46.9%)	-.29	.76
Adolescent sad/distressed → mother escalate	27 (84.4%)	-.37	.61
Adolescent sad/distressed → mother de-escalate	31 (96.9%)	.11	.20
Adolescent sad/distressed → mother avoid/withdraw	15* (46.9%)	-.07	.74
Mother frown/upset → adolescent escalate	31 (96.9%)	.32	.44
Mother frown/upset → adolescent de-escalate	32 (100%)	-.04	.32
Mother frown/upset → adolescent avoid/withdraw	22 (68.8%)	-.42	.55
Mother sad/distressed → adolescent escalate	28 (87.5%)	-.47	.55
Mother sad/distressed → adolescent de-escalate	28 (87.5%)	-.09	.40
Mother sad/distressed → adolescent avoid/withdraw	21 (65.6%)	-.25	.70

* Yule's Q could not be computed for > 50% of the sample; thus, contingencies dropped from subsequent analyses.

Appendix G

Study 2: List of Variables with Significant Skew (Bakeman & Quera, 2011)

1. Yule's Q - Mother FU → Mother Escalate
2. Yule's Q - Focal Adolescent FU → Focal Adolescent Escalate
3. Yule's Q - Mother FU → Focal Adolescent Escalate
4. Yule's Q - Sibling FU → Sibling Escalate
5. Yule's Q - Sibling FU → Focal Adolescent Escalate
6. Yule's Q - Focal Adolescent SD → Focal Adolescent De-escalate
7. Yule's Q - Mother FU → Focal Adolescent De-escalate
8. Yule's Q - Sibling FU → Sibling De-escalate
9. Yule's Q - Focal Adolescent FU → Focal Adolescent Avoid/Withdraw
10. Yule's Q - Focal Adolescent SD → Mother De-escalate
11. Yule's Q - Focal Adolescent SD → Sibling De-escalate