COPING WITH SOCIAL STRESS IN EARLY ADOLESCENCE: THE INTERACTIVE CONTRIBUTION OF OBSERVED EMOTIONAL CLIMATE AND YOUTH PHYSIOLOGY

BY

XIAOMEI LI

THESIS

Submitted in partial fulfillment of the requirements for the degree of Master of Science in Human Development and Family Studies in the Graduate College of the University of Illinois at Urbana-Champaign, 2019

Urbana, Illinois

Master’s Committee:

Assistant Professor Kelly M. Tu, Chair
Professor Nancy L. McElwain
Abstract

Parental socialization of coping is suggested to assist the acquisition of coping strategies, especially during early adolescence when youth are experiencing increasing social challenges. Yet, less is known about whether characteristics of the relational context of parental socialization of coping also contribute to the development of coping. Additionally, contextual influences likely vary depending on youths’ parasympathetic nervous system (PNS) functioning which reflects their physiological responsiveness to environmental stimuli. The aforementioned gaps in the literature were addressed in the current two-wave longitudinal study of 100 mother-youth (53% boys, age 10-12) dyads. The relational context of parental socialization of coping was characterized by the emotional climate of the mother-youth dyad (i.e., maternal affect, dyadic cohesiveness) observed during a 5-min discussion task about youths’ peer problems. Youths’ PNS functioning was assessed via baseline respiratory sinus arrhythmia (RSA) collected during a resting task. Youths’ self-reported engaged coping and social advice-seeking (from parents) behaviors were collected at both waves of data collection. Results suggest that during mother-youth interactions: (1) higher levels of maternal positive affect and lower levels of maternal negativity predicted more engaged coping over time among all youth, (2) higher levels of maternal positive affect and dyadic cohesiveness predicted more social advice-seeking over time, especially for boys exhibiting higher levels of baseline RSA and girls exhibiting lower levels of baseline RSA, (3) higher levels of maternal negativity predicted less social advice-seeking over time for boys and girls exhibiting higher levels of baseline RSA but more social-advice seeking over time for boys exhibiting lower levels of baseline RSA. Findings highlight the role of a more positive and cohesive relational context in facilitating the development of coping during early adolescence and its differential effects on boys and girls characterized by different physiological profiles.
Acknowledgements

The author would like to thank her co-advisors, Dr. Kelly M. Tu and Dr. Nancy L. McElwain, for their continual support and guidance with her Master’s thesis. The author would also like to express appreciations to her family and friends who always offered support and love during this process.
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Chapter 1: Introduction

The transition to middle school can be challenging for emerging adolescents who often find themselves facing numerous social stressors, ranging from daily hassles (e.g., minor peer conflict) to serious difficulties (e.g., social rejection; Juvonen, Le, Kaganoff, Augustine, & Constant, 2004). Fortunately, the majority of social stressors that youth will encounter in their everyday lives are controllable. Among manifold contributors to the competence in managing social challenges is coping ability, which is defined as “conscious volitional efforts to regulate emotion, cognition, behavior, physiology, and the environment in response to stressful events or circumstances” (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001, pp. 89). Problems in effectively coping with social stressors may interfere with youths’ normative socioemotional development and give rise to psychopathology (Compas et al., 2001). Additionally, adaptation to social challenges has to be achieved in the midst of developmental changes in youths’ cognitive, emotional, biological, and behavioral characteristics, as well as in their peer groups and school environment (Gestsdottir & Lerner, 2008). Therefore, as youth are gradually gaining more autonomy to make personal decisions (Wray-Lake, Crouter, & McHale, 2010), these new demands highlight the importance of researchers to understand how early adolescents effectively manage social challenges and navigate this critical period.

Mounting evidence points to the role of parents as agents in youths’ socialization of coping (for reviews, see Eisenberg, Cumberland, & Spinrad, 1998; Kliewer, Fearnow, & Miller, 1996). In the social domain, parents can socialize adaptive coping behaviors via direct suggestions of strategies to deal with social challenges. Less obvious, parental socialization of coping also occurs through the emotional climate of parent-youth discussions about interpersonal problems during which coping advice is usually given. Compared with direct coping suggestions, the influence of emotional climate on youth coping has been understudied but might provide a greater understanding of processes underlying parental socialization of coping based on theories suggesting its unique role in constituting and characterizing the relational context of parental socialization more broadly (Darling & Steinberg, 1993). Additionally, it has been widely suggested that the caregiving environment might not affect all youth in the same way and instead may depend on youth characteristics. Youth’s parasympathetic nervous system (PNS) functioning, reflecting their physiological responsiveness to environmental influences, might be a potential moderator in the associations between emotional climate and development of coping. The influence of emotional climate may also vary by gender given parental socialization of coping is theorized to have different emphases and outcomes for boys and girls (Eisenberg et al., 1998; Kliewer et al., 1996) and evidence of gender differences in the choice of coping responses (Rose & Rudolph, 2006). Therefore, in the current study, I examined youth PNS functioning and gender as moderators of the longitudinal association.
between the emotional climate of mother-youth discussions about peer problems and youth’s coping strategies in the social domain.

**Coping with Social Stress**

Coping responses involve voluntary efforts to self-regulate (e.g., behaviorally, emotionally, physiologically) or alter the environment, or both (Compas et al., 2001). These responses are further distinguished as engaging with or disengaging from the stressor. In the face of controllable interpersonal stressors, engaged coping responses or responses directed towards stressors (e.g., problem-solving, emotion regulation, emotion expression) allow youth to analyze the stressful circumstances, direct their attention toward the manageable aspects of the stressors, and generate constructive solutions to deal with the stressors. Engaged coping also reflects youths’ abilities to form positive cognitions about themselves and regulate negative emotion, which may lay a foundation for better social adjustment (Compas et al., 2017). Potentially assisting these processes, seeking help or support from parents might provide youth more opportunities to acquire appropriate coping strategies and could mitigate the effects of stressors (Eisenberg et al., 1993). Conversely, disengaged coping responses or responses oriented away from stressors (e.g., avoidance, denial, wishful thinking) involve the release of negative feelings and are often considered to reflect inadequate skills in modulating negative self-perceptions or perceptions of the stressor. Lack of efforts to constructively regulate ones’ cognitions, emotions, behaviors, and the environment might be associated with symptoms of psychopathology, such as increase in internalizing and externalizing problems (Compas et al., 2017). Therefore, factors that contribute to the acquisition of various coping strategies must be examined more comprehensively.

**Emotional Climate of Mother-Youth Interactions**

**Parental socialization of coping.** Understanding how various factors within the family (e.g., family environment, parent-child relationship, parenting practices) shape the development of coping strategies sheds light on why youth respond to stressful situations as they do (Darling & Steinberg, 1993; Kliewer et al., 1996; Skinner & Zimmer-Gembeck, 2016). Parental socialization of coping typically involves parenting goals, practices, and styles (i.e., emotional climate, Darling & Steinberg, 1993) that influence children’s learning and utilization of strategies to manage personal or external demands that exceed the child’s current resources or capacities (Miller, Kliewer, & Partch, 2010). To understand how parental socialization of coping contributes to youth coping, parents’ coping suggestions that directly intervene on youths’ coping strategies have been widely investigated. However, these coping suggestions are not given in a vacuum. Parental socialization of coping is usually embedded in the relational context constituted by parents and youth during interactions, but significantly less attention has been paid to how characteristics of the relational context also influence youth coping. In the broader literature on parental socialization, the emotional climate of parent-youth interactions is thought to represent the relational context of parental
socialization, reflecting a constellation of parental attitudes, affect, and beliefs toward the youth (Darling & Steinberg, 1993). Unlike goal-directed and specific parental socialization practices (e.g., advice-giving), the emotional climate of parent-youth interactions during parental socialization captures unique aspects of the general day-to-day interaction milieu such as parent’s tone of voice, body language (or gestures), displays of emotions in response to youth’s expressions of stress, as well as the dynamics of the parent-youth relationship (e.g., quality of coordination, shared affect). Although the emotional climate is expressed along with the use of specific socialization practices, it is conceptually independent of specific socialization practices in contributing to socialization outcomes (Darling & Steinberg, 1993). Therefore, the emotional climate displayed specifically during mother-youth discussions of peer problems may characterize the relational context within which mothers socialize coping in the social domain, and its relations to youth coping with social stress merit investigation. Two indicators, maternal affect and mother-youth dyadic cohesiveness, that capture distinct aspects of the emotional climate of youths’ interactions with mothers are discussed below.

Maternal affect. The emotional climate of mother-youth interactions could be reflected in maternal emotional expressiveness, which is conceptualized as the degree of positive affect and negativity displayed by the mother towards the youth during their interactions (Halberstadt, Crisp, & Eaton, 1999; Morris, Silk, Steinberg, Myers, & Robinson, 2007). Specifically, maternal positive affect involves the mother exhibiting verbal or non-verbal expressions of pleasure and enjoyment in being with the youth, whereas maternal negativity involves the mother’s expression of negative affect, such as tension, anger, irritability, and rejection, towards the youth (Lindahl & Malik, 2001).

Theories suggest that mothers socialize coping responses not only by providing specific suggestions but also largely through their expressions of emotions and reactions to youths’ emotions (Eisenberg et al., 1998), which help set the tone of mother-youth day-to-day interactions. Youth may be more likely to process mothers’ coping suggestions and actively regulate emotions and behaviors when mothers are affectionate and positive rather than hostile or passive (Dix, 1991; Hoffman, 1983). Mothers who communicate high positive affect and low negativity during daily interactions with youth might help them experience optimal levels of arousal and therefore gradually (and even unconsciously) affect learning about coping. In comparison, low maternal positive affect and high maternal negativity might compromise youths’ acquisition of constructive coping responses because youth might be worried about disapproval or hesitant to share their experiences, feelings, and thoughts; feel diminished; or try to avoid discussing the problem to prevent sanction from mothers (Davies & Cummings, 1998; Eisenberg et al., 1998). Therefore, mothers’ display of more positive affect and less negativity might contribute to youth outcomes by transforming the nature of parent-child interactions, altering the effectiveness of parenting practices, and changing children’s openness to parental socialization (Darling & Steinberg, 1993).
Findings from empirical evidence have also revealed links between mother’s emotional expression and youth coping responses. For example, a cross-sectional study found that mothers who reported more positive (less negative) affective responses towards youths’ negative emotions had youth who reported more engagement and less disengagement coping responses to stress (Valiente, Lemery-Chalfant, & Swanson, 2009). Similarly, when mothers reported higher expressions of threat-related negative emotions (e.g., anger, hostility), youth reported on average a smaller proportion of constructive coping responses (e.g., problem-solving and help-seeking) to stressful events during a two-week period (Valiente, Fabes, Eisenberg, & Spinrad, 2004). In other words, mothers’ high negative emotional expressions were associated with a larger proportion of nonconstructive coping responses (e.g., verbal aggression, turned emotional) among youth. Therefore, theoretical and empirical evidence highlight the role of mothers’ self-reported general expressions of emotions in shaping youths’ coping abilities.

**Dyadic cohesiveness.** In addition to maternal affect, mother-youth dyadic cohesiveness also denotes the emotional climate of their interactions (Morris, Criss, Silk, & Houltberg, 2017; Morris et al., 2007). Dyadic cohesiveness, which is derived from the concept of family cohesion and refers to the emotional bond and relationship quality among family members (Olson, Sprengle, & Russell, 1979), is defined as the sense of unity, togetherness, and closeness within the dyad during their interactions (Lindahl & Malik, 2001). Dyads who are highly cohesive will demonstrate strong interpersonal connections, mutual appreciation, harmony, and closeness during interactions. In contrast, low cohesiveness involves one or both parties in a dyad showing disconnect, distance, and awkwardness or lack of comfort during interactions (Lindahl & Malik, 2001).

Dyadic cohesiveness describes a key quality of the mother-youth relationships that has may influence the development of coping (Kliwer et al., 1996). Youth who experience high levels of cohesiveness with mothers may view mothers as available to meet their safety needs for facing and manage life challenges (Sandler, Short, Miller, & Wolchik, 1989). Indeed, according to attachment theory, researchers have theorized that a secure relationship with mother allows youth to approach problems in a more active and oriented manner, whereas an insecure relationship with mother likely elicits avoidance coping behaviors in youth (Kliwer et al., 1996). As a result, mothers and youth who are close, unified, and comfortable with each other could potentially support and facilitate youths’ learning and use of more engaged coping strategies to solve problems, whereas dyads who appear separate and distant might make youth feel more threatened by stressful events and discourage them from actively dealing with challenges that they may encounter (Kliwer et al., 1996).

Although no empirical study has directly examined the role of dyadic cohesiveness in maternal socialization of coping, relevant evidence of other indicators of relationship quality between family members sheds light on the proposed association between dyadic cohesiveness and coping. For example,
families’ self-reported perceptions of high family cohesion were related to more adaptive coping among adolescents (e.g., Hamid, Yue, & Leung, 2003; Lohman & Jarvis, 2000; Shulman, Seiffge-Krenke, & Samet, 1987). Also, youth who perceived higher maternal acceptance, another well-studied aspect of mother-youth relationship quality, reported more active coping responses (Kliewer et al., 1996). Similarly, in a study where parent-youth relationship quality was treated as a global concept, youth who perceived more supportive and emotionally-expressive relationships with parents also adopted more active coping strategies, and less avoidant and wishful thinking strategies, in the face of problems at school (Zimmer-Gembeck & Locke, 2007). These prior studies highlight the importance of considering mother-youth relationship in studying the influence of parental socialization of coping. Dyadic cohesiveness observed during mother-youth interactions describes the dynamics of coordination and communication between mothers and youth, which reflects a unique aspect of mother-youth relationship quality (i.e., dynamics) that is different from self-reported perceptions of general relationship quality and might better capture characteristics of the interactive processes between mothers and youth during parental socialization of coping specifically.

**Moderating Effect of Youth PNS Functioning**

As reviewed above, the emotional climate of mother-youth interactions might contribute significantly to the development of coping during early adolescence. Meanwhile, multiple theories have highlighted the interactions between children’s characteristics and environmental factors, including parenting and the caregiving context, in the prediction of their adjustment (e.g., Belsky & Pluess, 2009; El-Sheikh & Erath, 2011; Ellis & Boyce, 2008; Ellis, Boyce, Belsky, Bakermans-Kranenburg, & van Ijzendoorn, 2011; Monroe & Simons, 1991; Pluess & Belsky, 2013). Among them, the differential susceptibility model proposes that some children possess characteristics, termed “susceptibility” factor, that may make them more reactive to both positive and negative caregiving environments (Belsky & Pluess, 2009). As a result, a “susceptible” individual would not only exhibit worse outcomes in negative caregiving environments, but better outcomes in positive caregiving environments. From a psychophysiological perspective, the function of individual’s stress response system, particularly the autonomic nervous system (ANS), is considered an important endophenotypic marker of individual susceptibility (Belsky & Pluess, 2009). Therefore, denoting biological readiness to respond to environmental stimuli, youth ANS functioning might interact with the positive and negative emotional climate of mother-youth interactions in contributing to the development of coping.

The ANS regulates individual’s hemostatic function and comprises two subsystems, the sympathetic nervous system (SNS) and the parasympathetic nervous system (PNS). Specifically, the SNS promotes increased metabolic output which mobilizes the body to engage in “fight or flight” responses in the face of external challenges. In contrast, the PNS promotes the rest, repair, and relaxation of the body.
through a series of physiological responses (e.g., decelerated heart rate, decreased blood pressure, increased blood flow to internal organs, and muscle relaxations) controlled by vagal nerves (Beauchaine, 2001). According to Polyvagal Theory (Porges, 2007), the vagus also plays an important role in preparing the individual to respond to environmental demands by facilitating the allocation of body resources and conserving energy. Therefore, the functioning of PNS is tightly linked to the effectiveness of an individual’s physiological regulatory capacity.

The functioning of PNS is often assessed through respiratory sinus arrhythmia (RSA) which refers to the variations in heart rate during a breathing cycle. RSA, an objective marker of vagal tone, is composed of more heightened vagal efference during exhalation which lowers the heart rate, and of decreased vagal efference during inhalation which increases the heart rate (Beauchaine, 2001). RSA measured during a resting task (i.e., baseline RSA) represents the vagal tone under non-stressful situations and reflects the capacity of PNS to regulate body resources and maintain homeostasis, as well as an individual’s biological potential to inhibit autonomic arousal to respond to subsequent environmental stimuli (Porges, 2011). Because baseline RSA assessed during a resting and non-stressful state reflects the body’s regulatory capacity (Porges, 2011), higher baseline RSA has been theorized to represent individual’s greater ability to modulate emotionality and physiological activity, greater and more flexible potency to respond to stress, and greater readiness to adapt to environmental challenges (Beauchaine, 2009; Porges, 2007; Thayer & Lane, 2000). Therefore, potentially underlying an individual’s higher physiological reactivity (Beauchaine, 2001; Rabinowitz & Drabick, 2017), the construct of higher baseline RSA seems to be more consistent with the description of susceptibility factor and might moderate the environmental influence on individual’s development as suggested by the differential susceptibility model (Belsky & Pluess, 2009).

Several studies adopting the differential susceptibility framework have also revealed support for high baseline RSA as a susceptibility factor. Although no known studies have examined the contributions of higher youth baseline RSA specifically in parental socialization of coping during early adolescence, it has been investigated as a moderator of associations linking aspects of family environment and child outcomes more broadly. For example, under the differential susceptibility framework, Eisenberg and colleagues (2012) found that better environmental quality (reflected by higher socioeconomic status and better marital adjustment) reported by parents was associated with lower aggression among young children exhibiting high or moderate levels of baseline RSA, but no association emerged for those exhibiting low baseline RSA. The authors concluded that high baseline RSA seemed to serve as a susceptibility factor that contributed to young children’s ability to take advantage of the potential benefits of a supportive relational context. Similarly, but with adolescents, Van der Graaff and colleagues (2016) reported that adolescents exhibiting different levels of baseline RSA respond differentially to self-
reported relationship quality with parents, yielding divergent social adjustment among adolescents. Specifically, higher parental support was a positive predictor of empathic concern for girls exhibiting high levels of resting RSA, whereas higher negative interaction with parents predicted lower empathic concern for boys exhibiting high resting RSA. Although results from this particular study did not yield a consistent moderating effect of high baseline RSA, they highlight the importance of investigating baseline RSA as a potential moderator of the associations linking different aspects of parental influence with youth adjustment and providing more evidence in an effort to clarify the patterns of these associations. Therefore, guided by theoretical and empirical evidence for the differential susceptibility model presented above, I conceptualized youths’ high baseline RSA as indicator of physiological susceptibility to understand the contributions of youth physiology in parental socialization of coping.

**Gender Difference**

Youth gender may be another important moderator to consider in examining the effect of parental socialization on youth coping. Girls and boys may be socialized differently, with theoretical and empirical evidence suggesting girls are socialized and supported to value interdependence and connectedness in social relationships, whereas boys are encouraged to develop greater independence and autonomy (Snyder, 1998; Zemp, Bodenmann, Backes, Sutter-Stickel, & Revenson, 2016). In the parental emotion socialization literature, it has been suggested that young children may “cue in to parental behavior, interpret family interaction patterns, or listen to parental advice differently depending on their gender” (Kliewer et al., 1996, pp. 2343). Meanwhile, mothers’ discussions of emotion with sons and daughters are also likely to differ in various ways, such as emphasizing the expression of warm and empathic emotions with daughters (compared with anger and disgust with sons) and focusing more on emotional states with daughters (compared with causes and consequences of emotions with sons), which might further contribute to divergent emotional development between boys and girls (Eisenberg et al., 1998). Among adolescents, an inconsistent pattern of associations by youth gender has emerged. For example, adolescent girls whose mothers reported more invalidation of their daughters’ positive affect reported more depressive symptoms, whereas this association was not found for adolescent boys (Yap, Allen, & Ladouceur, 2008). Yet, other researchers have found that parents tend to socialize adolescent boys’ and girls’ emotional expressions in similar ways (Klimes-Dougan et al., 2007). Thus, it is unclear whether and how gender may moderate the effect of parental socialization of coping, especially during the transition to adolescence.

Additionally, when taking youth’s physiology into consideration, empirical evidence has shown that it further interacts with youth gender in moderating the associations linking aspects of the family environment with youths’ behavioral outcomes. As previously mentioned, Van der Graaff and colleagues (2016) found that higher negative interaction with parents predicted lower empathic concern only for boys
exhibiting high resting RSA but not girls. In contrast, higher parental support predicted higher empathic concern only girls exhibiting higher levels of resting RSA. These findings suggest that whether higher baseline RSA operates as a susceptibility factor may vary by boys and girls depending on which aspects of parent-youth interaction are examined.

Finally, numerous studies have found stable gender differences in certain voluntary coping strategies (for a review, see Rose & Rudolph, 2006). For example, adolescent girls demonstrated more efforts to solve problems and seek emotional or instrumental support than adolescent boys, with evidence that gender differences intensifies with age (Rose & Rudolph, 2006), especially as children enter into early adolescence. Collectively, based on the aforementioned studies, there appears to be some evidence, albeit mixed, of gender differences in parental socialization, youth coping, and among associations of parenting, baseline RSA, and youth outcomes, which warrant further investigation.

**The Current Study**

As reviewed above, the emotional climate of mother-youth interactions may contribute to the development of coping but is relatively understudied compared with the effect of parents’ direct coping suggestions. For empirical studies assessing aspects of emotional climate, self-report measures were often adopted to capture youths’ perception of parents’ emotional expressivity (Valiente et al., 2004) or parent-child relationship quality (Van der Graaff et al., 2016). In comparison, observational assessments of parent-child interactions are thought to be less swayed than questionnaires by social desirability effects, elicit ongoing issues in family relationships, create more opportunities to capture a wide range of actual behavioral responses among family members, and provide a more ecologically valid assessment of mother-youth daily conversations (Cummings, Keller, & Davies, 2005; Krishnakumar & Buehler, 2000).

Towards advancing the literature, the current study investigated the prospective effects of observed emotional climate during a mother-youth conversation about a peer problem on youth-reported engaged coping and social advice-seeking. The use of a peer problem conversation specifically situated mothers and youths in a context of discussing experiences and potential solutions to youths’ social challenges. During this conversation, mothers might give coping advice and youth could learn to deal with social challenge. Therefore, the emotional climate displayed during this conversion task might be an ecologically valid assessment of attributes pertinent to the relational context in which parental socialization of coping takes place. Moreover, maternal affect and mother-youth dyadic cohesiveness were both observed to gain a more comprehensive understanding of different characteristics of emotional climate during mother-youth interactions and their potential associations with youth coping.

Additionally, our understanding is limited and inconsistent regarding patterns of associations between emotional climate indices and coping among youth characterized by different physiological profiles (Eisenberg & Valiente, 2004). Applying the differential susceptibility framework (Belsky &
Pluess, 2009), the current study examined the moderating role of youth PNS functioning indicated by baseline RSA, with higher levels of baseline RSA conceptualized as a susceptibility factor for youth. Because the differential susceptibility model emphasizes the influence from both positive and negative dimensions of caregiving, which has been pointed out to be absent in many relevant studies (Scott & O’Connor, 2012), the current study incorporated both positive and negative aspects (i.e., maternal positive affect and maternal negativity; higher and lower levels of dyadic cohesiveness) of the mother-youth interaction context. Therefore, youth who display higher levels of baseline RSA, which denotes their greater capacity to react to (and thus being influenced by) positive and negative cues in the relational context, might be more strongly affected by both positive and negative emotional climate of the mother-youth interactions – acquire more engaged coping strategies and show more social advice-seeking behaviors in the face of high maternal positive affect and high dyadic cohesiveness, but less engaged coping and social advice-seeking in the presence of high maternal negativity and low dyadic cohesiveness. Finally, given the aforementioned gender differences in parental socialization, youth coping, and the role of baseline RSA in moderating the association between the two, gender differences were explored in the current study to provide more evidence for the potentially differential associations among emotional climate, youth baseline RSA, and youth coping among boys and girls.

A two-wave longitudinal design was used in the current study with a community sample of mother-youth dyads. First, I examined the longitudinal association linking indices of observed emotional climate (i.e., maternal affect, dyadic cohesiveness) at Time 1 (T1) with youth-reported engaged coping strategies and social advice-seeking from parents at Time 2 (T2), controlling for T1 levels. Higher maternal positive affect and higher dyadic cohesiveness at T1 were hypothesized to predict more engaged coping strategies and social advice-seeking behaviors at T2. Conversely, higher maternal negativity at T1 was hypothesized to predict less engaged coping strategies and social advice-seeking behaviors at T2. Second, I examined whether youth T1 baseline RSA assessed before the conversation task would moderate these longitudinal associations. Conceptualizing high baseline RSA as a susceptibility factor, I proposed that the aforementioned associations would be stronger among youth who exhibited higher baseline RSA compared with those who showed lower baseline RSA. Finally, I examined whether youth gender further moderated the above interactions. No a priori pattern of gender interaction was hypothesized due to a lack of empirical support showing a consistent pattern of high baseline RSA as a susceptibility factor in parental socialization of coping among boys versus girls.
Chapter 2: Methods

Participants

Data used for the proposed study comes from a larger project entitled *The Transition to Middle School Project* conducted by Dr. Kelly Tu and colleagues at the University of Illinois (data collected from 2017 to 2018). The sample included 100 youth (53% boys; $M$ age = 11.05 years, $SD = 0.33$) and their mothers (96% biological; $M$ age = 41.25 years, $SD = 6.22$) who were recruited from local schools in a Midwestern county. Youth in the study were in fifth grade at the time of the first wave of data collection, then followed as they transitioned from elementary school to middle school 5.73 to 10.13 months later ($M = 7.40, SD = 0.88$). Participants were recruited across two consecutive cohorts ($N_{cohort \ 1} = 52, N_{cohort \ 2} = 48$), spaced one year apart.

In terms of family background, 57% of adolescents were identified by their mothers as European American and 43% as racial/ethnic minority (11% African American, 14% Hispanic or Latino, 6% Asian, and 12% other such as biracial). For 97% of mothers who reported their race/ethnicity, 61% identified themselves as European American, and 36% minority (8% African American, 16% Hispanic or Latino, 9% Asian, and 3% other such as biracial). In terms of the annual family income, about 4.1% of families had a total household income below $25,000; about 14.4% had an income between $25,000 and $50,000; 18.6% had an income between $50,000 and $75,000; and 62.9% had income above $75,000. As for mothers’ educational backgrounds, approximately 75.3% of the mothers had a bachelor degree or higher, 79% of mothers were currently employed, and 85.4% mothers were currently married.

Procedure

All study procedures and instruments in *The Transition to Middle School Project* were reviewed and approved by the University of Illinois at Urbana-Champaign’s Institutional Review Board (IRB). Only procedures pertinent to the current study are described. At T1, during the laboratory visit, youth and mothers were first asked to complete, separately, a checklist form which contains a list of common social challenges for youth during this age period. Specifically, they each identified any social problems that the youth had recently faced and rated how stressful the problem was for themselves and how often it happened to the youth. They were also allowed to provide their own experiences when none of the provided ones applied to them.

Mothers and youths were then asked to participate in a laboratory protocol (5-min acclimation, 3-min baseline, 3-min conversation, and 3-min recovery) during which youths’ physiological responses were recorded continuously throughout using hardware and software from MindWare Technologies, Inc. (Gahanna, OH). Trained research assistants placed electrodes on participants according to standard procedures. Data acquisition for RSA followed standard guidelines using a Bioamp data acquisition system (MindWare Technologies, Inc., Gahanna, OH). Electrocardiography (ECG) data were collected.
using a modified lead-II configuration through disposable silver/silver-chloride (Ag-AgCl) electrodes (1½” foam sensor, 7% chloride gel) placed on participants’ right clavicle and left and right rib (Berntson et al., 1997).

During the baseline period, youth and mothers were instructed to sit quietly and relax without talking to each other. A slideshow of nature pictures was presented on a laptop for each family member to view during the baseline period. During the conversation activity, mothers and youth were asked to work together and choose one social challenge to talk about from the two to four options of topics provided by the research assistant. Topic options were selected based on overlap across mothers’ and youths’ checklists and ratings of stress and frequency. Dyads were also instructed to approach the conversation just as they normally would. With both mother and youth permission, the conversation was video-recorded for behavioral coding afterward. This protocol was adapted from established procedures (e.g., family interaction tasks, Parent-Youth Interaction Task; (Melby & Conger, 2001; Rueter & Conger, 1995; Sheeber, Hops, Alpert, Davis, & Andrews, 1997), but focused on youth social problems rather than parent-child conflict.

After the laboratory protocol, youth completed a series of questionnaires including their self-reports of coping with social stress and social advice-seeking from parents on laboratory laptop via Qualtrics. Unless otherwise requested, trained research assistants administered the surveys by reading the questions to youth to ensure the youth understood each item. At T2, families returned for a follow-up visit where youth reported on their coping with social stress and social advice-seeking.

**Measures**

*Observed emotional climate of mother-youth conversations (T1).* Maternal positive affect, maternal negativity, and mother-youth dyadic cohesiveness were coded during the mother-youth social challenge conversation. All tapes were double-coded by two trained graduate research assistants (inter-rater reliability reached .70 during coding training) who assigned a global score for each indicator. Discrepancies were resolved through discussions and given a consensus score. Interrater reliability was calculated with coders’ original scores to ensure the overall consistency between them. The current study used a coding system developed and modified by Dr. Tu based on existing coding systems including the *System for Coding Interactions and Family Functioning* (SCIFF) (Lindahl & Malik, 2000) and the *Children’s Social Development Project III* (CSDP3) developed by Dr. McElwain and colleagues in 2017 at the University of Illinois, as well as observations of mother-youth interactions from the current dataset.

*Maternal positive affect.* Maternal positive affect reflects the degree of the mother’s positive emotional tone during the dyadic interaction, including verbal and non-verbal expressions of affection, laughter, positive facial expression, physical affection, and positive tone of voice. During the conversation, low-level positive affect was indicated by small chuckles or slight smiles, whereas high-
level positive affect was indicated by verbal expressions of affection, physical affection (including reassuring or affectionate touches, hugs), or more intense expressions of smiles and laughter. Maternal positive affect was coded on a 5-point scale with 0 = absence of behavior, 1 = one or two low-level behaviors, 2 = one high-level or three low-level behaviors, 3 = two high-level or four or more low-level behaviors, and 4 = three or more high-level or continuous low-level behaviors. Interrater reliability was high for maternal positive affect (ICC = .87, α = .93).

**Maternal negativity.** Likewise, maternal negativity reflects the degree of mother’s negative emotional tone during the dyadic interaction, including expressions of tension, frustration, hostility, anger, irritation, or criticism expressed verbally, or through the tone of voice or facial expressions. During the conversation, low-level negativity was indicated by brief, low-intensity displays of abovementioned negative affect directed at the youth, small interruptions or talking over the youth, use of an annoyed or sarcastic tone, or minor put-downs. Moderate-level negativity was indicated by rudely or harshly interrupting or cutting the youth off, turning away from the youth, dismissing or invalidating youth’s opinions, ideas, feelings, thoughts. High-level negativity was indicated by explicitly insulting or overly rejecting the youth’s viewpoint, harsh criticism, or being condescending towards the youth. Maternal negativity was coded on a 5-point scale with 0 = absence of behavior, 1 = one or two low-level behaviors, 2 = one moderate-level or three low-level behaviors, 3 = one high-level, two moderate-level, or four or more low-level behaviors, and 4 = two or more high-level, three or more moderate-level, or continuous low-level behaviors. Interrater reliability was good for maternal negativity (ICC = .79, α = .86).

**Dyadic cohesiveness.** Mother-youth dyadic cohesiveness reflects the extent to which mothers and youth are affectionate, respectful, and warm with each other during the conversation. Based on the degree of unity, togetherness, and closeness within the dyad, low cohesiveness was characterized by a sense of distance or awkwardness during the interaction, or displays of disengagement or disconnection with, or insensitivity towards one another. Conversely, high cohesiveness was characterized by a sense of mutual appreciation and harmony within dyads as they worked together towards a common goal comfortably, and displays of interpersonal engagement, matching affect, or mirroring emotional responses. Dyadic cohesiveness was coded on a 5-point scale with 0 = low degree or no occurrence of behavior, 1 = only brief periods and minimal occurrence of behavior, 2 = behavior occurred for about half the time, 3 = behavior occurred for majority of the time, 4 = high degree of behavior occurred throughout the conversation. Interrater reliability was acceptable for dyadic cohesiveness (ICC = .63, α = .77).

**Youth baseline RSA (T1).** RSA scores were quantified with MindWare Technologies HRV analysis software using the spectral analysis method (Berntson et al., 1997). Before that, trained graduate research assistants visually scanned the Electrocardiography (ECG) data, manually removed data points
that were misidentified as R peaks, and inserted correct R peaks points to ensure the continuity of data. RSA data were scored in 1-minute interval and averaged to create RSA baseline scores.

Youth’s coping with social stress (T1 and T2).

Engaged coping. Youth completed the Responses to Stress Questionnaire – Social Stress (RSQ, Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000) to indicate their coping responses with social stress. Items were rated on a scale from 1 (not at all) to 4 (a lot) to evaluate the degree or frequency of each response. The current study only used the engagement coping scale (18 items, $\alpha_{T1} = .85, \alpha_{T2} = .84$) of the RSQ, which combines the primary and secondary engagement coping scale and reflects responses directed toward a stressor or one’s reaction to the stressor (Connor-Smith et al., 2000). The engagement coping scale was comprised of six subscales, including problem-solving (e.g. “I try to think of different ways to change the problem or fix the situation.”), emotion regulation (e.g. “I do something to calm myself down when I’m having problems with other kids.”), emotion expression (e.g. “I let someone or something know how I feel.”), positive thinking (e.g. “I tell myself that I can get through this, or that I’ll do better next time.”), cognitive restructuring (e.g. “I think about the things I’m learning from the situation, or something good that will come from it.”), and acceptance (e.g. “I decide I’m okay the way I am, even though I’m not perfect.”).

Social advice-seeking from parents. Youth also reported the degree to which they seek social advice from parents using five items from the Parental Management of Peers Inventory (PMPI, Mounts, 2000, 2004). Youth rated items on a 6-point scale from 1 (strongly disagree) to 6 (strongly agree) to indicate their perceptions of items such as “when I am having a problem with a friend, I can ask my parent for help in solving it.” and “my parent and I talk about ways of making new friends.” Reliability of this measure was good ($\alpha_{T1} = .82, \alpha_{T2} = .77$).

Demographic variables. All categorical demographic variables were dichotomously coded, including youth gender (0 = female) and minority status (0 = European American), mother minority status (0 = European American), and study cohort (0 = the 1st cohort).

Data Analytic Plan

Preliminary analyses were conducted using SPSS 25.0 to examine descriptive statistics and bivariate correlations among the study variables. Data were checked for outliers and skewness. Because maternal negativity showed substantial positive skewness ($Skewness = 2.84, Kurtosis = 8.12$), a Logarithmic (Log 10) transformation was conducted (post-transformation $Skewness = 2.30, Kurtosis = 4.16$). The main aims of the study were to: (1) examine the predictive associations between T1 emotional climate of mother-youth interactions and T2 youth coping; (2) examine the moderating effects of T1 youth baseline RSA and gender in the aforementioned associations. To address these aims, a series of
longitudinal regression analyses were conducted in SPSS Amos 25.0, which uses full information maximum likelihood (FIML) estimation to handle missing data.

Missing data was primarily due to attrition (11 dyads did not return at T2). Overall, no significant differences were found between dyads who participated at T1 or at both times on indices of maternal affect and youth coping; however, dyads that only participated at T1 demonstrated greater cohesiveness during the mother-youth conversations \[ M_{both\ times} = 2.95, SD = 1.01; M_{T1\ only} = 2.13, SD = 1.46; t (85) = 2.11, p = .038 \]. Across all three T1 observational measures, 11% (ranging from 10% to 13%) on average of the coding data were missing because either permission was not given to video record the dyad or youth, or the video camera malfunctioned. No significant differences on other study variables were found between dyads with and without observational codes. One baseline RSA score was missing due to technical difficulties during the collection of heart rate data. Little’s Missing Completely at Random (MCAR) test \[ \chi^2 (28) = 35.38, p = .159 \], indicating that the data were likely missing at random and therefore could be handled by FIML.

All continuous predictors were mean-centered before creating the interaction terms and used in the analyses. In each regression model, youth coping outcomes (i.e., engaged coping, social advice-seeking) were examined separately and indices of maternal affect (i.e., positive affect, negative) were examine together, but separate from dyadic cohesiveness, resulting in four main effect models in total. For each regression model, covariates (e.g., demographic variables, study cohort, T1 corresponding coping) were first entered into the model prior to testing main effects. Youth gender, although considered as a moderator, was also entered into the models as a covariate before the main predictors to control for its potential main effect on youth coping as detailed in the gender difference section (step 1). Second, four separate models were conducted to examine the main effects of T1 emotional climate indices [i.e., maternal affect (positive affect and negativity), dyadic cohesiveness] on T2 youth coping indices (i.e., engaged coping, social advice-seeking), controlling for the T1 corresponding coping outcome (step 2).

Next, the main and moderating effect of T1 youth baseline RSA (steps 3 and 4, respectively) were added to the model. For maternal affect models, only one interaction term was tested at a time (i.e., positive affect \( \times \) RSA, negativity \( \times \) RSA), resulting in six interaction models in total. Finally, to test whether above interactions were further moderated by gender, three sets of interaction terms (i.e., emotional climate indicator \( \times \) gender, RSA \( \times \) gender, and emotional climate indicator \( \times \) RSA \( \times \) gender) were entered into the model simultaneously (step 5). For significant interaction effects, simple slope tests (Aiken & West, 1991) were conducted to determine whether the association between emotional climate indices and youth coping outcomes were significant at +/- 1 SD of the mean on the youth baseline RSA for boys and girls. In the Results and Discussion, prediction is used in the statistical as opposed to causal sense.
Chapter 3: Results

Preliminary Analyses

Descriptive statistics and correlations among study variables are reported in Table 1 below. Based on observational codes from mother-youth conversations about peer problems at T1, higher levels of dyadic cohesiveness were modestly associated with more maternal positive affect and strongly associated with less maternal negativity. Indices of youth coping (i.e., engaged coping, social advice-seeking) were moderately and positively correlated with each other concurrently and were relatively stable over time.

Moreover, as expected, higher levels of T1 dyadic cohesiveness showed weak to moderate associations with more engaged coping and social advice-seeking behaviors among youth both concurrently and over time. However, neither maternal positive affect nor maternal negativity at T1 was significantly associated with youth coping. Moreover, youths’ higher levels of baseline RSA showed a modest correlation with mothers’ displays of more positive affect during mother-youth conversations but was not correlated with maternal negativity, dyadic cohesiveness, or concurrent or prospective youth coping outcomes.

Independent sample T tests were conducted to examine gender, race/ethnicity, and cohort differences across study variables. Compared with boys, girls demonstrated lower levels of baseline RSA \([M_{boys} = 6.85, SD = 1.07; M_{girls} = 6.23, SD = 1.14; t (97) = -2.77, p = .007]\). Girls also reported significantly more social advice-seeking behaviors at T1 \([M_{boys} = 4.18, SD = 1.21; M_{girls} = 4.61, SD = 0.85; t (98) = 2.07, p = .041]\) and T2 \([M_{boys} = 3.85, SD = 0.95; M_{girls} = 4.23, SD = 0.84; t (87) = 2.00, p = .049]\). No significant group differences were found for youth minority status; however, ethnic minority mothers had youth who reported more T1 engaged coping behaviors \([M_{European Americans} = 2.84, SD = 0.47; M_{minorities} = 3.08, SD = 0.39; t (78) = -2.30, p = .024]\) and T1 social advice-seeking behaviors \([M_{European Americans} = 4.31, SD = 1.15; M_{minorities} = 4.75, SD = 0.84; t (73) = -1.99, p = .050]\). Finally, compared with Cohort 1, youth from Cohort 2 reported more T1 social advice-seeking behaviors \([M_{cohort 1} = 4.18, SD = 1.16; M_{cohort 2} = 4.60, SD = 0.92; t (96) = -2.01, p = .048]\).

Therefore, based on significant associations or group difference emerged in preliminary analyses, youth age and gender, mother minority status, study cohort, and the T1 corresponding coping index were included as covariates in subsequent regression analyses. Although study variables did not yield significant group differences by youth minority status, it was still included in subsequent regression models as another covariate based on literature documenting ethnic differences in coping with interpersonal stressors by race/ethnicity among individuals across different ages (e.g., Lam & Zane, 2004), particularly young adolescents (e.g., Copeland & Hess, 1995).
Table 1. Descriptive Statistics and Correlations among Study Variables.

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
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<tbody>
<tr>
<td>1 T1 youth age</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
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<td>-.05</td>
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<td>4 T1 dyadic cohesiveness</td>
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<td>-.05</td>
<td></td>
<td>.25*</td>
<td></td>
<td>-.55***</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5 T1 youth baseline RSA</td>
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<td></td>
<td></td>
<td>-.05</td>
<td></td>
<td>-.06</td>
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<tr>
<td>6 T1 youth engaged coping</td>
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<td>.22*</td>
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<td>-.01</td>
<td>-.08</td>
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<td>.07</td>
<td>.46***</td>
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<td>8 T2 youth engaged coping</td>
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<td>.17</td>
<td>-.18</td>
<td>.28*</td>
<td>.03</td>
<td>.57***</td>
<td>.37***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 T2 youth advice-seeking</td>
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<td>.22†</td>
<td>-.06</td>
<td>.37**</td>
<td>-.10</td>
<td>.34**</td>
<td>.43***</td>
<td>.42***</td>
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<td>M</td>
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<td>0.22</td>
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<td>2.87</td>
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<td>0.00</td>
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<td>3.00</td>
<td>4.00</td>
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<td>3.94</td>
<td>6.00</td>
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<td>6.00</td>
</tr>
</tbody>
</table>

Note. T1 = data collected at Time 1; T2 = data collected at Time 2; M = mean; SD = standard deviation; Min. = minimum; Max. = maximum.

†p < .10. *p < .05. **p < .01. ***p < .001.
T1 Emotional Climate Predicting T2 Youth Coping with Social Stress

Results from the regression analyses predicting youth engaged coping and social advice-seeking are reported in Table 2 (maternal positive affect and negativity as predictors) and Table 3 (dyadic cohesiveness as the predictor).

Table 2. Regression Coefficients for Models Testing the Independent and Interactive Effects of T1 Maternal Affect, T1 Youth Baseline RSA, and Gender on T2 Youth Coping.

<table>
<thead>
<tr>
<th>Effects</th>
<th>T2 Engaged Coping</th>
<th>T2 Social Advice-seeking</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1: controls</strong></td>
<td>β</td>
<td>B</td>
</tr>
<tr>
<td>Youth age</td>
<td>.22</td>
<td>.30*</td>
</tr>
<tr>
<td>Youth gender (Gender, 0 = girl)</td>
<td>-.09</td>
<td>-.08</td>
</tr>
<tr>
<td>Youth minority status</td>
<td>-.03</td>
<td>-.03</td>
</tr>
<tr>
<td>Mother minority status</td>
<td>-.02</td>
<td>-.02</td>
</tr>
<tr>
<td>Cohort</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>T1 corresponding youth coping</td>
<td>.55</td>
<td>.50***</td>
</tr>
<tr>
<td><strong>Step 2: predictor main effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1 maternal positive affect (Pos)</td>
<td>.20</td>
<td>.08*</td>
</tr>
<tr>
<td>T1 maternal negativity (Neg)</td>
<td>-.15</td>
<td>-.49†</td>
</tr>
<tr>
<td><strong>Step 3: moderator main effect</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1 youth baseline RSA (RSA)</td>
<td>.08</td>
<td>.03</td>
</tr>
<tr>
<td><strong>Step 4: 2-way interaction effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model A: Pos × RSA</td>
<td>-.15</td>
<td>-.05</td>
</tr>
<tr>
<td>Model B: Neg × RSA</td>
<td>-.14</td>
<td>-.47</td>
</tr>
<tr>
<td><strong>Step 5: 3-way interaction effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model A: Pos × Gender</td>
<td>.12</td>
<td>.06</td>
</tr>
<tr>
<td>RSA × Gender</td>
<td>-.05</td>
<td>-.03</td>
</tr>
<tr>
<td>Pos × RSA × Gender</td>
<td>.05</td>
<td>.03</td>
</tr>
<tr>
<td>Model B: Neg × Gender</td>
<td>-.07</td>
<td>-.28</td>
</tr>
<tr>
<td>RSA × Gender</td>
<td>-.09</td>
<td>-.05</td>
</tr>
<tr>
<td>Neg × RSA × Gender</td>
<td>-.06</td>
<td>-.23</td>
</tr>
</tbody>
</table>

*Note.* Interactions effects with maternal positive affect on youth coping (Model A) and negativity on youth coping (Model B) were examined in separate models controlling for each other’s main effect. Reported results are from the step of entry in the model.

†p < .10. *p < .05. **p < .01. ***p < .001.
Table 3. Regression Coefficients for Models Testing the Independent and Interactive Effects of T1 Dyadic Cohesiveness, T1 Youth Baseline RSA, and Gender on T2 Youth Coping.

<table>
<thead>
<tr>
<th>Effects</th>
<th>T2 Engaged Coping</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td><strong>Step 1: controls</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Youth age</td>
<td>.22</td>
<td>.30*</td>
<td>.12</td>
</tr>
<tr>
<td>Youth gender (Gender, 0 = girl)</td>
<td>-.09</td>
<td>-.08</td>
<td>.08</td>
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<tr>
<td>Youth minority status</td>
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<td>-.03</td>
<td>.08</td>
</tr>
<tr>
<td>Mother minority status</td>
<td>-.02</td>
<td>-.02</td>
<td>.09</td>
</tr>
<tr>
<td>Cohort</td>
<td>.01</td>
<td>.01</td>
<td>.08</td>
</tr>
<tr>
<td>T1 corresponding youth coping</td>
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<td>.50***</td>
<td>.08</td>
</tr>
<tr>
<td><strong>Step 2: predictor main effects</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>T1 dyadic cohesiveness (Coh)</td>
<td>.15</td>
<td>.06</td>
<td>.04</td>
</tr>
<tr>
<td><strong>Step 3: moderator main effect</strong></td>
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<td></td>
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</tr>
<tr>
<td>T1 youth baseline RSA (RSA)</td>
<td>.14</td>
<td>.05</td>
<td>.03</td>
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<tr>
<td><strong>Step 4: 2-way interaction effects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coh × RSA</td>
<td>-.07</td>
<td>-.03</td>
<td>.03</td>
</tr>
<tr>
<td><strong>Step 5: 3-way interaction effects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coh × Gender</td>
<td>.04</td>
<td>.02</td>
<td>.05</td>
</tr>
<tr>
<td>RSA × Gender</td>
<td>-.06</td>
<td>-.04</td>
<td>.05</td>
</tr>
<tr>
<td>Coh × RSA × Gender</td>
<td>-.14</td>
<td>-.07</td>
<td>.04</td>
</tr>
</tbody>
</table>

Note. Reported results are from the step of entry in the model.

†p < .10. *p < .05. **p < .01. ***p < .001.

Engaged coping. Older youth reported more engaged coping at T2. No significant associations were found for other covariates. Engaged coping was stable from T1 to T2.

Maternal affect. As shown in Table 2, higher T1 maternal positive affect predicted more T2 youth engaged coping behaviors, whereas higher T1 maternal negativity predict less T2 youth engaged coping behaviors (trend, p = .074). These main effects together explained 6.6% of the unique variance in T2 engaged coping. No significant main or moderating effect of T1 youth baseline RSA were found and no significant moderating effect of youth gender emerged.

Social advice-seeking. Mothers who self-identified as ethnic minorities had youth who reported higher levels of T2 social advice-seeking behaviors. No significant associations emerged for the other covariates. Social advice-seeking was modestly stable from T1 to T2.

Dyadic cohesiveness. As shown in Table 3, T1 dyadic cohesiveness did not significantly predict T2 youth engaged coping behaviors after accounting for covariates. T1 youth baseline RSA and gender did not moderate the effect of T1 dyadic cohesiveness on T2 youth engaged coping.

Social advice-seeking. Mothers who self-identified as ethnic minorities had youth who reported higher levels of T2 social advice-seeking behaviors. No significant associations emerged for the other covariates. Social advice-seeking was modestly stable from T1 to T2.

Maternal affect. As shown in Table 2, higher T1 maternal positive affect significantly predicted more T2 social advice-seeking behaviors, whereas T1 maternal negativity was non-significant. The two
maternal affect indices together explained 6.3% of the unique variance in T2 social advice-seeking. Further, T1 youth baseline RSA and gender emerged as moderators of the associations linking indices of maternal affect and T2 social advice-seeking, yielding two 3-way interactions. Specifically, the significant 3-way interaction between T1 maternal positive affect, T1 youth baseline RSA, and gender explained additional 19.1% of the unique variance in T2 social advice-seeking. In a separate model, the significant 3-way interaction between T1 maternal negativity, T1 youth baseline RSA, and gender accounted for additional 4.1% of the unique variance in T2 social advice-seeking.

For the interaction involving T1 maternal positive affect, I plotted the simple slopes for T1 maternal positive affect and T2 youth social advice-seeking at +/- 1 SD of the mean on youth T1 baseline RSA for boys (see Figure 1) and girls (see Figure 2) separately, with points to plot selected at +/- 2 SD of the mean on T1 maternal positive affect. As shown in Figure 1, higher levels of T1 maternal positive affect predicted more T2 social advice-seeking among boys who exhibited higher baseline RSA ($B = 0.20, SE = 0.07, p = .002$), but not lower baseline RSA ($B = -0.04, SE = 0.07, p = .560$). Further, the slopes for higher and lower baseline RSA were significantly different from each other, as indicated by the 2-way interaction between T1 maternal positive affect and baseline RSA ($B = 0.14, SE = 0.06, p = .020, \beta = 0.19$) in the model predicting T2 social advice seeking for boys.

Conversely, as shown in Figure 2, higher levels of T1 maternal positive affect predicted more T2 social advice-seeking behaviors among girls who showed lower baseline RSA ($B = 0.41, SE = 0.07, p < .001$), but not among girls who showed higher baseline RSA ($B = 0.10, SE = 0.07, p = .130$). Additionally, the slopes for higher and lower baseline RSA were significantly different from each other, as indicated by the 2-way interaction between T1 maternal positive affect and baseline RSA ($B = -0.17, SE = 0.06, p = .005, \beta = -0.20$) in the model predicting T2 social advice seeking for girls.
Figure 1. The association between T1 maternal positive affect and T2 youth social advice-seeking at lower (-1 SD) and higher (+1 SD) levels of T1 baseline RSA for boys.

Figure 2. The association between T1 maternal positive affect and T2 youth social advice-seeking at lower (-1 SD) and higher (+1 SD) levels of T1 baseline RSA for girls.
For the interaction involving T1 maternal negativity, I plotted the simple slopes for T1 maternal negativity and T2 youth social advice-seeking at +/- 1 SD of the mean on youth T1 baseline RSA for boys (see Figure 3) and girls (see Figure 4) separately, with points to plot selected at +/- 2 SD of the mean on the log-transformed T1 maternal negativity. As shown in Figure 3, higher levels of T1 maternal negativity was associated with lower T2 social advice-seeking for boys who exhibited higher baseline RSA ($B = -2.99, SE = 0.56, p < .001$), but higher T2 social advice-seeking for boys who exhibited lower baseline RSA ($B = 1.81, SE = 0.56, p = .001$). Further, the slopes for higher and lower baseline RSA were significantly different from each other, as indicated by the 2-way interaction between T1 maternal negativity and baseline RSA ($B = -3.37, SE = 0.57, p < .001, \beta = -0.42$) in the model predicting T2 social advice seeking for boys.

Demonstrating a similar pattern of associations as boys, as shown in Figure 4, higher levels of T1 maternal negativity was associated with lower T2 social advice-seeking for girls who exhibited higher baseline RSA ($B = -1.24, SE = 0.56, p = .027$), whereas this association was not significant for girls who exhibited lower baseline RSA ($B = 0.92, SE = 0.56, p = .101$). However, the slopes for higher and lower baseline RSA were not significantly different from each other, as indicated by the 2-way interaction between T1 maternal negativity and baseline RSA ($B = -0.88, SE = 0.57, p = .124, \beta = -0.12$) in the model predicting T2 social advice seeking for girls. Further, the main effect of T1 maternal negativity on T2 social advice-seeking for girls was also not significant ($B = -0.13, SE = 0.56, p = .824, \beta = -0.02$). Thus, the main and interactive effects of maternal negativity and baseline RSA were non-significant for girls.
Figure 3. The association between T1 maternal negativity and T2 youth social advice-seeking at lower (-1 SD) and higher (+1 SD) levels of T1 baseline RSA for boys.

Figure 4. The association between T1 maternal negativity and T2 youth social advice-seeking at lower (-1 SD) and higher (+1 SD) levels of T1 baseline RSA for girls.
**Dyadic cohesiveness.** Similar to the models for maternal positive affect, and as shown in Table 3, higher levels of T1 dyadic cohesiveness predicted more T2 social advice-seeking behaviors after controlling for covariates, explaining 4.9% of the unique variance in this outcome. This main effect was further qualified by a 3-way interaction among T1 dyadic cohesiveness, T1 youth baseline RSA, and youth gender, which together explained additional 9.4% of the unique variance in T2 social advice-seeking. For this interaction, I plotted the simple slopes for T1 dyadic cohesiveness and T2 social advice-seeking at +/- 1 SD of the mean on youth T1 baseline RSA for boys (see Figure 5) and girls (see Figure 6) separately, with points to plot selected at +/- 2 SD of the mean on T1 dyadic cohesiveness.

Similar to the pattern of associations that emerged for T1 maternal positive affect among boys, as shown in Figure 5, the association between higher levels of T1 dyadic cohesiveness and more T2 social advice-seeking behaviors emerged only among boys who showed higher ($B = 0.40, SE = 0.07, p < .001$) but not lower ($B = 0.08, SE = 0.08, p = .277$) baseline RSA. Further, the slopes for higher and lower baseline RSA were significantly different from each other, as indicated by the 2-way interaction between T1 dyadic cohesiveness and baseline RSA ($B = 0.16, SE = 0.07, p = .014, \beta = 0.21$) in the model predicting T2 social advice seeking for boys.

In contrast, as shown in Figure 6, the simple slopes test suggested higher levels of T1 dyadic cohesiveness predicted more T2 social advice-seeking behaviors for girls who showed lower ($B = 0.18, SE = 0.08, p = .015$) and higher, although a trend, ($B = 0.13, SE = 0.08, p = .085$) baseline RSA. Further, slopes for higher and lower baseline RSA were not different from each other, as indicated by the non-significant 2-way interaction between T1 dyadic cohesiveness and baseline RSA ($B = -0.04, SE = 0.07, p = .590, \beta = -0.05$) in this model. Additionally, a main effect of T1 dyadic cohesiveness on T2 social advice seeking behavior was evident for girls ($B = 0.16, SE = 0.08, p = .035, \beta = 0.18$). Thus, higher T1 dyadic cohesiveness was associated with more T2 social advice-seeking behaviors for girls, regardless of their exhibited levels of baseline RSA.
Figure 5. The association between T1 dyadic cohesiveness affect and T2 youth social advice-seeking at lower (-1 SD) and higher (+1 SD) levels of T1 baseline RSA for boys.

Figure 6. The association between T1 dyadic cohesiveness affect and T2 youth social advice-seeking at lower (-1 SD) and higher (+1 SD) levels of T1 baseline RSA for girls.

\[ \beta = .41, p < .001 \]

\[ \beta = .09, p = .277 \]

\[ \beta = .19, p = .015 \]

\[ \beta = .14, p = .085 \]
Chapter 4: Discussion

Although parental socialization (e.g., giving direct coping suggestions) has been shown to play an influential role in children’s development of coping (Darling & Steinberg, 1993; Kliewer et al., 1996), there are significant gaps in knowledge about whether the relational context of socialization matters and how youths’ own characteristics contribute to this process. These questions are also understudied among youth in the face of growing social challenges during the transition to middle school. The current study was designed to provide evidence for these issues by examining the independent and interactive associations among indices of the emotional climate of mother-youth peer problem-solving conversations, youth baseline RSA, and gender in the prediction of youth coping with social stress over time. Among youth, higher T1 maternal positive affect predicted more T2 engaged coping above and beyond the contributions of age and T1 engaged coping. Additionally, each index of T1 emotional climate (i.e., maternal positive affect, maternal negativity, dyadic cohesiveness) showed interactive contributions with T1 baseline RSA and gender in predicting T2 social advice-seeking after accounting for T1 levels.

Although engaged coping was highly stable across the transition to middle school, observed maternal affect was associated with youth-reported engaged coping behaviors in expected directions. Specifically, maternal positive affect uniquely predicted more engaged coping in middle school above and beyond the contributions of youth age, observed maternal negativity, and the initial levels of engaged coping. This finding was in line with studies highlighting the beneficial role of mothers’ positive affective responses in predicting more engaged coping responses among youth (e.g., Valiente et al., 2009). Moreover, higher levels of dyadic cohesiveness were correlated with more engaged coping at both time points, although the model predicting engaged coping over time did not yield a significant main effect of dyadic cohesiveness after accounting for covariates. Consistent with previous theories, a positive emotional climate of mother-youth interactions might promote the development of engaged coping by creating an optimal level of emotional arousal (Davies & Cummings, 1998; Eisenberg et al., 1998) to form a secure base of managing social challenges (Kliewer et al., 1996), and increasing openness to coping suggestions (Darling & Steinberg, 1993). Therefore, in the context of mother-youth conversations in which they discuss experiences of and potential solutions to youths’ peer problems, mothers’ display of positive affect might be especially important for facilitating youths’ development of engaged coping. Further, relatively limited main and interaction effect were found in the prediction of youth engaged coping, which could be partly due to the stability of engaged coping across the two time points.

Social advice-seeking was less stable over time compared with engaged coping, as youth in the current sample varied greatly in the degree to which they reported social advice-seeking from parents across the middle school transition. In the present study, the emotional climate was found to contribute to youth’s social advice-seeing in middle school, but this association varied by youth baseline RSA and
gender. During mother-youth interactions, higher levels of maternal positive affect contributed to more social advice-seeking behaviors only among boys who showed higher baseline RSA and among girls who showed lower baseline RSA. Moreover, higher levels of maternal negativity were associated with less social advice-seeking among boys and girls who showed higher baseline RSA, but more social advice-seeking among boys who showed lower baseline RSA. Finally, higher levels of dyadic cohesiveness contributed to more social advice seeking among boys who showed higher baseline RSA and among girls regardless of their exhibited levels of baseline RSA. Findings here suggest that higher and lower levels of RSA might operate differently among boys and girls in moderating the associations between emotional climate and youth social advice-seeking.

In line with our hypotheses, boys who exhibited higher (compared with lower) levels of baseline RSA, reported more social advice-seeking behaviors over time in the context of positive emotional climate (i.e., higher maternal positive affect, higher cohesiveness) but less advice-seeking in the context of negative emotional climate (i.e., higher maternal negativity). These findings are consistent with hypothesized patterns of associations that reflect differential susceptibility in that the strongest positive and negative associations emerged in positive and negative caregiving environments, respectively, among boys who exhibited higher baseline RSA. In other words, boys exhibiting higher (but not lower) baseline RSA demonstrated susceptibility to both positive and negative emotional climate of the mother-youth interaction context. These boys may be more likely to approach parents and ask for social advice in a positive relational context but less so in a negative relational context compared with their counterparts who displayed lower baseline RSA. In the current study, the emergence of higher baseline RSA as a susceptibility factor for boys but not girls could be partly explained by prior work suggesting that mother-son relationships are less emotionally close than mother-daughter relationships (see Russell & Saebel, 1997). Thus, boys may vary more in the extent to which they are influenced by the emotional climate of their interactions with mothers compared with girls who generally experience high levels of emotional closeness with mothers. In other words, fluctuations in the emotional climate might be more salient to boys who were sensitive to interaction cues (i.e., higher baseline RSA) and less impactful to boys who were not responsive (i.e., lower baseline RSA), but this differential influence did not manifest for girls who displayed the susceptibility factor (i.e., higher baseline RSA). Therefore, the emotional climate of mother-son interactions could have an especially strong effect for boys who are attuned and ready to respond to their environment, and this effect holds in both negative and positive contexts.

Further, partly congruent with the differential susceptibility model, girls who showed higher baseline RSA reported less social advice-seeking behaviors over time when mothers displayed higher maternal negativity, but no significant difference in social advice-seeking when their mothers displayed higher maternal positive affect and dyadic cohesiveness. These findings suggest that girls who showed
higher baseline RSA were indeed sensitive to a negative emotional climate, although this association did not differ significantly from their counterparts showing lower baseline RSA. Further, these “sensitive” girls compared with their “less sensitive” counterparts did not appear to especially benefit from a positive relational context. Therefore, our conceptualization of higher baseline RSA as a susceptibility factor was not fully supported for girls. This could be partly due to the characteristic of mother-daughter relationships explained above. Further, the results for maternal negativity need to be interpreted with caution given the generally low levels of maternal negativity observed during our mother-youth discussion task. Overall, studies investigating the moderating role of baseline RSA have yielded mixed findings on whether associations of interest manifested among youths with higher or lower baseline RSA. Nevertheless, the current findings of higher baseline RSA serving as a susceptibility factor particularly among boys provides another piece of empirical evidence on the moderating role of physiological susceptibility in parental socialization of coping under the differential susceptibility framework.

Unexpectedly, girls who showed lower baseline RSA demonstrated more social advice-seeking behaviors over time in the context of high maternal positive affect. In other words, girls who exhibited lower baseline RSA, reflective of lower physiologically readiness to response to environmental stimuli and more limited biological regulatory capacity compared with their counterparts who showed higher baseline RSA, were more likely benefit from a relational context characterized by high maternal positive affect. Although inconsistent with the differential susceptibility model, this finding was consistent with some studies documenting greater needs for positive socialization among youth with lower baseline RSA. For example, parental emotion socialization strategies were more strongly and positively associated with better preschool adjustment for children exhibiting lower versus higher levels of resting RSA (Hastings & De, 2008). Revisiting the distinctness of the mother-daughter relationship based on intimacy and support (Russell & Saebel, 1997), and considering girls’ greater tendency to seek help from mothers compared with boys (Schonert-Reichl & Muller, 1996), girls may be particularly buffered by a positive affective relational context and naturally turn to their mothers for help, especially when they exhibit physiological under-responsiveness which may reflect greater need of parental socialization.

Furthermore, consistent with the hypothesized main effect of dyadic cohesiveness, girls in the current study demonstrated more social advice-seeking behaviors in the context of high dyadic cohesiveness. However, in contrast to the finding for maternal positive affect, the strength of this association did not vary by different levels of baseline RSA exhibited by girls. In other words, maternal positive affect only buffered girls who showed lower baseline RSA, whereas dyadic cohesiveness appeared to benefit all girls regardless of their baseline RSA levels. One potential explanation could be that dyadic cohesiveness and maternal positive affect capture different aspects of the emotional climate: Cohesiveness accounts for the mothers’ and daughters’ interaction dynamics at a dyadic level, whereas
maternal positive affect describes mothers’ emotional responses towards the youth. The dyad-level characteristics of relationship quality (e.g., understanding, connection, intimacy) described by cohesiveness could potentially matter more for advice-seeking behaviors in this relationship. Thus, dyadic cohesiveness could contribute to advice-seeking behaviors from parents perhaps by establishing a harmonious conversational context, creating a stable space for problem-solving, and enhancing the closeness of the mother-daughter relationship. As a result, girls, regardless of their readiness to respond to the relational context (i.e., higher or lower baseline RSA), could be more likely to seek help from their mothers especially under conditions of high cohesiveness. These findings indicate that maternal positive affect and dyadic cohesiveness may be two distinct aspects of emotional climate and may contribute differently to girls’ advice-seeking behaviors.

Finally, more maternal negativity predicted more social advice-seeking over time for boys who exhibited lower levels of RSA. This finding was unexpected and somewhat counterintuitive, yet this pattern was consistent with a prior study that found higher levels of negative interaction with parents predicting higher empathic concern for boys displaying lower baseline RSA (Van der Graaff et al., 2016). A potential explanation for this unexpected result could be that boys who demonstrated lower baseline RSA might not be in tune with the environment and/or aroused enough to respond, and therefore, more difficult to socialize (e.g., Van der Graaff et al., 2016). Thus, boys displaying lower baseline RSA might need different and perhaps more forceful parental socialization of coping approaches (e.g., parental control, discipline), which may be more likely to occur with maternal negativity to cue them into social interactions and for mothers’ messages to translate to boys displaying lower baseline RSA in a problem-solving discussion (Kochanska, 1991).

Additionally, the nature of the assessed outcome – advice-seeking – might also contribute to the emerging patterns of findings. Although it is generally beneficial for youth to seek help from parents in the face of challenges, more help-seeking, particularly from parents and among boys, does not necessarily signify adaptation during early adolescence when youth are typically socialized to value independence and autonomy. As a result, going to an adult for help could diminish the image of social competence and popularity among adolescent boys in particular (Chung & Asher, 1996; Newman, 2008; Newman, Murray, & Lussier, 2001). Moreover, although advice-seeking could potentially facilitate the coping process (Eisenberg et al., 1993), its developmental benefits could vary depending on the specific content of advice given by parents, which was not assessed in the current study.

The current study has several limitations. First, the current sample is a community sample characterized by moderately high socioeconomic status and parental education levels, therefore, our conclusions cannot be generalized to at risk or more diverse populations. Second, only mothers were invited to participate in the laboratory protocol. Yet, other studies have found unique socialization
processes for fathers (Cassano, Perry-Parrish, & Zeman, 2007), suggesting the need to examine both maternal and paternal socialization of coping. Third, the low presence of maternal negativity limited our ability to draw strong conclusions in support of the differential susceptibility model. Finally, due to the two-wave study design, subsequent adolescent adjustment was not assessed Future studies could incorporate assessments of adolescent socio-emotional and psychopathological outcomes to better understand the implication of the present findings.

Despite the limitations, the current study is one of the first known studies to examine the influence of observed emotional climate of mother-youth conversations about social challenges on youth coping behaviors over time, as well as to incorporate the contributions of youth physiological functioning and gender. To gain a deeper understanding of this core question, future studies should continue to explore the joint contributions of the relational context and youth physiological functioning and demographic characteristics in the development of youth coping over time. Based on the findings from the present study, a more positive and cohesive relational context may facilitate the development of coping during early adolescence, and its effects may vary for boys and girls characterized by different physiological profiles.
References


