A 4-Year Longitudinal Study of Children's Competent Problem Solving in the Context of Positive Parenting and Peer Relationships

by

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A dissertation submitted to the Graduate Faculty of
Auburn University
in partial fulfillment of the
requirements for the Degree of
Doctor of Philosophy

Auburn, Alabama
August 6, 2016

Keywords: competent problem solving, positive parenting, peer acceptance, social information processing

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Abstract

The ability to effectively, positively, and productively cope with social problems is considered one of the most important developmental tasks for children's emotional and psychosocial adjustment. However, there is a paucity of empirical research on developmental patterns of children's competent problem solving (CPS) in the early school years. CPS is a process of finding solutions to specific problems, including the use of cognitive and emotional competencies. Early family and peer experiences have been found to be associated with individual difference in children's social cognition, but few if any studies have considered positive experiences with parents and peers as predictors of growth in children's social cognition in general or CPS in particular. The present study examined the early positive parenting (maternal warmth, parental involvement, proactive guidance) and peer experience (sociometric-based and teacher-reported peer acceptance) on the developmental trajectories of three domains of CPS (competent response generation, evaluation, and efficacy) from kindergarten to third grade. Data were collected from the Child Development Project, a prospective longitudinal study of child and adolescent development from a community sample of children and their families (N = 585). Three domains of CPS (competent response generation, evaluation, and efficacy) were measured the summer prior to kindergarten and grades 1, 2, and 3. Three positive parenting practices (i.e. warmth, involvement, and guidance) were assessed the summer before kindergarten, and peer acceptance via sociometric ratings and teacher-reports were assessed in kindergarten. A taxonomy of multilevel growth models revealed that the three components of

ii

CPS were relatively independent, and all three domains increase as children grow older. Maternal warmth and involvement and peer acceptance (both sociometric-based and teacher-reported) were associated with higher competent response generation (especially) and evaluation. Response generation was uniquely predicted, net of sociodemographic controls and other parenting measures, by a combination of high maternal warmth and high teacher-reported peer acceptance. Results of the present study underscore the importance of examining competent problem solving within a developmental perspective and suggest that its development varies to some extent as a function of parenting and peers experiences. Findings, implications, and future directions are discussed.

Acknowledgments

Life is like a box of chocolates. You never know what you're going to get. Six years ago, Alabama, to me, meant a southern state of the United States and known for agriculture learned from national geography class in high school, and the home state of Forrest Gump. So when I opened the chocolate of "Auburn HDFS graduate program," I had no idea this would change my life.

Six years at Auburn University has been nothing short of amazing. First and foremost, I want to thank my major professor, Greg Pettit, who is beyond an outstanding mentor, who deeply trusted that I could succeed even when I was doubtful myself, whose support, wisdom, patience, and high standards shaped me to more than I thought I could be. The dissertation process is incredibly difficult and challenging, but I am extremely grateful and thankful that Greg has been my mentor along the way. I also want to thank my committee members: Stephen Erath, who involved me in the research lab and spent a vast amount of time and effort to provide valuable guidance and feedback to my research work and stimulated me to critical thinking of research over the past six years; Jackie Mize, who has already retired but was willing to share her expertise and knowledge with me to turn this dissertation into a better work; Adrienne Duke, who has been so supportive and encouraging to me during the dissertation process.
I also have had such valuable and unforgettable experience besides my dissertation and there are dozens of remarkable individuals to whom I feel so grateful and thankful to interact with. I want to thank Carol Roberson, who is always being there for me, no matter good or bad days. I also

want to thank Amy Rauer, who modeled excellent teaching, and taught me the best lesson about teaching, that is, be yourself while teaching so that you can teach comfortably and confidently. A special thanks to Francesca Adler-Baeder, who provided me the opportunity at Alabama Healthy Marriage and Relationship Education Initiative, where I saw how extension bridges science and practice, and how research can actually transfer to power and elevate people's quality of life. Last but not least, I want to sincerely thank my family and friends. My mom, Yanzi, has always encouraged me to pursue my dream and provided tremendous emotional support during the graduate life. My dad, Xiong, who respects every decision of mine and provided huge support. I also feel lucky to have so many intelligent and awesome friends, who accompanied me over this hard path and cheered for me when I successed, and encouraged me when I met obstacles. I also want to thank all of my students over the past few years; it is they who made teaching so enjoyable and a joy to me.

I am about to head to the North to start my new chapter of life as an assistant professor, but Alabama to me, has the loveliest town in the world, Auburn, where I call it sweet home.

Table of Contents

List of Tables

List of Figures

I. Introduction

Researcher: "You go to the playground one day and see some kids you know playing soccer. You would really like to play with them, so you go over and ask one of the kids if you can play. The kid says no. What could you do or say so that you could join them to play?"

Child A's Response (5- year-old): "I don't know what to say, I will walk away."

Child B's Response (6- year-old): "You'd better let me play!'

Child C's Response (7- year-old boy): "I'll let you play with my soccer ball tomorrow if you let me play now."

Child D's Response (8-year-old girl): "Have you ever trained? You are very good at this! I had some soccer class before. How'd you like us to play as a team?"

The preceding quotes come from a study of children's abilities to think about and cope with socially challenging situations (Rubin & Kransor, 1986). The quotes illustrate the variability in the ways children of different ages and levels of social competence solve social problems. Despite evidence from cross-sectional and short-term longitudinal studies that older children engage in more competent problem solving (CPS), understanding the long-term trajectory of CPS and the predictors of CPS over time is lacking.

Competent problem solving (CPS) is defined as the self-directed cognitive processes by which a person attempts to identify or discover effective or adaptive ways of coping with problematic situations (D'Zurilla & Maydeu-Olivares, 1995). CPS, according to recent models, involves several steps, including accurate encoding of social cues, making accurate attributions about others' behavior, formulating competent social goals, generating competent strategies to

1

solve the problem, evaluating the possible potential consequences and effectiveness of the strategy, and feeling self-efficacy to enact a response (Dodge, 1986; Dodge, Pettit, McClaskey, & Brown, 1986; Dodge & Price, 1994). Although all components, individually and jointly, have been associated with socially competent behavior, it is the later steps, those more closely temporally related to behavior, that have recently received the most empirical support as predictive of good adjustment (Dodge & Pettit, 2003; Fontaine, 2010; Pettit & Mize, 2007). Fontaine and colleagues (2010) found that the response evaluation and decision step, a later stage, mediated the relation between attribution, an early stage, and subsequent antisocial conduct (Fontaine, Tanha, Yang, Dodge, Bates, & Pettit, 2010). For this reason, the current study examined three components of CPS: children's ability to generate competent responses, evaluate the effectiveness and possible outcomes associated with those responses, and confirm self-efficacy to enact the competent response.

Researchers frame CPS as a developmental construct because cross-sectional studies show that young children are less competent than older children at producing multiple and varied social problem solving strategies (Rubin & Krasnor, 1986). Numerous studies examine negative aspects of social information processing (SIP), such as hostile attributions and generation of aggressive strategies (Dodge, 2006; Dodge, Bates, & Pettit, 1990; Lansford et al., 2006; Pettit, Bates, & Dodge, 1993; Pettit, Polaha, & Mize, 2001), and there is at least one long-term study of aggression and negative SIP (Lansford et al., 2010). However, remarkably little research can be found on the study of developmental change in CPS, and no known study has examined the developmental trajectory of individual differences in CPS over more than two years (Youngstrom et al., 2000). Thus, the first goal of this study was to describe growth in CPS over a longer time frame than has been done heretofore, from kindergarten through third grade.

This age group was selected for two reasons. First, children experience dramatic improvements in cognitive abilities over the first years of formal schooling (Piaget, 1952; Rittle-Johnson, Siegler, & Alibali, 2001), a phenomenon referred to as the ''5- to 7-year shift'' (Harter, 1996; Sameroff & Haith, 1996). Research on children's basic information processing (i.e., involving non-social problems) suggests that growth in at least three domains may account for the dramatic changes (Flavell, 1999). First, working memory capacity increases linearly from early to middle childhood (Case, Kurland, & Goldberg, 1982; Kail, 2007). Greater capacity means that children can hold in memory and manipulate multiple bits of information simultaneously. Processing speed also increases. Kail (1991; 2007; Kail & Ferrer, 2007) has found an exponential increase over the early school years in processing speed on a wide variety of tasks, including perceptual-motor and cognitive tasks. Finally, children acquire a growing knowledge base, or expertise, on which to draw (Chi, Glaser, & Farr, 1988). With greater expertise, children have a broader repertoire of possible strategies and knowledge of their potential consequences and they have easier access to that stored knowledge. In studies of non-social problem solving, children with high levels of knowledge in a given area often can perform better than adults without specialized knowledge (Chi et al., 1988).

The second reason for selecting this age range is that during these years most children first move into formal school settings with self-contained classrooms and a naturally occurring, stable peer group. During the early school years, children spend most of their waking hours with peers in a diverse array of structured and unstructured activities. It is during these years that acceptance by the peer group as a whole is most developmentally salient (Fabes, Martin, & Hanish, 2009; Lansford et al., 2014). Peers also become vital to children's growing social-

cognitive skills and play a more and more important role in altering how children think about and process social information (Ladd, 2005; Rubin, Bukowski, & Laursen, 2009).

The second goal of the study was to examine parental and peer influences on children's CPS over this critical age range. Considerable evidence links negative interactions and relationship with both parents and peers to incompetent social problem solving, but there are few studies of positive influence on CPS, especially longitudinal. Early family experiences have often been a focus of researchers in explaining individual difference in children's social development because parents have the initial and primary social interactions with children early in life (Ladd & Pettit, 2002; Pettit, Bates, & Dodge, 1993, 1997; Pettit, Dodge, & Brown, 1988; Schofield et al., 2012). Three aspects of positive parenting that are particularly important for children's social cognitive development are maternal warmth, proactive guidance, and involvement in children's peer relationships.

Warmth has been linked with children's feelings of security, control, and self-confidence (Dykas & Cassidy, 2011; McElwain, Booth-LaForce, Lansford, Wu, & Dyer, 2008) and self-confidence, in turn, is associated with positive social development of children (e.g., Gregson et al., 2015; Mize & Pettit, 1997; Mize, Pettit, & Meece, 2000; Pettit et al., 1997). Proactive guidance, a term we use for anticipatory guidance of the child, monitoring of the child's activities, and parent-child teaching (Pettit et al., 1997), promotes children's skilled and prosocial behavior, presumably because it instills prosocial values and conveys information about effective behaviors (Laird, Marrero, & Sentse, 2010; Mounts, 2002; Updegraff, McHale, Crouter, & Kupanoff, 2001). Parental involvement in peer relationships refers to parents overseeing and regulating their children in interactions with age-mates. Parent involvement is associated with higher levels of social competence among children (McDowell & Parke, 2009; Updegraff et al.,

4

2001), perhaps because parents who are aware of and actively involved in their children's social life can pass on normative socialization beliefs and positive behaviors and skills.

The current study examined whether three aspects of positive parenting, maternal warmth, parental involvement in their children's peer contacts, and proactive guidance of prosocial behavior, individually and in aggregate, account for significant variance in the growth in each of the components of CPS. Thus, the second goal of the current study was to examine whether children with higher levels of positive parental experiences in preschool show higher initial CPS and greater growth in CPS from kindergarten to 3rd grade.

Peers, in addition to parents, exert powerful forces in altering how children think about and process social information (Ladd, 2005; Rubin et al., 2009). During the early elementary school years, peers become vital to children's growing social-cognitive skills and interpersonal competencies because of their interactions in the often-challenging social context of school (Grusec, 2011; Grusec & Davidov, 2010). Peer influences can be positive or negative. As children are exposed to more social environments beyond the home, individual differences in experiences will affect their social knowledge base or expertise (Gifford-Smith & Rabiner, 2004; Ladd, 2005). Whether children will behave competently or incompetently depends on the knowledge base that has accumulated from a great many experiences with parents and peers (Pettit & Mize, 2007; Rah & Parke, 2008).

In a short-term longitudinal study of peer rejection in the elementary school years, Dodge and colleagues (2003) found that peer rejection in one grade predicted increases in social-cognitive processing biases and deficits in a later grade. To the extent that a child is exposed to positive experiences with the peer group, one would expect the child to see, access, and thus generate, more competent solutions to interpersonal dilemmas, endorse positive and constructive

5

approaches to resolving potential conflicts with peers, and have higher self-efficacy to enact the prosocial responses (Witvliet, Van Lier, Cuijpers, & Koot, 2009). Therefore, our third goal is to examine whether children with positive peer experiences at kindergarten show more adaptive trajectories in each of the three components of CPS over time.

In sum, although there is some indication that children's competent problem solving changes with age and varies as a function of different parenting and peer experiences, no known study has systematically examined the developmental trajectory across the early school years of various components of CPS within the contexts of early positive parenting and peer experiences. Findings of the current study will increase our understanding of the development of CPS across the early school years and may help inform intervention efforts aimed at improving children's CPS.

To examine the developmental trajectory of CPS over the early elementary school years, several research conditions must be met. First, a longitudinal design is needed in which CPS is assessed at a minimum of four time points. Second, reliable and robust indicators of the outcome (competent problem solving in this instance) must be constructed. The current study examined three components of CPS: competent response generation, competent response evaluation, and competent response self-efficacy. Because previous studies have demonstrated that multiple dimensions of positive parenting are empirically distinct from each other and each makes independent contributions to the prediction of children's social development (Ladd & Pettit, 2002; Pastorelli et al., 2015; Pettit, Dodge & Brown, 1988; Su, Pettit, & Erath, 2016), several dimensions of positive parenting are included. Moreover, a reliable peer relationship measure is needed. The current study used both the sociometric assessment, the most common and reliable approach used by developmental psychologists to measure peer acceptance (Jiang & Cillessen,

2005), and teacher ratings of how children are getting along with others, to study the quality of children's peer relations.

Present Study

Data for the present study were drawn from the Child Development Project, a prospective longitudinal study of risk and protective factors in children's development of competence and behavior problems. Positive parenting was assessed during the first wave of data collection, which took place the summer before the children's entry into kindergarten. We considered a single-time assessment of parenting to be adequate because studies have shown that early parenting practices remain stable over the early years of school (Bates & Pettit, 2015). Observational, interview, and questionnaire measures were used to construct the three indicators of positive parenting used in this study: warmth, proactive guidance, and involvement in children's peer relations. Positive peer experience was assessed via sociometric ratings and teacher-reported peer relationships at kindergarten. CPS was assessed the summer prior to kindergarten and in grades 1, 2, and 3. Three different components of CPS were derived from children's responses to hypothetical peer problem situations: generating prosocial strategies, endorsement of prosocial strategies, and self-efficacy for performing prosocial strategies.

Coupled with increasing recognition that children's CPS may change over time (e.g., Mize & Pettit, 2008; Pettit et al., 2001; Pettit & Mize, 2007; Walker, Degnan, Fox, & Henderson, 2013), the central question of the present study was: How do positive parenting and peer experiences contribute to the initial status and change in CPS across the early years of school? By using individual growth modeling, we examined patterns of growth in CPS across the early years of school. We chose CPS beginning in kindergarten, given that the transition to kindergarten marks the start of formal schooling when children face novel social challenges. To

extend previous research on CPS development, the specific aims of the present study were to examine (1) whether children experienced growth in CPS from kindergarten to third grade, (2) whether higher levels of positive parenting (warmth, involvement, proactive guidance) assessed before kindergarten predicted higher CPS at the initial level and promoted faster growth rates across early elementary school years, (3) whether greater peer acceptance (sociometric, teacher-report) measured at kindergarten, predicted higher CPS at the initial level and produced faster growth rates across early elementary school years, and (4) whether positive parenting and peer acceptance had an additive (cumulative) effect on the initial level and the growth of CPS.

II. Literature Review

The goals of the current study were to examine developmental change in children's competent problem solving (CPS) from kindergarten to 3rd grade, and the associations between CPS and parenting and peer experiences. In keeping with the study goals, the present review first examined literature bearing on the development of children's CPS. Then the review turns to the associations among children's CPS, positive parenting, and positive peer experiences. The first section describes the components of CPS, with special focus on competent response generation, competent response evaluation, and competent response efficacy, and whether there is developmental change in these competencies over time. The second section is concerned with the notion of positive parenting, and whether aspects of positive parenting, specifically, maternal warmth, involvement, and guidance, contribute uniquely to children's CPS. The third section examined the role of positive peer experiences in CPS. The final section focuses on the effects of demographic factors on the trajectory of CPS.

Individual Difference in CPS, Positive Parenting, and Peer Acceptance

      Development of CPS

CPS is defined as the self-directed cognitive-behavioral process by which a person attempts to identify or discover effective or adaptive ways of coping with problematic social situations encountered in everyday living (D'Zurilla & Maydeu-Olivares, 1995). Problem solving is a process of finding solutions to specific problems, which requires a set of skills, including the use of cognitive and emotional competencies. Thus, it is important to acknowledge that CPS is not an "all-or-none" cognitive skill; rather it is a cognitive process involving several components.

9

Social-cognitive processes have been studied extensively in recent decades as researchers and clinicians search for the underlying perceptual and mental processes that give rise to children's misbehavior (e.g. Dodge, Laird, Lochman, & Zelli, 2002; Lansford et al., 2010; Pettit, Lansford, Malone, Dodge, & Bates, 2010; Ziv, Oppenheim, & Sagi, 2004). A variety of theories propose that individual differences in social information processing skills explain why children confronted with the same social situation act in very different ways. As early as the 1970s, Spivack and Shure (1974) proposed that social problem solving consists of a number of interrelated elements. These elements included: sensitivity to or recognition of interpersonal problems, the ability to generate alternative solutions to solve these problems, the ability to consider step-by-step means to reach goals, the ability to articulate consequences of social acts, and the ability to identify and understand the motives and behaviors of others. These elements were cast into a developmental framework in which Spivack and Shure proposed that children become more sophisticated as they mature.

Along these lines, Rubin and Krasnor (1986) developed an information processing model of social problem solving, a more comprehensive and elaborate model of social problem solving than that of Spivack and Shure. The model consisted of five main steps that included selecting social goals, examining the task environment, assessing and selecting strategies, strategy implementation, and assessing the outcome. In succeeding years, Mize (Ladd & Mize, 1983; Mize & Ladd, 1988, 1990) suggested that, for young children at least, generation of strategies was a less reflective and more spontaneous or "cold" process than previous contemporary models implied.

Almost at the same time, the best known and most frequently used integrative perspective – Dodge' social information processing (SIP) model (Crick & Dodge, 1994; Dodge et al., 1986)

– suggested that children's responses to challenging social situations were guided by a series of steps in the processing of external and internal sources of information. This process entails five steps: encoding of relevant stimulus cues, interpreting the intentions, response generation, response evaluation, and behavioral enactment of a selected response. These steps theoretically occur in real time (referred to as on-line processing), derive from schemas stored in memory that are built from experiences with others, and will result in socially competent behavior if skillful processing at each step occurs. Thus, both Rubin and Dodge assume that the processing steps occur rapidly in time and that the steps of information processing are dynamically interrelated, yet separable. However, most of the extant research is concerned largely with aberrant or deficient process. Rubin's research focuses more closely on children with internalizing difficulties, whereas Dodge and his colleagues focus on externalizing disorders; less attention has been paid to normative change in competent social problem solving (Pettit & Mize, 2007; Spencer, Bowker, Rubin, Booth-LaForce, & Laursen, 2013; Ziv, 2013).

Understanding normative development is the first step toward understanding deviancy in the emerging field of developmental psychopathology (Cicchetti & Rogosch, 2002, Pettit & Mize, 2007). In fact, the capacity to effectively, productively, and positively cope with social problems is considered one of the most important developmental tasks for children's emotional and psychosocial adjustment (Dodge et al., 2003; Rubin & Rose-Krasnor, 1992; Youngstrom et al., 2000). The development of CPS is important for children's everyday social functioning and may influence the quality of their social experiences. Conversely, deficiencies in the capacity to solve social problems increase the risk for developing problems such as depression, anxiety, substance abuse, aggression, and other deviant behaviors (Dodge et al., 2003; Lansford et al., 2010; Pettit et al., 2010). Although less studied, Eisenberg and colleagues found that children

with more CPS skills tend to be more prosocial and have more constructive social skills (Eisenberg et al., 1996). One study laying the groundwork for an understanding of the role of SIP in the development of socially competent behavior found that generation of competent solutions to problems predicted teacher- and peer- rated socially skilled behavior among a sample of 46 preschool children (Pettit, Dodge & Brown, 1988). Similarly, in a recent study of 198 children, Ziv (2013) examined the links among positive SIP, social behavior, and academic skills. Those preschoolers with more competent processing patterns, that is, competent response construction, and competent response decision, were also reported to be more socially and academically competent and by their teachers. Those studies consistently show the utility of positive SIP approach in relation to positive social skills training. Indeed, interventions for children with peer problems explicitly focused on the role of CPS (Ladd & Mize, 1983; Mize & Ladd, 1988). For example, children who were trained in social skill by incorporating the knowledge of competent behavior showed improvement in classroom behaviors with peers (Mize & Ladd, 1990). Thus, the following section will fill in a gap in the literature by providing an extensive discussion of later-stage CPS.

Components of CPS

Competent response generation. There are several ways by which strategies may become available for use in achieving social goals. The child may have a set of strategies stored in long-term memory, or the child generates one or more new strategies through the cognitive transforming of available strategies in the repertoire. That is, children may adjust a previous successful response to fit a new situation. Response generation usually is measured by asking children to produce as many relevant solutions as possible when an interviewer presents a social problem. These brief stories typically describe situations that children face in everyday

12

interactions at school, such as resolving conflicts with peers, or gaining entry into a group of peers. Competent response generation refers to being able to generate an idea for appropriate response to hypothetical social vignettes (e.g., Crick & Dodge, 1994; Mize & Ladd, 1988). Appropriate responses are those likely to lead to positive peer relationships and gain peer acceptance. Many earlier studies focused on the links between the number of social strategies generated and behavior outcomes (e.g., Shure & Spivack, 1974; Webstaer-Stratton & Lindsay, 1999), but more recent literature has emphasized the quality of strategies generated by children in social situations (Crick & Dodge, 1994; Dodge et al., 2003; Goraya & Shamama-tus-Sabah, 2013; Mize & Ladd, 1988; Mize & Pettit, 2008; Youngstrom et al., 2000). The rationale for a greater focus on the quality of strategies is that generating many responses will not lead to positive outcomes unless the responses generated are competent ones.

Therefore, it might be important to consider both the quantity and quality of the generated responses, that is, proportion. Youngstrom and colleagues (2000) found that quality of response appeared more important than solution quantity in predicting ecologically valid behavior. For example, Richard and Dodge (1982) found that the proportion of solutions that a child generated which were classified as incompetent by adult raters was higher for aggressive boys than for popular boys. Further, it also appears that the competent response generation capacities of aggressive children may be limited to a single response, since aggressive children were able to generate a single competent response to a hypothetical problem situation, and then began to generate agonistic and ineffective responses, whereas popular children continued to generate competent responses (Richard & Dodge, 1982). Similarly, Attili and colleagues (2010) found that children who were more socially popular generated a greater proportion of competent responses to an ambiguous social situation compared with their less popular peers. In fact, the

13

more competent solutions a child could generate to social problems the more likely that child would be to select and enact a competent solution and be successful in social interactions (Blandon, Calkins, Grimm, Keane, & O'Brien, 2010).

Competent response evaluation. According to the Dodge (Dodge, 1986; Dodge & Price, 1994) model, after generating potential responses to a social situation, the next step in problem solving for the child is to evaluate each behavioral response; this step is named response evaluation. Operationally, the evaluation process can be deduced from children's ratings of strategies along a number of evaluative dimensions, including their ability to judge the likely consequences of the strategies and their ability to weigh the suitability and fitness of strategies on the basis of relevant social situations (Rubin & Krasnor, 1986). Ideally, the child learns to evaluate the potential consequences of each generated response across various substantive domains, such as friendliness or socio-moral acceptability (e.g., a belief that hitting people is a bad thing to do or that helping people is a good thing to do; Crick & Ladd, 1990). The individual anticipates possible consequences of performing the behavior of interest. That is, the individual answers the question, "what would occur if the selected response were actually implemented?"

The ability to evaluate and select competent response is an important component of competence (Meece & Mize, 2010), showing individual differences among children. Compared to their nonaggressive peers, aggressive children have been found to expect tangible rewards to accrue from acting aggressively (Rubin & Pepler, 2013), to evaluate aggressive responses as socio-morally acceptable (Lochman, Powell, Whidby, & FitzGerald, 2012), and to make positive evaluations of aggression (Dodge et al., 2003; Lansford et al., 2006). Crick and Ladd (1990) found that incompetent, aggressive children anticipate more positive instrumental and interpersonal outcomes from aggression than do their more competent peers. Though less

14

frequently studied, socially competent children would be expected to more positively endorse competent responses (Dodge et al., 1986). Further, the importance of the evaluation step is considered by Fontaine and Dodge (2006) in their development of an advanced model of this SIP step, called response evaluation and decision (RED). In their follow-up study, Fontaine and colleagues found that RED mediates the association between hostile attributions and subsequent antisocial conduct, controlling for previous misconduct among adolescents (Fontaine et al., 2010). Thus, to examine competent response evaluation over the early school years is necessary to fill the gap of the literature.

Competent response efficacy. Self-efficacy was defined by Bandura (1993) as one's beliefs concerning competence in specific behavioral domains that influence choice, performance, and persistence in endeavors requiring or utilizing those behavioral competencies. The literature documents widely the pervasive influence of self-efficacy on performance, directly and indirectly, and across various domains of functioning (e.g., academic, athletic) (Bandura, 1993). An understudied but potentially important social cognition in the development of social competence is perceived efficacy in enacting prosocial strategies, referred to here as competent response efficacy. Researchers have found that individuals low in social efficacy tend to avoid tasks and challenging social situations that they perceive to be beyond their reach (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996); children with higher efficacy would be expected to view themselves as competent interaction partners and to believe that enacting a competent response is comparatively easy (Bandura, 1993).

Bandura (1993) pointed out that one major source of perceived self-efficacy is performance accomplishment, or the experience of success. In other words, self-efficacy is the accumulation of one's success experiences; thus, individual differences in social self-efficacy

during childhood may stem from earlier and ongoing interaction experiences with parents and peers. Children who have generally positive experiences in their peer relationships may come to view themselves as capable and competent in their interactions with peers. Indeed, at least one study found that popular children had higher social self-efficacy than their non-popular peers (Attili et al., 2010). Rejected or victimized children and preadolescents tend to have lower levels of competent response efficacy in responding to challenging peer situations (e.g., Dodge et al., 1986). In a longitudinal study, Bandura and colleagues (Bandura et al., 1996) found that early adolescents' perceived social efficacy predicted prosocial behavior. Further, using two independent data sets, Davis-Kean and colleagues (2008) examined the relationship between self-beliefs and behavior from age 6 to 18. They found that the relation between children's self-efficacy for their aggression and children's actual aggression level increases with development. Thus, self-beliefs become more strongly related to behavior as children grow older. All of these findings suggest that for children, it is likely that having high perceived efficacy for a particular action may cause one to choose that behavior often and then become practiced at it, eventually improving the social ability.

Developmental change of CPS

Remarkably little empirical study has been devoted to the normative developmental changes in social information processing (De Castro, 2004; Mize & Pettit, 2007). In addition, even in studies that have examined longitudinal data, developmental changes in social information processing are typically not the scientific impetus for the study (De Castro, 2004). However, scientists have increasingly been calling for studies that utilize longitudinal data to examine the stability and change in social cognition across time (e.g., Crick & Dodge, 1994; Fontaine, 2006, 2010; Fontaine & Dodge, 2006; Pettit & Mize, 2007), especially the trajectory of

16

competent problem solving and conditions that influence changes in competent social processing across time (Pettit & Mize, 2007).

Although the trajectory of social cognition has been a neglected area of study, it still is possible to draw some tentative conclusions about developmental changes in SIP. The work of Dodge and his colleagues (e.g., Crick & Dodge, 1994; Dodge & Price, 1994; Dodge et al., 2002) has yielded a relatively consistent picture of developmental trends in competence in children's responses by using cross-sectional and short-term longitudinal studies. Developmental differences in response generation have been found repeatedly when age differences among children in the studies have spanned several years. In a study of first, second, and third graders, Dodge and Price (1994) found that older children generated more behavioral responses to group entry, provocation, and authority-demand situations than did their younger peers. Similarly, Youngstrom and colleagues (2000) examined 60 children from age 5 to 7, and found social problem solving (in both peer and mother problem) change dramatically, such as older children generated more prosocial solutions than did younger ones. It is possible that when children first enter the school environment, their repertoire of social strategies is limited because they have not had exposure to such challenging peer situations. As they grow older and their experience with the peer group become both more frequent and more complex, they learn to broaden the base from which they draw their responses to social situations. Additionally, children's social cognitive skills at each step of the information-processing model are also more advanced as children become older. For example, older children are better at detecting their peers' prosocial intentions (Lansu, Cillessen, & Bukowski, 2013; Vliek, Overbeek, & Orobio de Castro, 2014), endorse aggressive responses less often (Dodge & Price, 1994), generate more, more varied, and more competent responses to hypothetical social problems compared to younger children

(Runions & Keating, 2007), and evaluate competent responses more positively and effectively (Rubin, Begle, & McDonald, 2012).

Developmental changes in CPS reflect, to some extent, growth of basic information processing ability (Dodge et al., 1986; Mize & Pettit, 2008; Pettit & Mize, 2007), such as increases in speed, memory capacity, and knowledge base (expertise) (Kail, 2007; Kail & Ferrer, 2007). As children become older, they are able to hold in memory and perform operations with more information at once, which has implications for both the evaluation and generation processes. For example, when a child is rejected from playing soccer, a competent response could be, "I'll let you play with my soccer ball tomorrow if you let me play now." A younger child may evaluate that competent response as incompetent, because young thinkers may not be capable of weighing simultaneously the short-term and long-term effects of an act.

Another reason to expect developmental change in competent problem solving is that children have a growing knowledge base or experience. Numerous studies demonstrate that children's social experiences play a critical role in influencing social cognition. Some elementary cognitive processes may be unconscious, via ongoing individual– environment transactions (Crick & Dodge, 1994; Lemerise & Arsenio, 2000; Schofield et al., 2012); children's social cognitive abilities and interpersonal strategies become more complex as a function of normal development (Dodge et al., 2003). Having better memory capacities means storing of more generalized and specific event representations, which provide a base for generating strategies, evaluating their potential effects and acceptability, and judging one's own ability to enact strategies. Competent response evaluation requires mental representation of the anticipated consequences and value of possible behaviors. As social learning theory suggests, the more experiences a child has, the bigger his or her knowledge base becomes, and the more accurate he

18

or she becomes at anticipating an outcome associated with a behavior, and the better he or she becomes at estimating his or her ability to enact behaviors (Bandura, 1993; Mize & Ladd, 1990).

However, there is mixed evidence regarding the developmental trajectory of children's competent response self-efficacy. As with competent response generation and evaluation, researchers suggest that children's competent response self-efficacy will increase as age increases and as children believe they are more capable to enact a competent response (Bandura et al., 1996). For example, Youngstrom et al. (2000) found that, on average, children reported fewer forceful and more prosocial solutions to hypothetical problems from preschool to first grade. Interestingly, they also found little to no stability of Social Problem Solving (SPS) from preschool to first grade, which was attributed to rapid gains in SPS abilities that allowed children who reported relatively poorer SPS skills in preschool to report similar SPS to their peers by first grade. On the other hand, Harter (2006) has pointed out that from age 5 to 7, children's self-representations are typically very positive—perhaps unrealistically so—and the child continues to overestimate his or her virtuosity regarding various competencies, such as social skills, cognitive abilities, and athletic talents across the elementary school years. Thus, it is likely that children may demonstrate increasing levels of competent response self-efficacy over the early school years, or children may exhibit deceases as they realize the realistic and complex and challenging nature of social interactions and experiences. The current study examined these possibilities by tracing the trajectory of competent response self-efficacy across the early school grades.

The studies reviewed above provide a convincing rationale for the expectation of developmental changes (increases) in CPS. Yet, changes in basic information processing and social information processing do not occur in a vacuum: Information processing, particularly

19

social information processing, is strongly influenced by social experiences with parents and peers (Garner & Lemerise, 2007; Meece & Mize, 2010; Pettit et al., 1998). As Mize and Pettit (2008) suggested, the ability to generate more prosocial strategies may be driven not only by growth in verbal skills and understanding of persons and emotions, but also by the accumulation of experiences with parents and peers (Mize & Pettit, 2008). Thus, positive parenting and peer experience that may influence the development of CPS will be considered next. The following sections examine the literature on the significance of early parental antecedents and ongoing peer relationships in child social cognitive process.

Associations between Early Positive Parenting and CPS

Research on qualities of parenting and parent-child relationships that are associated with child wellness and adjustment has a long and venerable history (e.g., see Grusec & Davidov, 2010). Parental influence on children's social-cognitive development can be distinguished in terms of parental style and parenting practices (see Ladd & Pettit, 2002 for a review). Parenting style, or indirect parenting, refers to the emotional and interactive climate that parents establish across contexts (Parke & Buriel, 2006; Mize & Pettit, 1997). Style is reflected in the underlying emotional tone of parent-child relationships and the extent to which parents typically display behaviors that are characteristic of a general orientation toward the child (e.g., acceptance vs. rejection). In contrast, direct parental involvement refers to parenting behaviors or practices intended to achieve goals in some domain of child development (Mize & Pettit, 1997), such as managing, selecting, modifying, and structuring social environments, or helping a child resolve conflicts with friends (see Ladd & Pettit, 2002). Studies examining both indirect parenting and direct parenting have found relatively modest associations between the two (Gregson et al., 2015; Mize & Pettit, 1997; Pastorelli et al., 2015). Thus, it appears that parenting style and

parenting practices are relatively independent constructs that may differentially predict children's social competence.

Early family experiences play a key role in the development of social skills and social cognitive development because many of children's social behavioral patterns are learned in the family of origin (Schofield et al., 2012). Various aspects of parenting have been studied over the years, and abundant evidence has documented that higher levels of warm, involved, nurturing parenting are associated with lower levels of poor adjustment and higher levels of good adjustment (Pettit et al., 1997), whereas harsh discipline, coercion, and unresponsive parenting predict adjustment problems such as aggression, depression, and low confidence (Ladd & Pettit, 2002). SIP has mainly been studied as a mediator of the links between negative parenting and adjustment problems (e.g., Runions & Keating, 2007). However, little discussion within the literature has focused on how parenting style and practices together shape children's CPS in early childhood. For the most part, studies that examine the relative impact of parenting style and parenting practice on children's social-cognitive adjustment use cross-sectional (Cabrera, Fagan, Wight, & Schadler, 2010; Werner, & Grant, 2009) or short-term longitudinal (Pettit et al., 1993) designs. Therefore, it is still unclear how both forms of parenting could contribute to the trajectory of CPS in early childhood.

Moreover, Parke and Buriel (2006) indicated that children's cognitive processes – goals, strategies, anticipated consequences, efficacy beliefs – mediated the association between parent-child interactions and children's social competence. In other words, it is plausible to expect positive parent-child relationship to promote children's CPS. Some parenting styles might influence children's more generalized, global and enduring representations of relationships. Children's characteristic ways of interacting with non-family members (e.g., peers) are shaped

21

by past experiences participating in social transactions with parents, which in turn form the basis of a generalized representational structure that serve as a strategies for guiding social behaviors (Parke & Buriel, 2006). Those patterns of parent-child interaction, carried forward to subsequent social interactions during which they guide or constrain perceptions, cognitions and behavior. Parent warmth, thus, has consistently been found to be predictive of higher social competence in children (e.g., Raya, Ruiz-Olivares, Pino, & Herruzo, 2013).

In addition to parents' indirect impact, it is also possible that direct parental coaching and instruction in how to respond in social contexts serves as an extra function in shaping children's social cognitive development. Ladd and Pettit (2002) detailed that peer-related parenting practice takes form in four roles: designer, mediator, supervisor, and advisor or consultant. During peer interactions, parents may serve as a supervisor where they can take three roles. First, parents can provide proactive guidance, such as being directly involved in a play activity, and providing guidelines and rules for peer interactions. In contrast, some parents may act in a reactive manner, in which they become involved if conflict or problems arise. Third, parents can also engage in monitoring role, in which parents show knowledge or awareness of children's peer activities and social relations. Young children can benefit from both the proactive or monitoring role because they provide a context for learning important social skills, and steer children away from deviant peers during the transition into the kindergarten (La Greca, Prinstein, & Fetter, 2001).

A conclusion that seems warranted based on research on positive parenting is that it is multifaceted and that the different facets are only very loosely related (Pettit et al., 1997). Parents may select from a smorgasbord of possible positive parenting behaviors, with a preference for some practices, such as insuring a high degree of involvement in the child's peer activities, over others practices, such as dealing with possible conflicts in a calm and reasoned manner (Parke &

Buriel, 2006). Therefore, the current study examined various dimensions of positive parenting on the trajectory of children's CPS over a 4 year time period, in order to have a comprehensive picture of the parental influence on children's development. Three positive parenting were of an interest in the current study: parenting style, observed maternal warmth; parenting direct practice, proactive teaching of social skills; and a mix of parenting style and direct practice, interest and involvement in their children's peer contacts. These three measures were adapted from a prior study which used them as indexes of supportive parenting (Pettit et al., 1997). However, the goals of the current study and that of Pettit et al. (1997) are distinct. Pettit et al. mainly examined whether positive parenting would predict adjustment (behavior problems, social skills, and academic performance) above and beyond harsh parenting and family adversity, whereas supportive parenting was combined as one construct. However, the current study examined each of these positive parenting domains as an individual predictor, and whether those three positive parenting domains account for significant variance in each of the CPS from kindergarten to third grade. The following sections focus on each of those parenting domains and its relationship with CPS.

   Maternal warmth and CPS. In early research aimed at identifying the primary dimensions of parenting style, warmth was one dimension that received attention consistently. For example, warmth constitutes one of the two primary components in Baumrind's (1967) conceptualization of parenting styles. Maternal warmth is a key aspect of the general positive emotional climate of parent-child relationships (Gregson et al., in press; McLeod, Wood, & Weisz, 2007), for it reflects parents' tendencies to be supportive, affectionate, accepting and nurturing (Rohner, Khaleque, & Cournoyer, 2005). Lack of warmth, hostility or indifference, is predictive of social incompetence (Dodge, 2006; Gamble & Yu, 2014; Grusec, 2011) and lower

prosocial behavior. The proposed study was designed to investigate maternal warmth, operationalized as parent displaying positive regard toward the child, including both the direct positive emotional and behavioral expressions.

Empirical evidence has demonstrated that maternal warmth is related to parent-child relationship quality, which in turn is related to children's social competence and self-efficacy (e.g., Baumrind, 1967, 1971; Raya et al., 2013). In a longitudinal study, Zhou et al. (2002) examined the concurrent and longitudinal relations of parental warmth and social competence among 180 children. Researchers found that observed parental warmth at 2nd grade was associated with social competence of children at 5th grade. And parents' positive expressivity and empathy to the child mediated those links. When parents are warm, accepting, and emotionally available, their children tend to be socially competent, well adjusted, and well accepted by their friends (Cummings et al, 2002). For example, in a sample of 192 predominantly Caucasian preschoolers, children who had warm relationships with their parents, as rated by behavioral observation, were rated by their teachers as more prosocial (Clark & Ladd, 2000). Consistent findings also appear in other ethnic groups. Among Korean immigrants, maternal warmth was also positively related to children's social competence (Kim, Han, & McCubbin, 2007). Not only maternal warmth, but also paternal warmth has been found to promote children's social adjustment (Maccoby & Martin, 1983). In a study of Chinese children, maternal warmth predicted children's perceived self-competence and leadership, whereas fathers' warmth predicted children's social preference, social competence, and academic achievement (Chen, Liu, & Li, 2000). Therefore, it can be concluded that children's capacities to behave positively in the social world emerge from positive experiences in close relationships within the family (Pastorelli et al., 2015).

Little is known about the link between maternal warmth and the trajectory of competent problem solving across early childhood. Based on attachment literature, it has been found that children who are securely attached tend to exhibit more prosocial behavior (Clark & Ladd, 2000). In attachment theory, dynamic mental representations of relationships – known as internal working models – are thought to derive initially from early social relationships with caregivers. The working model provides rules that permit or limit the individual's access to certain forms of knowledge (Bowlby, 1988). Therefore, a warm, responsive relationship with a parent allows the child to use the parent as a secure base from which to learn and explore (Ziv et al., 2004). As children enter kindergarten, this secure base allows the child to acquire beliefs and prosocial behaviors related to self and peers because it gives children feelings of security, control, and trust in the environment, which increase children's self-confidence and efficacy (e.g., Dykas & Cassidy, 2011; McElwain et al., 2008). In fact, a recent study of a community sample found that warm, sensitive parenting at 12 months significantly predicted children's social competence at 24 months (Barnett, Gustafsson, Deng, Mills-Koonce, & Cox, 2012). Moreover, by using a longitudinal design among a large national sample, Knafo and Plimin (2006) found that parental positivity toward a child at age 3 predicted prosocial behaviors at age 3 and 4, and parental positivity at age 4 predicted prosocial behavior at age 7. One possible explanation for the above studies is that warm, supportive parenting may increase prosocial behavior by providing a caring model for children and by increasing both children's willingness to attend to parental messages and their accuracy in detecting these messages (Knafo & Plomin, 2006). Therefore, it is expected that there will be a positive link between maternal warmth and competent problem solving.

Further, maternal warmth as a promoter of children's competent problem solving might due its effects on children's perspective taking, empathy, and moral reasoning (Eisenberg, Spinrad, & Knafo-Noam, 2015). Rohner's acceptance-rejection conceptual framework supported the idea that a child who feels accepted by parents will be more likely to be confident about their competence, and develop a positive view of the "generalized other," and building healthy, warm relationships with peers at school (Rohner et al., 2005). For example, in a sample of 8-year-old children, Attili and colleagues (2010) found popular children were situated in a relationship structure where mothers were displaying more positive behavior (i.e. positive conversation) than mothers of rejected and average children. Therefore, children feel accepted by warmth and developed a sense of social capability to CPS. However, when a child feels rejected by parents, they are less likely to develop a positive view of other relationships, and might even use social maladjustment to draw attention. In a sample of 1st grade students, Bailey et al. (2006) found that children who were low in maternal acceptance were significantly more likely to engage in externalizing behaviors.

Additional support is found in social learning theory, which proposes that children learn via modeling in the context of family interactions (Bandura, 1993). Specifically, negative parent-child exchanges may be experienced as frightening or punishing, making children involuntarily use similar strategies with peers in stressful or challenging social circumstances; conversely, positive parent-child exchanges may be perceived as rewarding and comfortable, encouraging children to use more prosocial behaviors and feel more confident and natural in employing those competent problem solving skills in peer situations. In a standard laboratory parent-child interaction assessment, mothers who used positive verbal statements (e.g., polite requests and suggestions) and were less disagreeable and demanding had children who showed higher

26

problem solving skills (Owen, Slep, & Heyman, 2012). These findings support the idea that warm, positive parenting increases social cognitive skills and competent behaviors.

> ***Parental involvement and CPS.*** How parents oversee and regulate the behavior and activities of their children is a topic of considerable interest to socialization researchers. Haskett and Willoughby (2007) reported that parental responsiveness, sensitivity, and positive regard were associated with adaptive patterns of social cognitive processing. Parent monitoring has been operationalized in a variety of ways, but a core feature of most definitions is an emphasis on parents' knowledge of their children's whereabouts, companions, and activities. Parental involvement, a developmentally appropriate form of parental monitoring, is widely used in early childhood. In the present study, parental involvement refers to parent's awareness of and concern about the child's social experience and willingness to use such considerations to structure the child's experiences (Pettit et al., 1998; Kochanska, Murray, & Harlan, 2000). Parental involvement in children's social lives serves an essential role in children's development of social-cognitive and behavioral skills (Mize & Pettit, 1997; Moran, Lengua, & Zalewski, 2013). Especially at early stages of children's social life, parental involvement serves a positive socializing function by providing children with needed guidance and supervision (Brown, Mounts, Lamborn, & Steinberg, 1993), and is a fundamental component of effective behavior regulation by proactively preventing negative peer experience and correcting child's misbehavior in a timely fashion (Crouter & Head, 2002). Lack of awareness and knowledge, on the other hand, coupled with an inability or unwillingness to supervise and regulate children's companions and activities, may be associated with heightened risk of adjustment difficulties.

> Many investigators have found significant relationships between parental involvement and positive child outcomes, presumably in part at least because involvement or knowledge of

their children's activities enables parents to ensure that their children are not exposed to influences that would have a detrimental effect on their socialization (Bugental & Grusec, 2006). Through their involvement, parents express interest and solicitude to their children's needs (Dishion & McMahon, 1998; Pastotrlli et al., 2015). In fact, parental involvement is associated with higher levels of social competence among children (McDowell & Parke, 2009; Updegraff et al., 2001), and lower levels of behavior problems (e.g., Laird et al., 2010; Mounts, 2002; Pettit & Laird, 2001). Parents can play the role of "supervisor" in children's peer relationship through their involvement (Ladd & Pettit, 2002), directly regulating child behavior and socializing children toward the normative goals of conformity (Pettit et al., 2001).

Previous studies have linked parental involvement with social competence, but no known study has examined the effects of parental involvement on children's trajectory of CPS across the early school years. A few studies have attempted to find out if there are longitudinal relations between parental awareness and children's social development. Pettit et al. (1997), for instance found that parents' involvement and interest in their children's peer experiences at kindergarten was associated with lower levels of externalizing problems and higher levels of academic performance at grade 6. One reason we expect the potential contribution of parental involvement to the trajectory of CPS is the previously reported connection between involvement and children's emotional regulation. One of the major goals of socialization is for children to assume regulation of their own behavior and to act without explicit directives or demands, and to engage in socially prescribed behaviors in the absence of adult supervision (Grolnick & Farkas, 2002). When parents are available to help their children when distress becomes unmanageable and to keep affect within tolerable limits, they direct children's attention to the understanding of their own and other's emotions and needs (Malti, Eisenberg, Kim, & Buchmann, 2013). When this

sense of security and caring is present, the child will more likely want to take on the regulatory strategies and will be more likely to enact prosocial responses. In fact, many studies (such as those cited above) have shown that parents who are knowledgeable about their children's activities and whereabouts are successful in promoting positive child behavior. Thus, with parental involvement, children's emotional regulation is practiced and CPS skills are strengthened.

Proactive guidance and CPS. In addition to parenting that is generally positive in tone and content, there is increasing evidence for the importance of parents' use of proactive socialization strategies in predicting child social outcomes. In early childhood, there are critical developmental tasks for parent and child to negotiate; for example, parents need to teach their child to gain adult attention appropriately, to regulate emotions, to engage in constructive activities with other children (Denham et al., 2000; Gardner, 1999; Pettit & Bates, 1989), to keep away from danger and conflict, and to share and cooperate with others (Gardner, Sonuga-Barke, & Sayal, 2007). As the child grows older, parents may take a supervisor role by proactively discussing with their children how to develop friendships, manage conflict, or deal with teasing or bullying (Ladd & Pettit, 2002). Indeed, Pettit and colleagues (2001) found that when parents scaffold their young children's activities, they are engaging in an important early form of parental monitoring; that is, early proactive parenting was predictive of later monitoring and high levels of parental monitoring associated with lower social delinquency (Gardner et al., 2007; Pettit & Bates, 1989).

Proactive parenting has been found to provide an important social developmental context for the prevention of problem behavior in young children (Ladd & Pettit, 2002; Leidy, Guerra, & Toro, 2012; Maccoby, 1983). Such involvement may take the form of anticipatory guidance of

29

the child, monitoring of the child's activities, and parent-child teaching (Leidy et al., 2012; Pettit et al., 1989). Parents who paid careful attention to the child's needs and engaged in active management of their activities had children with less social maladjustment. In an observation study of preschool children and their parents, researchers coded spontaneous joint play and other-mother-child activities as proactive parenting, and found that the amount of time spent in joint play at age 3 predicted individual improvement in conduct problems at age 4, even after controlling the initial level and the effects of negative parenting (Gardner et al., 2007). Proactive parenting may also play a role in eliciting adaptive cognitive functioning by its impact on the parent-child relationship, providing positive role models, and through direct and indirect teaching of adaptive problem solving (Criss, Pettit, Bates, Dodge, & Lapp, 2002; Haskett & Willoughby, 2007; Pettit et al., 1988). For instance, Pettit et al. (1988) defined proactive parenting as use of preventive teaching and found evidence between proactive parenting and child encoding relevance; parents, that is, who utilize more preventive teaching strategies as part of their parenting repertoire have children who encode the most relevant social cues when solving social problems.

A recent study using a person-centered approach in children age 18 months to 5 years found that proactive parenting, defined as parents' active engagement in emotional socialization, was indirectly associated with children's positive social behaviors through children's change in effortful control (Miller, Dunsmore, & Smith, 2015). Children with parents who actively engage in a variety of emotion socialization practices may increase in regulatory capacities and engage in more positive social behavior. Moreover, parental proactive guidance involves anticipatory guidance, such as setting up tasks to avoid conflict and attempting to guide the child's behavior in future situations. For example, in a home observation, 52 mothers were observed in regards to

preventing conflict with 3-year-old child. Mothers who were less likely to use proactive

guidance, and more likely to use reactive strategies, had children with lower skills to solve

conflicts at age 5, even controlling for age 3 behavior problems (Gardner, Sonuga-Barke, &

Sayal, 1999). Pettit and Bates (1989), in a sample of preschoolers, defined proactive parenting in

terms of affectively positive, educative exchanges between mother and child, and found that

more proactive parenting was strongly related to the relative absence of problem behavior. More

recently, in a sample of 116 mothers in Korea, Park and Cheah (2005) found that proactive

parenting was associated with higher social skills for preschoolers. Perhaps one reason is that

proactive parenting facilitates larger peer networks (Ladd, 2005). These findings are consistent

with the proactive assumption, that is, "good things" are best learned in a painless, self-directed

fashion and that children might think more poorly of these "good things" (i.e., prosocial

behaviors) if they were taught in a directive, authoritarian fashion (Rubin & Mills, 1992)

Although proactive strategies probably do not have the same short-term socialization

benefits as more directly reactive strategies in terms of eliciting immediate compliance, they

may, as Rubin and Mills (1992) suggested, have more enduring benefits. However, no known

study has examined the longer-term impact, which there is reason to expect. By engaging the

child positively and proactively, the parent may be setting the stage for subsequent social

encounters where the child is more receptive to the parent's wishes. Furthermore, such

involvement in early life apparently promotes verbal development (Park & Cheah, 2005).

Enhanced verbal ability could have the function of allowing the child's psychological needs to be

met more efficiently by the parent as well as helping the authoritative parent (Baumrind,

1967,1971) provide clear directives to the child. Thus, focusing on the longer-term impacts of

proactive parenting on children's competent problem solving could provide valuable insights into the development of social competence.

It should be noted that the current study did not hypothesize specificity in links between parenting predictors and CPS outcomes for two reasons. First, in the literature on SIP, specificity in links is found between early and later stages of SIP, not among steps within early/later stage (Pettit & Mize, 2007). For example, early parental maltreatment and rejection underlie poor attention to and encoding of relevant social cues and interpretation of peers' intention, the early-stage of SIP, but not response generation and evaluation, the later-stage of SIP (Pettit & Mize, 2007). Second, conceptually, we believed that exposure to competent role models and good parental coaching would beneficial for later-stage SIP, cooler, calmer, and more reflective information processing.

Association between Peer Experience and CPS

Despite the fact that parenting may be a very robust socialization predictor of children's social cognitive development, individual differences in CPS during childhood also stem from positive interaction experiences with peers, such as having friends and being well-liked. In fact, the notion that peers are important for various aspects of children's socio-cognitive development, including perspective taking, competence, self-confidence, has long been recognized (e.g., Ladd, 2005). Peer acceptance has a long history as a social competence indicator in the social development literature (see Ladd, 2005; Rubin et al., 2009, for reviews) and is typically operationalized in terms of peer sociometric choice data. It should be noted that some research also has used teacher ratings to estimate degree of peer acceptance (Howes, Hamilton, & Matheson, 1994; Hughes & Kwok, 2006).

Peer acceptance serves as an indicator of both likability and integration in the classroom peer group, and reflects the important social goal of establishing and maintaining alliances and positive relationships within salient social groups. Researchers have found evidence to support the link between children's information processing and peer acceptance (Crick & Dodge, 1994; Gifford-Smith & Rabiner, 2004). Children draw conclusions about themselves or their peers based on the information gathered from the peers. Thus, peer status has the most potential for influencing a child's future social information processing and subsequent social adjustment. Therefore, the current study examined earlier peer acceptance, and its association with the trajectory of CPS.

Research on peer experience and children's social cognitive development has mainly focused on negative peer experience and social information processing deficits. For example, Dodge and colleagues (2003) used two samples of school-aged children (including the same sample as the current study) to examine the link between peer acceptance and social information processing biases. Across both longitudinal samples they replicated the findings that kindergarten peer dislike predicted less competent response generation and less competent response evaluation. It is possible that peer status is often reflected in the peer's behavior toward the child, such as rejection, acceptance, annoyance, or approval of their peers, so that peer dislike may lead to decreases in feelings of social competence. Thus, children who are rejected by peers may have lower confidence and diminished social coping self-efficacy in competent solving skills when facing challenging peer situations (e.g., Attili et al., 2010; Blandon et al., 2010). Another possible explanation is that because a child is unable to generate and enact competent responses in these social situations, the child comes to be perceived as socially incompetent and likely to be rejected.

Although less frequently studied than social cognition deficits, a few studies have been conducted on social-cognitive competencies on and children's peer acceptance. One of the classic studies, built on the foundation of using SIP to examine normative development of children, found that children who are socially skilled and well-liked by their peers tend to generate more competent, assertive, and prosocial responses, more positively endorse competent responses and view themselves as capable and competent in their interactions with peers (Dodge et al., 1986).It also has been found that positive social processing (i.e., CPS) is associated with higher levels of peer acceptance. In a longitudinal study, Blandon and colleagues (2010) found that children's early social skills, indicated by children's social abilities in cooperation, assertion, and self-control predicted later peer acceptance across the ages of 2 to 7. In line with this idea, an intervention program was used to improve children's competent problem solving by improving peer acceptance. The GBG (Good Behavior Game) intervention is a classroom management program in which teachers are taught to facilitate positive peer interactions. In the GBG intervention, children work together in groups in which members are encouraged to support each other in behaving prosocially and following positively formulated class rules through a process of mutual self-interest. Groups as a whole are rewarded for rule compliance and prosocial behavior. GBG children, who were trained to have more prosocial strategies, compared to controls, were found to improve peer acceptance (Witvliet et al., 2009).

Few if any researchers have investigated the role that peer acceptance might play in the development of CPS, despite the fact that several studies showed reciprocal associations between social cognitive process and peer acceptance (e.g., Rah & Parke, 2008; Crick & Dodge, 1994; Ladd, 2005). Consider competent response generation. Generalized mental representation of previous experiences is often referred to as a script, relationship schema, or construct of social

concepts that guide perceptions, evaluation, and behavior (Pettit et al., 2000). A child, for instance, may develop a "prosocial" or "withdrawal" schema based on previous experiences. When a child is facing a peer provocation, whether a friendly or withdrawal schema is accessed depends, partly, on recent environmental and internal cues or events, so that a child is more likely to access a schema that is consistent with the recent event or the emotion that accompanied the event. Thus, children who have just been teased or rejected by a peer may be more likely to access a construct of withdrawal or hostility, whereas children who have recently been well liked had a good time with friends and may be more likely to access a prosocial construct. Therefore, generation of more and more socially appropriate strategies may reflect increasing cognitive capacity coupled with a growing knowledge base as a result of accumulating positive peer experiences, including successfully using prosocial behavior to gain positive outcomes.

In conclusion, by examining the impact of peer acceptance on the trajectory of three different aspects of competent problem solving, this study will contribute to the current literature to better understand the relationship between peer acceptance and competent problem solving among young children.

Association between Socio-demographic Factors and CPS

Empirical support for contextual antecedents of children's social cognitive development includes socioeconomic status (e.g., Gottfried, 2013) and gender (e.g., Mize and Pettit, 1997). Socioeconomic status (SES) is one of the most widely studied constructs in the social sciences. Research shows that SES is associated with a wide array of cognitive and socioemotional outcomes in children, with effects beginning prior to birth and continuing into adulthood (see Bradley & Corwyn, 2002, for a review). With regard to social cognitive development, Pettit and colleagues (1988) suggested that socioeconomic disadvantage might engender a familiar climate

of mistrust of outsiders, thus fostering the development of hostile attribution style. Schultz, Izard, and Ackerman (2000) also found that after controlling for age, gender, and verbal ability, family environment factors such as family instability and lower SES were marginally related to anger attribution bias. Likewise, Bradley and Corwyn (2002) found evidence for socio-demographic disadvantage predicting maladaptive response generation in boys. It therefore appears that family's SES has an impact on children's social cognitive development. Thus, we controlled for SES in predicting the trajectory of CPS.

Gender should also be considered when investigating CPS for the following reasons. First, previous research suggests that females are more skilled in many facets of social cognitive knowledge than are males (Gottfried, 2013; Schultz et al., 2000). Studies using self-reports and others' reports have shown that girls consistently behave at least somewhat more prosocially than do boys (Eisenberg et al., 1996). Even among the same peer status category, popular girls are rated as more prosocial than are popular boys (LaFontana & Cillessen, 2002). However, perceived social inefficacy has a heavier impact on depression in girls than in boys in the longer term (Bandura, 1993). Second, different parental socialization strategies have been found to have different effects (i.e., patterns of associations) for boys and girls, and may contribute to gender differences in the development of CPS. For instance, mothers' positive engagement (e.g., maternal warmth) is especially important for girls' developing competencies (Mize & Pettit, 1997). Third, sex differences have been found in aggressive social information processing (i.e. aggressive boys attended to aggressive cues more than girls, Crick & Dodge, 1994), but the findings may not necessarily apply to competent social information processing (Pettit et al., 2001). Therefore, we will include gender as a control variable to the trajectory of CPS.

Conclusion

In conclusion, previous research has demonstrated that positive parenting is positively associated with children's social cognitive development. There is also evidence for the association between positive peer experiences and children's social competence. Nonetheless, numerous questions remain. First, no systematic research has examined whether there is growth of CPS over childhood. There are relatively few longitudinal studies of competent problem solving focused on the period of early to middle childhood, and we were not able to find a single study that assessed children across multiple years using the same measures at each age. Second, if there is growth, would different domains of positive parenting be associated with the growth (not only initial level)? Third, would peer acceptance be associated with the growth of CPS? Last, would positive peer experiences facilitate the growth of CPS of children above and beyond early positive parent-child relationships? Thus by addressing the gaps in the current literature, this study provides important insights into the development of CPS.

Hypotheses

The research reviewed above provides a basis for examining longitudinal relationships among parenting, peer experiences, and CPS. As Petti and Mize (2007) have noted, examination of the trajectory of competent problem solving over childhood has been a limitation in the past. No known study has systematically examined the linkages between positive parenting, peer experience and CPS. Given the preceding review, the following hypotheses were addressed:

1. Children will experience growth in CPS (i.e., competent response generation, competent strategy evaluation, and competent behavior efficacy) across kindergarten to 3rd grade.

   a. Children's gender, ethnicity and SES may account for the differences in initial level and rate of change in CPS; if so, those demographic factors will be controlled in further analysis.

2. Earlier positive parenting (warmth, involvement, and proactive guidance) will predict higher CPS at the initial level and faster growth rates across the early elementary school years.

3. Peer acceptance (sociometric, teacher-report) assessed at kindergarten will predict higher CPS at the initial level and faster growth rates across the early elementary school years.

4. Positive parenting and peer acceptance will have an additive (cumulative) effect on the initial level and growth of CPS.

III. Method

Sample

The children and their families in this study were participants of the Child Development

Project (CDP), an ongoing, multi-site longitudinal study of the risk and protective factors in

children's development of competence and behavior problems (Dodge et al., 1990; Pettit et al.,

1997). Participating families were recruited during kindergarten pre-registration from three

geographical areas (Nashville and Knoxville, Tennessee, and Bloomington, Indiana) in 1987

(cohort 1) and 1988 (cohort 2). Parents were randomly approached and asked if they would

participate in a longitudinal study of child development. Approximately 75% of those initially

contacted agreed to participate. The study sample consisted of 585 families at the first

assessment. This sample was demographically representative of the schools and communities

from which it was drawn in terms of sex (52% males), ethnicity (81% European American, 17%

African American, 2% other groups), single parenthood (25% single parents), and SES (26% low

SES). The sample was predominantly middle class, with an average Hollingshead (1979) score

of 40.4 ($SD = 14$). However, the participants represented a range of socioeconomic status, with

9%, 17%, 25%, 33%, and 16% of the families classified in the five classes of Hollingshead's

scale (from the lowest to the highest).

Measures

Competent problem solving

Annually during the summer before kindergarten through Grade 3, children were

presented with 24 video vignettes that depicted situations in which child protagonists attempted

unsuccessfully to enter peer groups and encountered provocations from peers. In each vignette, children were told to imagine being the protagonist and were asked a series of questions after watching each vignette. Children were also presented with a series of cartoon pictures depicting peer interactions and brief verbal descriptions of the cartoon events and were asked questions to assess their processing of the cartoon stimuli. Inter-rater agreement on the open-ended SIP questions described below (i.e., competent response generation) was good ($k >. 0.80$ in all instances; see Weiss, Dodge, Bates, & Pettit, 1992).

Competent response generation. Children's generation of acceptable and prosocial strategies to deal with peer dilemmas was assessed via the 24 video vignette measures. In the video measure children were asked how they would respond if each of the 24 video situations had happened to them. Each response was coded as being aggressive, withdrawn or inept, or acceptable and competent. Children were separately presented with eight cartoon stimuli and asked to generate solutions to the problems depicted in the cartoons. The proportions of competent responses generated for the video vignettes and cartoon stimuli were calculated, and scores were combined to create a single variable reflecting competent response generation. The alpha scores across four years were .89, .89, .90 and .89, respectively, from kindergarten to grade 3 (Lansford et al., 2006).

Competent response evaluation. Positive evaluation of prosocial strategies to peer dilemmas was also measured with the video measure of SIP. After each video vignette, children were shown alternative strategies (competent, aggressive, and inept) for dealing with the situation. Response evaluations were assessed by asking children to rate whether each alternative strategy was a good or bad thing to say or do (1 = *very bad*, 2 = *bad*, 3 = *good*, 4 = *very good*). Competent response evaluation was scored as the average of this item following the competent

40

response across the 24 vignettes. The alpha scores across four years were .91, .91, 92 and .92, respectively, from kindergarten to grade 3.

Competent response efficacy. During the interview, children were presented three different social situations from "Things that happen to me" (e.g., a situation involving standing in line: a child cuts in front of you; a story involving watching TV: a child changed the channel without asking; a situation involving playing in playground: you want join and play soccer but a child rejected you) and a competent response with each situation. Competent response efficacy was assessed by asking children to rate whether each competent strategy (e.g., I will let you cut if you let me cut next time) was hard or easy thing to say or do (1 = *very hard*, 2 = *hard*, 3 = *easy*, 4 = *very easy*). Competent response efficacy was scored as the average of this item following the competent response across the 3 situations. The alpha scores within each of four years were .48, .59, .53 and .46, respectively, from kindergarten to 3rd grade. Since we were interested in capturing children's overall competent response efficacy, we created a composite of efficacy by averaging scores across the three scenarios, correlations ranged from .10 to .35 (*p*s = .00 - .02). It is also possible that efficacy in each social situation is somewhat distinct, such that efficacy in each situation influences the overarching construct of efficacy (i.e., causal indicators), as compared to the possibility that an underlying efficacy construct influences efficacy across the situations (i.e., effect indicators) (Bollen & Lennox, 1991; Kuhn & Laird, 2011). Such reasoning is in line with Streiner (2003), who pointed out that the reliability of an index formed from causal indicators is not necessarily assessed accurately by internal consistency across situation.

Positive parenting

Observational, interview, and questionnaire data collected in the first year of the project (the summer before and early fall of kindergarten) were used to assess positive parenting: warmth, involvement, and proactive guidance.

Warmth. The primary home interviewer completed a Post-Visit Inventory which involved a rating of the mother's behavior toward the child. The interviewer noted the occurrence (*occurred* = 1, *did not occur* = 0) of each of four behavioral events: "parent speaks to child with a positive tone," "parent expresses a positive attitude when speaking of child," "parent initiates positive physical contact with child" and "parent accepts positive physical contact from child." If an item could not be coded due to insufficient information (e.g. if the child did not initiate any positive physical contact), it was coded as 0 (i.e., did not occur). The four items were composited to create a summary score for observed mother warmth towards the child (α = .64). This measure was adapted from a prior study, which used warmth as an index of supportive parenting (Pettit et al., 1997).

Involvement. As part of the in-home interview, parents were asked to describe their children's exposure to peers (at age 1 to 4 and at age 4 to 5). Interviewers asked the parent to identify the situations in which the child interacted with other children, whether the child had been around any children that the parent considered aggressive, whether the child had any close friends that she or he talked about, and the extent to which the child had been involved in conflicts with peers. Based on the parents' responses, the interviewers rated the "parent's awareness of and concern about the child's social experience and willingness to use such considerations to structure the child's experiences." The interviewer impressions were summarized on an extensively anchored 5-point Likert scale (1 = *parent was unaware or*

42

uninterested in most of the child's peer experiences to 5 = *a very high level of parental interest and involvement*). The ratings across two developmental periods were averaged to create an overall positive involvement scale score ($r = .92$) (Pettit et al., 1997).

Proactive guidance. The Concerns and Constraints Questionnaire was used to assess proactive guidance provided by parents. Parents were presented with five stories in which the child misbehaved in his or her interactions with peers (e.g., child refuses to relinquish a toy after a reasonable length of time). Parents then were asked "What would you do to prevent your child from acting this way in the first place?" Parents' responses were coded as "doing nothing," "after the fact – non-preventive power assertion, punishment," "after the fact – reasoning, proactive guidance," "before the fact – preventive but vague and general," and "before the fact – preventive, situation and method and specific." Parents who used either of the latter two categories were scored as 1; parents using any other categories were scored as 0. Those scores across five stories were averaged to create an overall proactive guidance item. This item had an internal consistency of .70 across the five stories and was adapted from prior research on positive parenting (Pettit et al., 1997; Pinderhughes, Dodge, Bates, Pettit, & Zelli, 2000).

Positive peer experiences

Peer acceptance was measured by sociometric assessment and teacher-rating. Sociometric interviews following the protocol described by Coie, Dodge, and Coppotelli (1982) were conducted during the winter of kindergarten in all classrooms in which at least 70% of children's parents gave consent. Children were shown pictures of their classmates in kindergarten and were asked to name up to three peers they especially liked and up to three peers they especially disliked. A social preference score was created by taking the standardized difference between the

standardized "like most" nomination score and the standardized "dislike most" nomination score (see Coie et al., 1982).

Teachers completed five items that are used to assess children's peer acceptance at kindergarten (e.g., "This child gets along well with peers of the same sex," "This child is accepted by the peer group"), rated on a 5-point scale (1 = *never true* to 5 = *always true*). Internal consistency was high ($\alpha = .88$).

III. Results

Overview

The goals of this study were to examine the development of competent problem solving (CPS) from kindergarten to third grade and the roles of early positive parenting (i.e., maternal warmth, proactive guidance, and parental involvement) and early positive peer experience (i.e., peer acceptance) on CPS. In the sections that follow, the descriptive statistics and correlations among study variables are presented. Next, the growth curve analysis was conducted to examine the primary hypotheses regarding the role of early positive parenting and peer acceptance in predicting the change of CPS.

Descriptive Analyses

A summary of descriptive statistics is shown in Table 1. Variables were checked for outliers, skewed distributions, and other non-standard conditions. All variables were within the commonly accepted range of skewness (absolute values < 1.23); and, therefore, no transformations were necessary.

In general, children had a moderate level of competent response generation across time, which increased from kindergarten to 3rd grade, but there was variability among children at each time point (Ms ranged from .33 to .52 on a 0- to 1- point scale; average SD =.18). This indicated that on average, 33% to 52% of responses generated by children are competent. The moderate standard deviation also indicated that children do vary somewhat in competent response generation from kindergarten to 3rd grade. On average, children had a modestly high level competent response evaluation (Ms ranged from 2.86 to 3.22 on a 1 to 4 point scale; average SD

=.57), which increased from kindergarten to 2nd grade, but slightly decreased from 2nd grade to 3rd grade. The moderate standard deviation indicated that there is some variability among children at each time point. Children's competent response efficacy was moderately high and increased over time (*M*s ranged from 2.86 to 3.22 on a 1 to 4 point scale; average *SD* =.75), with variability among children at each time point. In addition, on average, maternal warmth, involvement, and proactive guidance were moderately high, as was peer acceptance (both sociometric and teacher-rated).

Correlations among Key Study Variables

Bivariate analyses were conducted to examine the associations among all study variables (Tables 2, 3). Table 2 shows the correlation among all CPS variables and control variables. Stability correlations within each domain of CPS (competent response generation, competent response evaluation, and competent response efficacy) were in the expected direction and generally modest in magnitudes (*r*s ranged from .09 to .45, *p*s range from .001 to .10). The exception was the non-significant association between competent response efficacy at kindergarten and competent response efficacy at 2nd and 3rd grade. Five out of twelve associations among CPS variables (competent response generation, evaluation, and efficacy) at each time point were slightly positively correlated as expected, ranging from $r = .08, p < .10$ to $r = .16, p < .001$, indicating that the three components of CPS are relatively independent. Children from higher income households had more competent responses across the years, and were more likely to evaluate competent responses as effective at kindergarten, 1st, and 2nd grade, but less likely to feel efficacy to enact a competent response at 1st grade.

Further, *t*-tests were conducted to examine sex and race/ethnicity differences. Results revealed that compared with boys, girls were more likely to generate more competent responses

than boys at 1st ($M_{girls} = .42$, $SD = .19$; $M_{boys} = .37$, $SD = .16$), 2nd ($M_{girls} = .51$, $SD = .20$; $M_{boys} = .44$, $SD = .18$), and 3rd ($M_{girls} = .55$, $SD = .18$; $M_{boys} = .50$, $SD = .17$) grades. Additionally, compared with African Americans (AAs), European Americans (EAs) came from higher income households ($M_{AA} = 27.04$, $SD = 12.5$; $M_{EA} = 42.18$, $SD = 12.91$), and were more likely to generate more competent responses at 2nd ($M_{AA} = .42$, $SD = .16$; $M_{EA} = .48$, $SD = .19$) and 3rd ($M_{AA} = .45$, $SD = .17$; $M_{EA} = .54$, $SD = .17$) grades, more likely to evaluate a competent response as effective at kindergarten ($M_{AA} = 2.61$, $SD = .73$; $M_{EA} = 2.91$, $SD = .61$), 1st ($M_{AA} = 2.89$, $SD = .75$; $M_{EA} = 3.09$, $SD = .56$) and 2nd grade ($M_{AA} = 3.08$, $SD = .63$; $M_{EA} = 3.24$, $SD = .48$) grades.

As shown in Table 3, fourteen out of twenty associations between predictors (the three positive parenting measures and the two peer measures: maternal warmth, parenting involvement, proactive guidance; and sociometric peer acceptance and teacher-reported peer acceptance) and competent response generation from kindergarten to 3rd grade were significant and positive, ranged from $r = .08$, $p < .10$ to $r = .26$, $p < .001$, indicating that positive parenting and peer experiences were associated with higher levels of competent response generation. Three out of twenty associations between the parenting and peer positive predictors and competent response evaluation from kindergarten to 3rd grade were significant and positive, correlations ranged from $r = .08$, $p < .10$ to $r = .16$, $p < .001$. All the significant correlations with competent response evaluation were with parenting predictors. There were no significant associations between predictors and competent response efficacy.

Associations among parenting predictors revealed that higher parenting involvement was modestly linked with higher maternal warmth and proactive guidance, but warmth and proactive guidance were unrelated (see Pettit et al., 1997). Peer-rated and teacher-reported peer acceptance were positively correlated as expected and moderate in magnitude. Four out of six associations

of the three positive parenting predictors (warmth, involvement, and proactive guidance) with the two peer acceptance measures were positively, as expected, ranging from $r = .10$, $p < .05$ to $r = .13$, $p < .01$. Children from higher income households experienced higher levels of maternal warmth, parenting involvement, proactive guidance, and peer-rated and teacher-reported peer acceptance.

Further, t-tests were conducted to examine sex and race/ethnicity differences. Results revealed that compared with boys, girls were more likely to be rated high in sociometric peer acceptance at kindergarten ($M_{girls} = .32$, $SD = .92$; $M_{boys} = -.00$, $SD = .98$). Additionally, compared with African Americans (AAs), European Americans (EAs) were more likely to have higher maternal warmth ($M_{AA} = 2.23$, $SD = 1.06$; $M_{EA} = 2.57$, $SD = 1.08$), higher parental awareness ($M_{AA} = 2.77$, $SD = .95$; $M_{EA} = 3.35$, $SD = 1.05$), have parents who were more likely to provide proactive guidance ($M_{AA} = 1.80$, $SD = 1.60$; $M_{EA} = 2.37$, $SD = 1.66$), and had higher score of sociometric peer acceptance ($M_{AA} = -.03$, $SD = 1.00$; $M_{EA} = .19$, $SD = .96$).

Multi-Level Data Analytic Plan

To address the two levels of investigation—within-child growth in CPS and between-child differences in CPS development attributed to early positive parenting and peer experiences—a taxonomy of multilevel models for change were fitted (Tables 4-6). Conceptually, the multilevel model for change consists of two levels of analysis (Singer & Willett, 2003). Level 1 allows us to model true intercepts and true growth rates in CPS for each child. Level 2 treats the true CPS trajectories specified in Level 1 as an outcome that can be predicted by between-child differences in positive parenting and peer relations, controlling for the other variables in the model. To investigate the first research question, we fitted an unconditional growth model for each domain of CPS outcomes, in which the only predictor was

48

time, the measure of CPS at 4 time points: kindergarten, 1st, 2nd, and 3rd grade. Time was centered at kindergarten, so that the intercept is interpreted as the mean value of CPS for participants at the summer proceeding kindergarten. The predictors we used to explain change in CPS over time were collected in the summer of kindergarten (i.e., positive parenting) or early in the kindergarten school year (i.e., sociometrics and teacher ratings) (Time 0).

All models were fitted using the SPSS MIXED procedure, using ML estimation and a freely estimated (co)variance structure. We examined the available variance that existed in the intercept and growth parameters of each unconditional model (a model for each of the 3 components of CPS) and determined that we could use our predictors, measured at intercept, to predict change in CPS over these four time points. To answer our second and third research questions, we fitted an additional taxonomy of multilevel models for change, by adding the positive parenting and peer predictors separately. We report the deviance statistics for each model: -2 log-likelihood (-2LL), Akaike information criterion (AIC), and Bayesian information criterion (BIC). Singer and Willett (2003) pointed out for all three deviance statistics, the smaller, the better fit. To answer the fourth research question, whether positive parenting and peer experience had an additive effect on CPS, the significant demographic controls, positive parenting, and one of the positive peer variable from the earlier models (i.e., sociometric-based or teacher-reported peer acceptance) were entered into the final model. Only variables that significantly improved goodness-of-fit were included in final models to estimate their unique effect on the CPS growth trajectory (Model G, Tables 4-6). As a reminder, in the earlier models, positive parenting variables were considered separately because studies suggested that multiple dimensions of positive parenting are empirically distinct from each other and that each makes an independent contribution to the prediction of children's social development (Ladd & Pettit, 2002;

49

Pettit et al., 1997; Su et al., 2016). In the final model, all the significant parenting variables were entered simultaneously to test the additive effects of different parenting practices.

Hypothesis Testing

Hypothesis 1: the nature of the change of CPS

The first hypothesis was that each component of CPS (i.e., competent response generation, evaluation, and efficacy) increases from kindergarten to third grade. To test this hypothesis, an unconditional growth model was fitted separately for each component of CPS (Model A, Tables 4, 5, 6). For competent response generation (Table 4), on average, the true initial status in generation was .33 ($p < .001$), and children's competent response generation increased by .07 points per grade over the first 3 years of elementary school. The variance components ($\sigma^2_\varepsilon = .02$, $\sigma^2_0 = .05$; $p < .001$), indicated that average competent response generation both varies over time and that children differ from each other. The intraclass correlation = between-individual variance (σ^2_0) / between-individual variance (σ^2_0) + within-individual variance (σ^2_ε). The intraclass correlation coefficient (ρ) of .50 indicated that half of the variation in children's competent response generation is attributable to between-individual differences. The Pseudo-R^2 is .30. It can be concluded that 30% of the variation in competent response generation is systematically associated with linear time.

On average, the true initial status in evaluation was 2.91 ($p < .001$), and children's competent response evaluation increased by .11 points per grade over the first 3 years of elementary school (Model1, Table 5). The variance component ($\sigma^2_\varepsilon = .20$, $\sigma^2_0 = .24$; $p < .001$), indicated that average competent response evaluation varies over time and that children differ from each other. The intraclass correlation coefficient (ρ) of .56 indicated that 56% of the variation in children's competent response evaluation is attributable to between-individual

50

differences. The Pseudo-R^2 is .29. It can be concluded that 29% of the variation in competent response evaluation is systematically associated with linear time.

Similarly, the true initial status in efficacy was 2.83 ($p < .001$), and children's competent response efficacy increased by .08 points per grade (Model A, Table 6). The variance component ($\sigma^2_\varepsilon = .48$, $\sigma^2_0 = .12$; $p < .001$) indicated that average competent response evaluation varies over time and that children differ from each other. The intraclass correlation coefficient (ρ) of .20 indicated that 20% of the variation in children's competent response efficacy is attributable to between-individual differences. The Pseudo-R^2 is .06. It can be concluded that 6% of the variation in competent response efficacy is systematically associated with linear time.

Hypothesis 1 was that CPS would change—increase—from kindergarten to 3rd grade. As expected, consistent results were found for each domain of CPS, and supported the hypothesis that children show significant increases in their competent response generation, evaluation, and efficacy from kindergarten to 3rd grade. In addition, the intraclass correlations indicated that it will be profitable to add between-individual predictors (i.e., positive parenting, and peer variables) to the model.

Hypothesis 2: the impact of positive parenting on CPS

The second hypothesis in this study was that positive parenting in kindergarten would predict initial level and growth of children's CPS. The results were tested separately for the three CPS outcomes, namely, competent response generation, evaluation, and efficacy.

Competent response generation as outcome. Before testing the main effects of positive parenting variables, demographic controls were fitted in a model (Table 4). Gender had a significant impact on the initial level and the slope (trend level) of generation, in that girls had a .03 higher generation than boys at the initial level (Model B). Thus, the average girl's generation

51

scores at kindergarten was .27, whereas the average boy's generation score at kindergarten was .24; moreover, the average girl's generation score increased by .01 points more per grade than did the average boy's. Ethnicity only had a marginally significant impact on the slope of generation, in that an average EA child increased by .02 points more per grade than an average AA child. An average EA child's generation score increased by .08 per grade, whereas an average AA child's generation score increased by .06 per grade. In contrast, SES only had a significant impact on the initial level of growth. The fixed effects indicated that the estimated initial level of generation for an average child who comes from a higher income household is .26 at kindergarten, whereas the score of an average child from a lower income household is .22 at kindergarten.

To test the main effects of the parenting predictors, each predictor was added separately into Model A on both initial and time parameters. The maternal warmth variable was added into the unconditional growth model in Model C. The fixed effects indicated that the estimated true initial level of generation for an average child is .30, controlling for maternal warmth at kindergarten. Children differed significantly in their estimated initial level of generation based on their maternal warmth such that children's initial level was .01 points higher for each 1-point increase in maternal warmth. On average, a child with higher maternal warmth had a higher generation score than did a child with lower maternal warmth at kindergarten, but that difference does not become magnified or attenuated over time.

A similar pattern was observed when the parental involvement variable was added into the unconditional growth model (Model D). The fixed effects indicated that the estimated initial level of generation for an average child is .28 controlling for parental involvement on initial level. Children do differ significantly in their estimated initial level of generation based on their

parental involvement such that children's initial level increases by .01 points for each 1 point increase in parental involvement. Thus, an average child with higher parental involvement had a higher generation score than did a child with lower parental involvement at kindergarten, but that difference did not change over time.

Next, the proactive guidance variable was added into the unconditional growth model (Model E). Proactive guidance was not a significant predictor of either the initial level or slope of generation.

In conclusion, maternal warmth and parental involvement had a significant impact on the initial level of competent response generation, but none of the positive parenting predictors predicted the rate of change of competent response generation.

Competent response evaluation as outcome. Before testing the main effects of the positive parenting variables, demographic controls were fitted in a model (Table 5). Ethnicity had a significant impact on the initial level and a marginally significant effect on the slope of evaluation, in that an EA child was .21 points higher at the initial level, but had a .06 points slower growth rate per grade than an AA child (Model B). The implication of this finding will be discussed in the discussion section. An average EA child's evaluation scores was 2.67 at kindergarten with a growth rate of .17 points per grade, whereas an average AA child's evaluation score was 2.46 at kindergarten with a growth rate of .23 points per grade. Similarly, SES had a significant impact on the initial level and the slope of evaluation, such that a child from a higher income household had a .01 point higher evaluation score at kindergarten than did a low-income child, but the low-income child increased by .002 faster rate per grade than did a child from a higher income household.

To test the main effects of the parenting predictors, each was added separately into Model A for both initial status and time parameters. When maternal warmth was added into the unconditional growth model (Model C), the fixed effects indicated that the estimated initial level of evaluation for an average child was 2.96, controlling for the effect of maternal warmth on initial level. Maternal warmth only had a significant impact on the rate of change, not the initial level of evaluation. Thus, children did differ significantly in their estimated rate of change in evaluation, such that a child with higher maternal warmth had a faster growth rate (.03 point increase in evaluation per 1 unit increase of maternal warmth) per grade than did a child with lower maternal warmth.

Next, parental involvement was added into the unconditional growth model (Model D). The fixed effects indicated that the estimated initial level of evaluation for an average child is 2.68 controlling for parental involvement. Children do differ significantly in their estimated initial level of evaluation based on the level of parental involvement such that, for each additional point in parental involvement, children's evaluation score at kindergarten is .07 points higher. There was no effect of parental involvement on rate of change in evaluation, however. Thus, on average, a child with higher parental involvement had a higher evaluation score than did a child with lower parental involvement at kindergarten, but that difference does not change over time.

Finally, proactive guidance was added into the unconditional growth model (Model E). Proactive guidance had a significant impact on both the initial level and the rate of change of evaluation. Children differed significantly in their estimated initial level of evaluation based on the level of proactive guidance such that for each 1-point increase in proactive guidance, children's initial level of evaluation is .04 points higher. On the other hand, greater proactive

guidance was related to slower growth rate in children's evaluation skills. To be specific, for each 1-point increase in proactive guidance, children had a .02 slower rate of growth of evaluation. On average, child with higher proactive guidance parents had an evaluation score of 2.85 at kindergarten with a growth rate of .13 per grade, whereas an average child with lower proactive guidance parents had an evaluation score of 2.68 at kindergarten with a growth rate of .15 per grade. The meaning and interpretation of this finding will be further explored in the discussion section. Thus, it can be concluded that there are differences in both the initial level and rate of change in competent response evaluation explained by proactive guidance.

In conclusion, parental involvement and proactive guidance had a significant impact on the initial level of competent response evaluation, and maternal warmth and proactive guidance predicted the rate of change in competent response evaluation. However, it should be noted that whereas warmth predicted higher (faster) growth in competent response evaluation, proactive guidance predicted lower (slower) growth in competent response evaluation, as will be discussed in the discussion section.

Competent response efficacy as outcome. Before testing the main effects of the positive parenting variable, demographic controls were fitted in a model predicting efficacy (Table 6). Ethnicity had a significant impact only on the slope of efficacy, such that an EA child's efficacy level did not differ from a AA child at kindergarten, but an EA child had a somewhat faster growth rate (.12 points) than an AA child (.05 points) per grade. Neither gender nor SES had an impact on either the initial level or slope of efficacy.

To test the main effects of the parenting predictors on child efficacy, each predictor was added separately into Model A on both initial and time parameters. Maternal warmth was added into the unconditional growth model (Model C). The fixed effects indicated that the estimated

initial level of evaluation for an average child was 2.91 controlling for maternal warmth on initial

level. Children do differ significantly (trend level) in their estimated rate of change in efficacy

from kindergarten to 3rd grade as a function of maternal warmth, in that a child with higher

maternal warmth had a faster growth rate (.03 per grade for each 1 unit increase in maternal

warmth) than did a child with lower maternal warmth.

Next, the parental involvement and proactive guidance variables were added separately

into the unconditional growth model (Models D and E). Neither parental involvement nor

proactive guidance significantly predicted the initial level or slope of efficacy. In conclusion, the

only significant predictor of child efficacy was maternal warmth, which had a marginally

significant impact on the rate of change in competent response efficacy.

In conclusion, several main effects of positive parenting on the initial level and rate of

change in CPS were significant. More specially, four out of nine possible associations between

positive parenting and the initial level of CPS emerged, and three out of nine possible

associations between positive parenting and the rate of change of CPS emerged. Results were

mostly consistent with hypotheses, but see discussion that follows.

Hypothesis 3: the impact of peer acceptance on CPS

The third hypothesis was that positive peer experiences in kindergarten would have

positive effects on the initial level and rate of change of children's CPS from kindergarten to 3rd

grade. It was anticipated that positive peer experiences would predict both the initial level and

greater rates of change in each component of CPS. The results are tested separately for the three

CPS outcomes, namely, competent response generation, evaluation, and efficacy.

Competent response generation as outcome. To test the main effects of the peer

predictors, sociometric and teacher-reported peer acceptance were added separately into Model

A on both initial and time parameters (Table 4). The rationale to enter them separately despite their empirical overlap was to determine whether replicated patterns would be seen across informants. Findings for each index separately yielded highly similar results. Sociometric peer acceptance was added into the unconditional growth model for generation (Model F). The fixed effects indicated that the estimated initial level of generation for an average child was .32 controlling for sociometric peer acceptance on initial level. Children do differ significantly in their estimated initial level of generation based on their sociometric score such that a child's generation score is .04 point higher at kindergarten for each 1-point increase in sociometric score. There was no effect of sociometric scores on over-time changes in children's generation of competent solutions.

A similar pattern emerged when teacher-reported peer acceptance was added into the unconditional growth model for generation (Model G). The fixed effects indicated that the estimated initial level of generation for an average child is .12 controlling for teacher-reported peer acceptance on initial level. Children do differ significantly in their estimated initial level of generation based on their teacher-reported peer acceptance score such that children's initial level is .05 points higher at kindergarten for each 1-point increase in teacher-reported peer acceptance However, there was no effect of teacher-rated peer acceptance on over-time changes in children's generation of competent solutions. Thus, both sociometric and teacher-reported peer acceptance significantly predicted the initial level, but not the slope, of competent response generation.

Competent response evaluation as outcome. To test the main effects of the peer predictors, sociometric and teacher-reported peer acceptance were added separately into Model A on both initial and time parameters (Table 5). Sociometric and teacher-reported peer

acceptance were not significant predictors of either the initial level or slope of evaluation (Model F, H). Thus, positive peer experience did not predict the growth of competent response evaluation.

Competent response efficacy as outcome. To test the main effects of the peer predictors, sociometric and teacher-reported peer acceptance were added separately into Model A for efficacy on both initial and time parameters (Table 6). Sociometric and teacher-reported peer acceptance were not significant predictors of either the initial level or the slope of efficacy. (Models F and H). Thus, positive peer experience did not predicted the growth of competent response efficacy.

Summary. The hypothesis was tested as to whether positive peer experiences predict the initial level and rate of change of CPS from kindergarten to 3rd grade. Two out of six possible associations between positive peer experience and the initial level of CPS emerged; specifically, sociometric and teacher-reported peer acceptance predicted initial level of competent response generation. However, no significant associations between positive peer experience and the slope of CPS were found. Therefore, peer acceptance is a less robust predictor of the rate of the change of CPS than are the positive parenting variables.

Hypothesis 4: the additive effects of positive parenting and peer on CPS

The fourth hypothesis in this study was that positive parenting and peer experience in kindergarten would have additive effects on initial level and growth of children's CPS. All of the previously significant positive parenting predictors, one of the significant peer variables (either sociometric-based or peer-reported), and significant demographic controls were added to the final model. The results were tested separately for the three CPS outcomes, namely, competent response generation, evaluation, and efficacy. To test this hypothesis, only variables that

significantly improved goodness-of-fit in previous models were included in final models to estimate their unique effect on the CPS growth trajectory (Model H, Table 4, 5, and 6), and plots of significant effects on rate of change are provided.

Competent response generation as outcome. Model H of Table 4 shows the final model of competent response generation. Since the previous models (Model A-G, Table 4) had better goodness-of-fit indices than did Model A, all the variables were added to the final model. However, based on the hypotheses and for parsimony, Model H is the final model. Comparing the full model with a model in which non-significant variance components for intercepts and slope were dropped, there is no significant reduction of goodness-of-fit. The indices of goodness-of-fit indicated Model H is a better fitted model by having the smallest of deviance statistics (i.e., -2LL, AIC, BIC).

The fixed effects indicated that the estimated initial level of competent response generation for an average child is .05 controlling for the effects of gender and SES, and including maternal warmth, parental involvement, and teacher-reported peer acceptance in the model. On average, children do differ significantly in their estimated initial level of generation as a function of the four predictors: girls had a higher generation score (.03) than boys' at kindergarten controlling for SES, maternal warmth, and peer acceptance; children who come from higher SES families had higher (.01) generation scores at kindergarten for each 1 point increase in SES than children from lower SES families controlling for gender, maternal warmth, and peer acceptance; children with higher maternal warmth (.01) showed higher generation scores for each 1 point increase in warmth controlling for peer acceptance, gender and SES; children with higher peer acceptance (.04) showed higher generation scores for each 1 point increase in peer acceptance controlling for maternal warmth, gender and SES. Parental involvement was not a significant

59

predictor at the initial level of competent response generation after controlling for demographic maternal warmth, and peer acceptance.

On average, children's competent response generation increased by approximately .06 points per grade when controlling for the effects of gender on rate of change. Children differed in their estimated rate of change in generation, with girls increasing at a somewhat faster rate (.01 points) than boys across grades (Figure 1). An average girl had a growth rate of .08 per grade, whereas an average boy had a growth rate of .06 per grade in competent response generation from kindergarten to 3rd grade. Therefore, it could be concluded that gender, SES, maternal warmth, and teacher-reported peer acceptance explained some variance in the initial level of generation simultaneously, and gender explained some variance in the rate of change in generation.

Competent response evaluation as outcome. Model H of Table 5 shows the final model for competent response evaluation. Based on the tested hypothesis and for parsimony, Model H is the final model by having the best goodness-of-fit (i.e., lowest -2LL, AIC and BIC). Figure 2-4 presents competent response evaluation growth trajectories based on Model H to demonstrate these findings. The values chosen for the plots of children were 1 *SD* above and below the mean for maternal warmth, proactive guidance, and peer acceptance. We held controlled variables at their means.

The fixed effects indicated that the estimated initial level of competent response evaluation for an average child is 2.85 controlling for the impact of ethnicity, maternal warmth, proactive guidance, and teacher-reported peer acceptance on initial level. On average, children differed significantly in their estimated initial level of evaluation based on the two predictors: children whose parents used more proactive guidance had higher evaluation scores (.04) at

60

kindergarten controlling for everything else; EA's initial level is higher (.31) than AA controlling for all other variables.

On average, children's evaluation increased by .05 points per grade when controlling the impact of ethnicity, maternal warmth, and proactive guidance on rate of change. Children differed significantly in their estimated rate of change in evaluation as function of ethnicity, maternal warmth, and proactive guidance, where EA children increased at a somewhat slower rate (.09 points) across grades than AA controlling for maternal warmth and proactive guidance (Figure 2). Thus, an average EA child's evaluation scores was 2.85 at kindergarten with a growth rate of .05 points per grade, whereas an average AA child's evaluation score was 2.54 at kindergarten but with a growth rate of .14 points per grade controlling for all else. Similarly, children increase at a somewhat faster rate (.03) per 1 unit increase of maternal warmth controlling for ethnicity and proactive guidance (Figure 3). In contrast, children increase at a somewhat slower rate (-.02 points) per 1 unit increase of proactive guidance controlling for maternal warmth and ethnicity (Figure 4). The tendency for children from high proactive guidance families to show a somewhat slower rate of increase in competent response evaluation was noted earlier. Therefore, it could be concluded that ethnicity and proactive guidance explained some variability in the initial level of evaluation, and ethnicity, maternal warmth, and proactive guidance explained some variance in the rate of change of competent response evaluation simultaneously.

Competent response efficacy as outcome. Model H of Table 6 shows the final model of competent response efficacy. Similarly, based on the research questions and for parsimony, Model H is the final model by having the smallest deviance statistic (i.e., -2LL, AIC and BIC). The fixed effects indicated that the estimated initial level of competent response efficacy for an

average child is 2.82 controlling for sociometric peer acceptance's impact on initial level. On average, a child's competent response efficacy increases by approximately .08 points per grade by controlling ethnicity and maternal warmth. Children do not differ significantly in their estimated rate of change in efficacy after controlling for sociometric peer acceptance and maternal warmth.

Summary. Hypothesis 4 was tested to determine whether positive parenting and peer experiences had additive effects on the growth of CPS from kindergarten to 3rd grade. One out of three possible models showed additive effects of positive parenting and peer experiences on the initial level of CPS; specifically, maternal warmth and teacher-reported peer acceptance additively predicted initial status of competent response evaluation. There were no additive effects of parenting and peer experiences on rate of change for any CPS domain.

<center>**V. Discussion**</center>

The present study was guided by hypotheses regarding developmental change in children's competent problem solving (CPS) from kindergarten to 3rd grade, and whether positive parenting (i.e., maternal warmth, parental involvement, and proactive guidance) and positive peer experience (i.e., sociometric-based and teacher-reported peer acceptance) predicted the initial level and change of children's CPS from kindergarten to 3rd grade. Hypotheses were tested with a multi-method, multi-informant longitudinal study design that allowed for the examination of change in CPS across the early school years using a community sample of children. Overall, analyses showed that there is a significant increase in competent response generation, evaluation, and efficacy from kindergarten to 3rd grade. There was some evidence for predictive associations between positive parenting and peer acceptance and initial (kindergarten) levels of CPS, but little evidence of links between parenting and peer acceptance and growth in CPS. Below, the results of the present study are discussed in greater detail.

The Growth of CPS from Kindergarten to Third Grade

Although the ability to effectively, positively, and productively cope with social problems is considered one of the most important developmental tasks for children's emotional and psychosocial adjustment (Dodge et al., 2003; Rubin & Rose-Krasnor, 1992; Youngstrom et al., 2000), few studies have systematically examined the developmental trajectories of components of CPS. CPS, according to several models (Dodge, 1986, Dodge et al., 1986; Fontaine et al., 2010; Rubin & Krasnor, 1986), is a process of finding solutions to specific problems, which requires a set of skills, including the use of cognitive and emotional

<center>63</center>

competencies. In the current study, guided by Dodge's social information processing (SIP)

model (Crick & Dodge, 1994; Dodge et al., 1986), we examined three components of CPS:

competent response generation, response evaluation, and self-efficacy. These components are

subsumed in steps 3 and 4 of the original SIP formulation and are thought to be more "proximal"

to actual behavior than the earlier steps of encoding of cues (step 1) and interpretation

(attributions of intent) of those cues (step 2) and reflect "cold" cognition (conscious processing

of response alternatives, their likely consequences, and the ease of enacting them) as opposed to

the "hot" (emotionally driven) cognition of the earlier steps ((Dodge & Pettit, 2003; Fontaine,

2010). These later steps have received the most empirical support as predictors of good

adjustment outcomes (Mize & Pettit, 2008; Pettit & Mize, 2007).

In the present study, bivariate correlations revealed that these three components of CPS

were slightly positively correlated, consistent with a number of studies that supported the idea

that CPS is multidimensional and components of CPS are relatively independent (e.g., Dodge et

al., 2001, Fontaine et al., 2002; for a review see Pettit & Mize, 2007). For example, Ziv (2013)

found that positive response construction and positive response decision were moderately

correlated with each other ($r = .35$, $p < .001$) among young children (average age of 4.5) in a

large metropolitan area. Using data from the Fast Track project, Dodge and colleagues (2002)

built a structural model with four latent constructs consisting of intent attribution, goal

orientation, response generation, and response evaluation, and this model yielded a better model

than models with only one construct. One thing to notice is that Dodge et al. (2002)'s study

examined the aggressive pattern of SIP, but the current study is to our knowledge, the first to

focus on competent processing and whether the components of competent processing are

distinct. Our findings provided empirical evidence to support the distinctiveness of the processing components.

The bivariate correlations also revealed that components of CPS tended to be only modestly-to-moderately correlated across years, consistent with short-term longitudinal studies (e.g., Lansford et al., 2006). For example, study 1 of Dodge et al. (2003) examined a subsample of 259 children from the Social Development Project (SDP) and found significant modest-to-moderate stability correlation (rs ranged from .18 to .37, ps < .05) for each component of SIP at two time points (kindergarten and 3rd grade). Similarly, using the same sample of the current study, an initial analysis reported by Dodge, Pettit, Bates, and Valente (1995) that focused on the *aggressive* pattern of SIP, showed generally modest to moderate and significant adjacent-year correlations among SIP measures of encoding deficits, hostile attributions, accessing aggressive responses, and positive evaluation of aggressive responses (rs ranged from .12 to .45, ps < .05).

Although in the past decade a few cross-sectional and short-term longitudinal studies were used to address the developmental change of CPS, as Pettit and Mize (2007) pointed out, data on stability and change in CPS patterns are sparse. Only one longitudinal study has published data with an assessment of competent information processing stability over more than two continuous time points. Walker and colleagues (2013) used a longitudinal design study to examine the developmental changes of social problem solving (SPS) from age 2 to 4 by observing children interacting in a free play session designed to assess sharing and turn-taking. Walker et al. coded and categorized children's SPS into two groups: withdrawn and competent. Results showed that withdrawn and competent social problem solving were moderately negatively correlated (rs ranged from .11 to .21, ps < .01) across three-time points, It therefore

would appear that CPS is multidimensional and components of it are relatively independent and stable across years.

Developmental change of CPS

Consistent with the hypotheses, children, on average, displayed increased levels of each component of CPS (i.e., competent response generation, evaluation, and efficacy) over time, showing that children were increasingly likely to generate more competent responses, more likely to evaluate a competent response as positive, and feel more self-efficacious to enact a competent response when facing challenging peer situations from kindergarten to 3rd grade. The increase in competent problem solving may reflect increasing working memory capacity and knowledge bases. Previous research has suggested that children's basic information processing (i.e., involving non-social problems) dramatically changes during early childhood (Flavell, 1999; Piaget, 1952; Rittle-Johnson et al., 2001), and children's working memory capacity increases linearly from early to middle childhood (Case et al., 1982; Kail, 2007), while their knowledge base grows (Chi et al., 1988). As children move from kindergarten to 3rd grade, they store a broader repertoire of possible strategies and retain more knowledge about prosocial strategies and have easier access to that stored knowledge; such changes may account, in part, for the observed increases in CPS across time in the present study.

CPS generation. It is worth noting that competent response generation in the current study is the proportion of competent responses, which taps both the quantity and quality of generated responses (Dodge et al., 2003; Goraya & Shamama-tus-Sabah, 2013; Mize & Cox, 1990). Youngstrom and colleagues (2000) found that quality of response (i.e., competent, aggressive, withdrawn) appeared more important than quantity of response in predicting ecologically valid behavior (i.e., teacher- and parent-reported externalizing problems); quantity

66

was indexed using a ratio score (i.e., the "prosocial ratio" was calculated by dividing the number of prosocial solutions by the total number of solutions). Aggressive children may lack the capacity to generate multiple competent responses; instead, after producing a single competent response, they may draw from their repertoire of less competent and more agonistic and ineffective responses. Popular children, on the other hand, may continue to generate competent responses (Richard & Dodge, 1982). Similarly, popular children have been found to generate a greater proportion of competent response to challenging social situations than their less popular peers (Attili et al., 2010). Meanwhile, the more competent solutions a child generates to social problems, the more likely that child would be to select and enact a competent solution and be successful in social interactions (Blandon et al., 2010). Thus, one can conclude that competent response generation is a marker of competence and the ideal way to assess it is in terms of the proportion of total generated responses, as such have taken into account verbal fluency (Mize & Petti, 2008).

Although the current study is the first known study to document significant growth of competent response generation across the early school years, previous work by Dodge and colleagues (e.g., Crick & Dodge, 1994; Dodge & Price, 1994; Dodge et al., 2002), using cross-sectional and short-term longitudinal designs, has yielded a picture consistent with this development trend. In a study of first, second, and third graders, Dodge and Price (1994) found that older children generated a higher quantity of behavioral responses to group entry, provocation, and authority-demand situations than did their younger peers. As already mentioned, children's memory space increases across development, and an essential resource for competent response generation is information drawn from prior experiences stored in long-term memory. When children first enter the school environment, their repertoire of social strategies is

limited because they have not had exposure to such challenging peer situations. When children

grow older, and their experience with the peer group becomes both more frequent and more

complicated, and their knowledge base broadens, providing them with a greater array of possible

responses from which to choose. Another way to generate a competent response is constructed

by the individual through the cognitive transformation of available strategies (Mize & Pettit,

2008). That is, children may adjust a previously successful response to fit a new situation, which

also reflects the increasing cognitive flexibility shown children get older (Flavell, 1999; Kail,

2007).

   CPS evaluation. The growth analyses revealed similar patterns in the trajectory of

competent response evaluation. Children's competent response evaluation increased over early

school years; that is, children were more likely to evaluate a competent response as positive as

they grew older. When a child evaluates a possible response aimed at solving a social problem,

several dimensions should be considered: the likely consequences of the response, the

friendliness or socio-moral acceptability, and the suitability and fitness of the response. In

contrast to a growing number of empirical investigations which focused on aggressive response

evaluation (Dodge et al., 2003; Lansford et al., 2006; Lochman et al., 2012; Rubin & Pepler,

2013), the current study examined competent response evaluation. As Meece and Mize (2010)

pointed out, the ability to evaluate the likely consequences of a selected competent response is an

important component of social competence. Though less frequently studied, socially competent

children would be expected to more positively endorse competent responses (Dodge et al., 1986).

   Given that children have a growth of basic information processing ability, such as

increase in processing speed and memory capacity (Kail, 2007; Kail & Ferrer, 2007), as noted

earlier, as children become older, they are able to hold in memory and perform operations with

more information at once, which has implications for the evaluation processes. For example, when a child is rejected from playing with toys, one competent response could be, "I'll let you play with my toy tomorrow if you let me play now." A younger child may evaluate that competent response as incompetent because young thinkers may not be capable of weighing simultaneously the short-term and long-term effects of an act. Additionally, having increased memory capacity means the storing of more generalized and specific event representations, which provide a base for evaluating the response's outcome and acceptability (Kail, 2007). This is also consistent with social learning theory, which suggests that the more experiences a child has, the bigger his or her knowledge base becomes through observation and direct teaching by peers or adults, the more accurate he or she becomes at anticipating an outcome associated with a behavior, and the better he or she becomes at estimating his or her ability to enact behaviors (Bandura, 1993; Mize & Ladd, 1990). From cognitive-developmental theory, as children grow older, their capability to think abstractly and to engage in perspective-taking, increase over time (Piaget, 1965). Thus, with increasing ability to perceive others and understand social situations in a cognitively complex way and take the perspective of others, children can make more accurate inferences about likely consequences. To summarize, our findings indicated that children become better able to evaluate competent responses as they get older.

CPS efficacy. Results concerned with competent response efficacy showed a consistent developmental pattern of growth, that is, children reported feeling more self-efficacy to enact a competent response when facing a challenging peer situation as they grew older. Although the literature documents widely the pervasive influence of self-efficacy on performance across various domains of functioning, such as academic and athletic (Bandura, 1993), children's perceived efficacy in enacting competent responses, an important aspect of social cognition in

69

the development of competent problem solving, is understudied. Our findings showed that children demonstrate increasing levels of competent response efficacy over the early school years, in that report they feeling that it is easier to initiate a prosocial behavior as they grow older. These findings lend support to the possibility that as children dramatically experience improvement of verbal, physical, and cognitive skills due to the "5- to -7 year shift" (Sameroff & Haith, 1996), they have been powered up and feel confident when dealing with social challenges. A contrasting view was put forth by Harter (2006), who pointed out that whereas children's self-representations during early and middle childhood are very positive, they likely are unrealistic because they overestimate their capability in social skills, cognitive abilities, and athletic talents. Harter suggested the possibility that efficacy beliefs decrease as children realize the complex and challenging nature of social interactions and experiences.

In the current study, results from the unconditional growth model indicated that children's competent response efficacy does, in fact, increase as they grow older. Bandura (1993) pointed out that one major source of perceived self-efficacy is performance accomplishment or the experience of success. In other words, self-efficacy is tied to the one's successful experiences. Children who have positive experiences in their peer relationships may come to view themselves as capable and competent in their interactions with peers. Consistent with the premise, Attili and colleagues (2010) found that popular children had higher social self-efficacy than their non-popular peers. Comparatively, Singh and Bussey (2011) found that among teenagers, more victimization was associated with decreased beliefs in one's ability to cope and diminished social coping self-efficacy. Further, using two independent data sets, Davis-Kean and colleagues (2008), examining the relationship between self-beliefs and behavior from age 6 to 18, found that children's self-efficacy for aggressive behavior become more strongly related to

their actual aggression level as the children grew older. Collectively, these studies suggest the increasing level of children's competent response efficacy may largely depend on children's actual experiences interacting with peers.

Early Positive Parenting: Links across Dimensions and with CPS

Children's social information processing styles do not develop in a vacuum. Family and peer experiences provide meaningful contexts within which children may acquire, practice, and employ problem-solving approaches. As such, it should not be surprising that the link between parent-child relationships, parenting behaviors, and children's social cognition and behavior has been studied widely over the years. However, although abundant evidence has documented relations between parenting, social information processing, and children's adjustment, the vast majority of this work has focused on negative parenting (e.g., harsh discipline), negative SIP (e.g., aggressive response evaluation) and aggression and related externalizing problems (e.g., Mize & Pettit, 1997; Pettit & Mize, 2000; Dodge et al., 2013); few studies have considered how positive parenting shapes children's CPS across early and middle childhood. In the current study, positive parenting was assessed in terms of maternal warmth, involvement, and proactive guidance. These three measures were adapted from a prior study that used them as indexes of supportive parenting (Pettit et al., 1997), and were selected because they appear to capture multiple dimensions of positive parenting, are methodologically distinct, and conceptually might be expected to be formative in the development of CPS. As reported by Pettit et al. (1997), the positive parenting measures were only modestly correlated with one another. Drawing from speculations by Parke (2006), Pettit et al. (1997) suggest that parents may select from "a smorgasbord" of possible positive parenting behaviors, with some preferring some practices, such as ensuring a high degree of involvement in the child's peer activities, over other practices,

71

such as providing timely suggestions to prevent negative peer experiences. Thus, a conclusion that seems warranted is that positive parenting is multifaceted and that different facets of it are only very loosely related (Pettit et al., 1997). Although the current study used the same three measures as Pettit et al. (1997), the goals of the present study and that of Pettit et al. (1997) are distinct. Pettit et al. mainly examined whether positive parenting would predict adjustment (behavior problems, social skills, and academic performance) above and beyond harsh parenting and family adversity. Moreover in Pettit et al., the individual indexes of supportive parenting were combined into a single construct. The current study, in contrast, examined each positive parenting measure as an individual predictor and tested whether the three positive parenting domains accounted for significant variance in each of the CPS measures across kindergarten to third grade.

Associations between positive parenting and CPS

In this section, the bivariate correlations between positive parenting and CPS are briefly discussed. Additional discussion of links between parenting and CPS follows in the sections devoted to predictions of growth in CPS from kindergarten through 3rd grade.

With respect to associations between the parenting measures and each component of CPS, correlations show that 7 out of 12 (including one marginally) were statistically significant for competent response generation, 5 out of 12 (including two marginally) were statistically significant for competent response evaluation, and none for competent response efficacy. Specifically, maternal warmth was positively correlated with competent response generation at kindergarten, 2nd, and 3rd grade, as well as competent response evaluation at 3rd grade; involvement was positively correlated with competent response generation at all four time points (marginally significant at 1st grade), as well as competent response evaluation at kindergarten

72

and 1st grade; and proactive guidance was (marginally significant) positively correlated with competent response evaluation at kindergarten and 1st grade. None of the parenting measures was significantly (or marginally) correlated with competent response efficacy. Thus, it can be concluded that, overall, multiple aspects of positive parenting are predictive of some but not all aspects of CPS. In addition, in general, the associations were stronger for more temporally proximal measures of CPS (kindergarten) than for more temporally distal measures (later grades). Although competent response generation, evaluation, and efficacy were all conceptualized as representing components of CPS, there are subtle differences in their links with parenting. Competent response generation is probably the CPS measure that most closely approximates actual behavior (because children are asked to describe "what they would do" in particular problematic peer situations) and as such might be expected to be more strongly associated with developmental antecedents and outcomes that have been linked with competent behavior, including positive parenting (Pettit et al. 2003; Pettit & Mize, 2000).

As noted earlier, parenting antecedents of competent processing have not received much research attention in the literature. The findings from the current study are consistent with that small body of research. For example, Haskett and Willoughby (2007) reported that parental responsiveness, sensitivity, and positive regard were associated with adaptive patterns of social cognitive processing. Specific aspects of positive parenting and individual components of CPS have also been studied. Using a sample of older children (average age 10), Domitrovich and Bierman (2001) found that both parent and child reports of warm support predicted competent response generation. The findings of the current study are consistent with prior research which suggests that children who grow up in a supportive and warm family environment, with parents who care and are involved in their social development and provide guidance when needed, are

73

more likely to form a generalized positive representational structure when facing challenging social situations, which in turn guides prosocial behaviors (Parke & Buriel, 2006). In contrast, as is well-documented, children who grow up in a destructive and antagonistic family atmosphere may acquire a set of beliefs that social interaction with peers is upsetting, that peers are mean, and that children need to be defensive (and aggressive) for self-protection (Dodge et al., 2002).

Associations between positive parenting and competent response generation. As noted, several significant bivariate associations between positive parenting and competent response generation emerged. Specifically, maternal warmth was modestly correlated with higher competent response generation at kindergarten, 2nd, and 3rd grade; involvement was associated with higher competent response generation at all four-time points (1st grade is marginally significant). It is well established that parental warmth is a fundamental element of parent-child relationship quality, which in turn is related to children's social competence (Eisenberg et al., 2015; Raya et al., 2013). The concurrent and longitudinal correlation among maternal warmth and competent response generation are consistent with prior research. For example, using a longitudinal research design, Zhou et al. (2002) examined the concurrent and longitudinal relations of parental warmth and social competence among 180 children. They found that observed parental warmth in 2nd grade was associated with the social competence of children in 5th grade. Along these lines, using a longitudinal design among a large national sample, Knafo and Plomin (2006) found that parental positivity, defined as positive feelings and positive discipline toward a child at age 3, predicted prosocial behaviors at ages 3 and 4, and parental positivity at age 4 predicted prosocial behavior at age 7. Other studies have shown that maternal warmth is not only associated with the prosocial behavior; it also is related to children's peer status. In a sample of 8-year-old children, Attili and colleagues (2010) found popular children

74

had relationships with their mothers characterized as higher in positive affect (e.g., more.

positive conversations) than the relationship of mothers of rejected and average children.

Consistent with prior studies, parental involvement of children's social life plays an

essential role in a child's development of social-cognitive and behavioral repertoire (Mize &

Pettit, 1997; Moran et al., 2013). Parental involvement has been found to be associated with

higher levels of social competence among children (McDowell & Parke, 2009; Updegraff et al.,

2001), and lower levels of behavior problems (e.g., Laird et al., 2010; Mounts, 2002; Pettit &

Laird, 2001). Parental involvement, a developmentally appropriate index of positive

socialization, especially at early stages of children's social life, provides children with needed

guidance and supervision (Brown et al., 1993; Steinberg, 1990), and is a key component of

effective behavior regulation (Barber, 1996; Crouter & Head, 2002). For example, using a

longitudinal sample, Pettit et al. (1997) found that parental involvement and interest in children's

peer experiences at kindergarten were associated with lower levels of externalizing problems and

higher levels of academic performance at grade 6.

Further, the present study tentatively suggests that involvement or knowledge of

children's activities enables parents to certify that their children are not exposed to influences that

would have a detrimental effect on their socialization (Bugental & Grusec, 1998). Through their

involvement, parents express interest and solicitude to their children's needs (Dishion &

McMahon, 1998; Pastotrlli et al., 2015), and provide immediate guidance and feedback to

children's social interaction. Therefore, through the direct involvement, children were educated

toward the normative goals of conformity and were more likely to generate more competent

responses.

Associations between positive parenting and competent response evaluation. Numerous, albeit modest, associations between positive parenting and competent response evaluation emerged in the current study. Specifically, maternal warmth was modestly correlated with higher competent response evaluation at 3rd grade; parent involvement was modestly correlated with higher competent response evaluation at kindergarten and 1st grade; proactive guidance was slightly correlated with higher competent response evaluation at kindergarten and 1st grade.

Parental warmth may be related to the development of children's competent response evaluation in multiple ways. Based on attachment literature, warm parents foster children's feelings of security, trust, and protection and promote children's sense of connectedness and belongingness to others (Bowlby, 1988; Dykas & Cassidy, 2011; Ziv et al., 2004). Moreover, parent warmth as a promoter of children's competent response evaluation might confer its effects on children's perspective taking, empathy, and moral reasoning (Eisenberg et al., 2015). When parents display warm and supportive behaviors and communication to the children, parents set a good model of fine and sensitive behavior and benign interpretations, which elicit similar prosocial behavior from the children, and facilitate the development of competent processing and prosocial behaviors (Cummings et al., 2002). These patterns are also consistent with Rohner's acceptance-rejection conceptual framework, which supports the idea that a child who feels accepted by parents will more likely be confident about their social competence, and develop a positive view of the "generalized other," and build healthy, warm relationships with peers at school (Rohner, 2005).

The association between parental involvement and competent evaluation might be due to the parent's effect on children's emotional regulation. One of the primary goals of socialization is for children to take regulation of their behavior and to act without explicit directives or

demands, and to engage in socially prescribed behaviors in the absence of adult supervision (Grolnick & Farkas, 2002). When parents are present to help and assist their children when distress becomes uncontrollable and to keep affect within the tolerable limits, the parent directs children's attention to the understanding of their own and peers' emotions and needs (Haskett & Willoughby, 2007; Malti et al., 2013). With a sense of security and dependability, children are more likely to practice their regulatory strategies, control their emotions, and calmly come up with competent responses and evaluate the possible competent responses as positive.

The association between proactive guidance and competent response evaluation is consistent with the idea that parents who paid careful attention to the child's needs and engaged in active management of their activities had children with less social maladjustment (Leidy et al., 2012). For instance, in an observational study of preschool children and their parents, researchers coded spontaneous joint play and other mother-child activities as proactive parenting, and found that the amount of time spent in joint play at age 3 predicted individual improvement in conduct problems at age 4, even after controlling the initial level and the effects of negative parenting (Gardner, Shaw, Dishion, Burton, & Supplee, 2007). Similarly, using a person-centered approach in children age 18 months to 5 years, a recent study found that proactive parenting, defined as parents' active engagement in emotional socialization, was indirectly associated with children's positive social adjustment through change in children's effortful control (Miller et al., 2015). Similar results were found in Korea, in a sample of 116 mothers, where Park and Cheah (2005) found that proactive beliefs were associated with higher social skills for preschoolers. Therefore, when parents proactively guide their children's behavior, and actively engage in emotion socialization practices, children may practice more of their regulatory capacities and engage in more competent information processing, including competent response evaluation

Moreover, proactive parenting may also play a role in eliciting adaptive cognitive functioning through the direct and indirect teaching of adaptive problem solving (Criss et al., 2002; Haskett & Willoughby, 2007). For instance, Pettit et al. (1988) defined proactive parenting as the use of preventive teaching and found evidence of a link between proactive parenting and children's social-cue encoding skill; that is, parents who utilize more preventive teaching strategies as part of their parenting repertoire have children who encode the most relevant social cues when solving social problems. Another explanation for the positive correlation between proactive guidance and competent response evaluation might be due to the effects of anticipatory parental guidance. For example, in a home observation, 52 mothers were observed regarding preventing conflict with a 3-year-old child. Mothers who were less likely to use proactive guidance, and more liable to use reactive strategies, had children with lower skills to solve conflicts at age 5, even controlling for behavior problems at age 3 (Gardner et al., 1999). Pettit and Bates (1989), in a sample of preschoolers, defined proactive parenting in terms of effectively positive, educative exchanges between mother and child, and found that more proactive parenting was strongly related to the relative absence of problem behavior. These findings are consistent with the idea that "good behavior" is best learned in a painless, self-directed fashion and that children might think poorly of "good behavior" (i.e., competent response) if they were educated in a harsh, stressful situation (Rubin & Mills, 1992). In conclusion, the bivariate correlations between positive parenting and CPS highlight the benefits of maternal warmth, parental involvement, and proactive guidance on children's competent response evaluation.

Associations between positive parenting and competent response efficacy. No significant bivariate associations between positive parenting and competent response efficacy

emerged. The possible explanation will be discussed in the section below and in the limitations section.

Positive parenting measures as predictors of growth in CPS

It will be recalled that a principal aim of the current study (Hypothesis 2) was to test whether the positive parenting measures, individually and collectively, predict growth in of each component of CPS. This was done by conducting a multilevel growth analysis in which (1) control variables were entered first, (2) each individual parenting measure (and peer acceptance) was tested, (3) all the demographic controls and parenting variables that significantly improved goodness-of-fit were included in the final model to test the additive effects on CPS. Additional, the unconditional growth analyses showed that there was variance in both initial level and rate of change that was unexplained and thus might be accounted for by parenting (and peer acceptance, as discussed in a subsequent section). Table 4 to 6 summarized the multilevel models for competent response generation, evaluation, and efficacy, respectively. For each table, Model A shows the unconditional growth model; Model B indicates the impact of demographic control on both the initial level and slope of CPS; Models C, D, and E show the impact of maternal warmth, involvement, and proactive guidance (respectively) on both the initial level and slope of CPS; Model F and G show the result of sociometric-based and teacher-reported peer acceptance (respectively) on both the initial level and slope of CPS; Model H is the final model, which included all variables that significantly improved goodness-of-fit in previous models to estimate their unique effect on the initial level and growth of CPS.

Positive parenting measures as predictors of growth in competent response generation. As mentioned previously, of interest in the current study was the prediction of the initial level of CPS, as well as the rate of change of CPS over the early school years. Before turning to the

79

growth analysis, predictive links between positive parenting and the initial level of competent response generation are considered. These associations are largely consistent with the bivariate correlations; that is, both maternal warmth and parental involvement predicted higher levels of competent response generation at kindergarten. However, in the final model of growth analysis (Model H, Table 4), in which the demographic controls, and alternative significant parenting variables were added, only maternal warmth significantly predicted higher levels of competent response generation at kindergarten. Therefore, maternal warmth may have some specific socialization significance, above and beyond other parenting variables, for the initial level of competent response generation.

It is plausible that maternal warmth indicated a general positive emotional climate of parent-child relationships (Gregson et al., 2015; McLeod, Wood, & Weisz, 2007; Mize & Pettit, 1997), and reflects parents' tendencies to be supportive, affectionate, accepting, and nurturing (Rohner, Khaleque, & Cournoyer, 2005). When the positive emotional climate forms a sense of security and caring, the child is most likely to take on values and behaviors that are modeled and valued by the parents. As Grolnick and Farkas (2002) point out, internalization of suggestions and guidance are most likely when the environment provides a backdrop of warmth, caring, and involvement. Thus, maternal warmth remained as a significant predictor of higher level competent response generation after controlling for demographic and parental involvement.

No predictive link of positive parenting to the rate of change of competent response generation emerged. The bivariate correlation indicated that positive parenting is associated with competent response generation at different grades, but not across grades. It therefore would appear that positive parenting may set the stage for competent response generation, but it does not forecast continuing growth in competent response generation. It may be that parenting at

later ages is more important, in the sense of being associated concurrently or longitudinally with competent responding. This possibility will be discussed in the future directions section. It also is possible that peer acceptance plays a more important role in "downstream" (later grades) competent responding. This possibility will be discussed below.

Positive parenting measures as predictors of growth in competent response evaluation. Predictive links between positive parenting and the initial level of competent response evaluation are consistent with the bivariate correlations; that is, both parental involvement and proactive guidance predicted competent response evaluation at kindergarten. However, in the final model of growth analysis (Model H, Table 5), in which the demographic control, and alternative significant parenting variables were added, only proactive guidance significantly predicted higher levels of competent response evaluation at kindergarten. Therefore, proactive guidance may have some specific socialization significance for the initial level of competent response evaluation. Proactive guidance, referring to a mixture of positive parenting behaviors, such as intervening in a timely manner to avoid social conflict, participating in child's social activity, or providing timely guidance about appropriate social behaviors (Pettit et al. 1997; Ladd & Pettit, 2002), may equip children with a systematic set of ideas for prosocial behavior. Children learned those competent responses even without awareness by accumulated proactive guidance and established their standard to judge or choose a right or wrong behavior (Rubin & Mills, 1992).

Interestingly, the predictive link of positive parenting to the rate of change of competent response evaluation shows that children with higher maternal warmth had a faster growth rate, but, simultaneously, children with higher proactive guidance reported a slower grow rate of competent response evaluation from kindergarten to 3rd grade simultaneously.

As shown in Figure 3, children with higher maternal warmth reported a faster growth rate of competent response evaluation over the early school years above, beyond the effects of demographic controls and proactive guidance. Competent response evaluation, as mentioned earlier, is a reflection of children's ability to infer the consequence of a prosocial behavior, to use perspective-taking and abstract thinking skill, and to consider the friendliness and acceptability of the behavior. During warm parent-child interaction, parents may initiate supportive, caring, and accepting behavior, and children form a knowledge base about the norm and standard of interactions, and thus, perhaps they came to evaluate the behavior that was similar to their parent's behavior as positive and acceptable. In contrast, it is well-established that harsh discipline, coercion, and unresponsive parenting predict adjustment problems such as children's aggressive behavior (Dodge, 2006; Ladd & Pettit, 2002; Lansford et al., 2006; Pettit & Arsiwalla, 2008). Compared to their nonaggressive peers, aggressive children have been found to expect tangible rewards to accrue from acting aggressively (Rubin & Pepler, 2013), to evaluate aggressive responses as socio-morally acceptable (Lochman et al., 2012), and to make positive evaluations of aggression (Dodge et al., 2003; Lansford et al., 2006). Thus, parents with higher maternal warmth set a good model of positive, benign, and affectionate relationship style, thus instilling gradually in the child ideas about what is proper behavior that fits the norms and moral standards (Owen, Slep, & Heyman, 2012; Rohner et al., 2005).

Children with higher proactive guidance at kindergarten had a higher competent response evaluation score at kindergarten, but contrary to our expectations, had a slower increasing rate during the early elementary years, compared with children who received lower proactive guidance. As shown in Figure 4, children with higher proactive guidance remained relatively stable on their competent response evaluation across the early school years; children with lower

proactive guidance started with a lower level at kindergarten, but reached the same level at 2nd grade, and even exceed slightly at the 3rd grade than children with higher proactive guidance. It is possible that children with higher proactive parents matured more and absorbed more social knowledge from their family environment before entering into kindergarten. In fact, in early childhood, there are critical developmental tasks for parent and child to negotiate; for example, parents need to teach their child to gain adult attention appropriately, to regulate emotions, to engage in constructive activities with other children (Denham et al., 2000; Gardner et al., 1999; Pettit & Bates, 1989), to keep away from danger and conflict, and to share and cooperate with others (Gardner et al., 2007). Parents who are engaging and scaffolding their young children's social activities, provide the child with advanced social knowledge and solid social norms even before entering a formal social setting – kindergarten. Thus, the new social experience with the teacher or peers may not have a big influence on their development of competent response evaluation, compared with members of their cohort who come from lower proactive guidance families. However, because this is one of the very first studies to examine the role of positive parenting on children's competent response evaluation, replication of the finding is needed to draw firm conclusions.

Positive parenting measures as predictors of growth in competent response efficacy. Consistent with the bivariate correlations, no predictive links emerged between positive parenting and the initial level of competent response efficacy. But the rate of change of children's competent response efficacy was (marginally) predicted by maternal warmth. Children who lived in a warm family environment before kindergarten had a faster growth rate of competent response efficacy. Although no known study has examined the association between warmth and rate of change in competent processing, a significant amount of literature supports

the concept that maternal warmth is associated with children's self-confidence (Dykas & Cassidy, 2011; McElwain et al., 2008). In the current study, maternal warmth was operationalized as parent displaying positive regard toward the child, including both the direct positive emotional and behavioral expressions. It is possible that children who constantly received praise, affection, and feelings of support are more likely to develop a positive view of themselves, their peers, and the world, and this view, in turn, might increase their success in social interactions and amplifies their self-efficacy to enact a competent response. However, this finding must be interpreted with caution, owing to the low level of reliability of the competent response efficacy measure.

Positive Peer Experiences: Links across Different Informants and with CPS

In addition to parents, the influence of peers on altering how children think about and process social information was examined. It has long been recognized that peer experiences are important for several aspects of children's social cognitive development, including perspective taking, competence, and self-confidence (e.g., Ladd, 2005; Rubin et al., 2009 for review). Peer acceptance has a long history as a social competence indicator in the social development literature and is typically operationalized in terms of peer sociometric liking and disliking (i.e., liking minus disliking), the "golden standard" of measuring peer-relationship quality at the group (classroom) level (Pettit et al., 2003). The current study used not only the sociometric-based but also teacher-reported peer acceptance. An underlying assumption of modern measurement theory is that information from a single source cannot provide complete information about its conceptual referent. Based on this theory, researchers have suggested that gaining information from different informants is the most comprehensive approach for studying peer experience, because it minimizes error variance and possible biases evident in the reports provided by single

sources (Salmivalli & Peets, 2009). This is particularly the case in the early school years, when a range of informants, including self, peer, teachers, and parents, are all in a position to supply common but unique information about peer victimization and adjustment problems (Ladd & Kochenderfer-Ladd, 2002; Salmivalli & Peets, 2009). Researchers need to include different informants so that the strength and patterning of predictive links can be contrasted. Therefore, in the current study, data on peer acceptance were drawn from teachers and peers; we tested whether there was replication when a different informant was used.

Association between peer acceptance and CPS

In terms of associations between the peer acceptance and each component of CPS measure, correlations show that 8 out of 8 were statistically significant for competent response generation. Specifically, both sociometric and teacher-reported peer acceptance were positively correlated with competent response generation at kindergarten, 1st, 2nd and 3rd grade. However, competent response evaluation and efficacy were not significantly correlated with either peer measure.

Association between peer acceptance and competent response generation. These robust findings between peer acceptance and competent response generation support the idea that peer acceptance is associated with children's competent information processing (Crick & Dodge, 1994; Gifford-Smith & Rabiner, 2004). It is consistent with one of the classical studies, built on the foundation of using SIP to examine the normative development of children, which found that children who are socially skilled and well-liked by their peers tend to generate more competent, assertive, and prosocial responses (Dodge et al., 1986). Similarly, Rubin and Rose-Krasnor (1992) also found that the proportion of prosocial response generated in kindergarten predicted peer popularity in 2nd grade. Generating competent social strategies reflects a prosocial schema,

85

which represents a generalized mental representation of previous experiences that are used to guide social perceptions, evaluation, and behaviors (Mize & Ladd, 1988; Pettit et al., 2000). When a child is facing a challenging peer situation, a friendly schema may be accessed because it is consistent with a recent event or the emotion that accompanied the event. Thus, children who have recently been well-liked and who presumably had a good time with peers may be more likely to access a prosocial construct (Mize & Pettit, 2008).

Consistent with several studies that found the reciprocal associations between social cognitive process and peer acceptance (e.g., Rah & Parke, 2008; Crick & Dodge, 1994; Ladd, 2005), it is also possible that a child who is capable of generating and enacting competent responses in challenging social situations will be perceived as socially competent and likely to be accepted. In fact, in another longitudinal study, children's early social skills, indicated by children's social abilities in cooperation, assertion, and self-control predicted later peer acceptance across the ages of 2 to 7 (Blandon et al., 2010). Witvliet et al. (2009) used findings such as this to develop an intervention program to improve children's competent problem solving by enhancing peer acceptance. The GBG (Good Behavior Game) intervention is a classroom management program in which teachers are taught to facilitate positive peer interactions. In the GBG intervention, children work together in groups in which members are encouraged to support each other in behaving prosocially and following positively formulated class rules through a process of mutual self-interest. Groups as a whole are rewarded for rule compliance and prosocial behavior. GBG children, who were trained to have more prosocial strategies, compared to controls, were found to have improved peer acceptance (Witvliet et al., 2009).

One noteworthy and interesting finding of the current research is that competent response generation, compared with competent response evaluation and efficacy, yielded the most significant associations with both parenting and peer variables. Although competent response generation, evaluation, and efficacy are all components of CPS, there are subtle and vital differences. As noted earlier, competent response generation is probably the most proximal mental process to actual a behavior. Thus, it is not surprising to find competent response generation is more strongly associated with social experiences. Further, Pettit and Mize (2003) pointed out there are remarkably few empirical data relevant to the study the salience of differing social information processes. Although much research has examined social information processing as the individual step or jointly, and as mediators of the link between social experience and adjustment outcome, fewer efforts have been focused on the question of whether the strength of association between an individual step and competence (or aggression) varies as a function of age.

Association between peer acceptance and competent response evaluation. No significant bivariate associations between sociometric-based and teacher-reported peer acceptance and competent response evaluation, or efficacy emerged. As mentioned previously, competent response evaluation reflects children's endorsement of positive and constructive approaches to resolving potential conflicts with peers. Although peer acceptance is not a significant predictor, other peer variables, such as number of mutual friends, or proximity to other children, might play a role. Researchers have asserted that peer acceptance reflects a group-level index about how well a child is liked in the group (Coie & Dodge, 1988), whereas having mutual friends reflects children's actual affiliations with specific peers (Tu, Erath, & Flanagan, 2012). A high proximity to peers indicates that a child is socially close to other peers and is well

capable of reaching others in peer interactions (Witviet et al., 2009). Thus, a more specific and individual-level peer variable might explain better competent response evaluation.

Association between peer acceptance and competent response efficacy. Sociometric-based and teacher-reported peer acceptance and competent response efficacy were not significantly correlated. In fact, in the current study, no parenting or peer variable was associated with competent response efficacy except that maternal warmth marginally predicted the rate of change of efficacy. The low reliability of our competent response efficacy measure might explain some of those nonsignificant associations, as discussed below in the Limitations section. The inconsistency between children's actual social behavior and social efficacy might be another reason. For instance, in a sample of adolescents, Erath et al. (2007) found that early adolescents' positive social performance expectations were only modestly positively associated with observed social skills. Further, a recent study found no significant correlation between prosocial behavior and self-efficacy for resolving peer conflict (McMahon et al., 2013). Thus, it is possible that prosocial behavior and efficacy about competent responses are somewhat distinct.

Additionally, it might be that other aspects of parenting and peer experience play a role in competent response efficacy. For example, studies have found that perceived popular youth possess high social self-efficacy (Puckett, Aikins, & Cillessen, 2008) even when those youth utilize a mix of aggressive and prosocial behaviors (Findley & Ojanen, 2013; Hawley, 2003; Sandstrom & Cillessen, 2006). Along these lines, other peer experience indicators, such as peer communication skills, and role-playing experience, may promote children to learn to understand others' thoughts, emotions, motives, and intentions. In turn, children are armed with new social understandings, are engaged in appropriate and efficient social behavior, and feel more confident about themselves and solving challenging social situations.

Peer acceptance and the rate of change of CPS

The current study examined the predictive role of peer acceptance at the initial level of CPS, and the rate of change of CPS over early school years. Predictive links between peer acceptance and the initial level of CPS were consistent with the bivariate correlations; that is, both sociometric-based and teacher-reported peer acceptance predicted high competent response generation at kindergarten even controlling for demographic controls and parenting variables. However, no predictive link of peer acceptance to the rate of change of CPS emerged. One possible explanation is that sociometric-based and teacher-reported peer acceptance over childhood is not static; it changes as children age (i.e., children may be more or less liked by peers in some classrooms than in others). Therefore, peer acceptance at kindergarten does not mean acceptance in subsequent elementary school grades. In a meta-analysis of 77 studies, Jiang and Cillessen (2005) found that longer-term stability (which was less than two years in all except one study) for peer acceptance averaged .53, indicating a moderate level of stability.

The current study used a static, one-time (kindergarten) index of peer acceptance. A better way to capture the association between peer acceptance and CPS would be to examine links between *changes* in peer acceptance and *changes* in CPS. This might be done in the context of a developmental cascade model (Dodge et al., 2009). A study conducted by Lansford and colleagues (2010) illustrates such an approach. Using the same data set as the current study, a series of cascade models between peer social preference, a global index of SIP, and aggressive behavior were tested across kindergarten through third grade. Results showed that social preference incrementally predicted change in SIP over time, above and beyond continuity in SIP (and vice versa), suggesting that each construct has an effect on the other in a snowballing cycle over time (Lansford et al., 2010).

The Additive Effects of Positive Parenting and Peer Acceptance on CPS

An additional goal of the current study was to examine the additive effects of positive parenting and peer acceptance on the components of CPS. As discussed in the preceding section, maternal warmth and involvement predicted the initial level of competent response generation. Sociometric and teacher-reported peer acceptance likewise predicted the initial level of competent response generation. Of interest, therefore, is whether maternal warmth/involvement and peer acceptance make unique or redundant contribution to the competent response generation. Sorting this out could help in specifying whether there are distinct pathways through which competent response generation develops or whether a single path (parenting through peer) best explains this developmental pattern. Another way to think about the combined vs. overlapping links between maternal warmth/involvement, peer acceptance, and competent response generation is in terms of cumulative positive effects. That is, the likelihood that competent response generation is heightened by the presence of multiple positive factors.

Consistent with an additive (cumulative) perspective, children who experienced both maternal warmth and peer acceptance reported the highest competent response generation at kindergarten. The additive model was replicated by both sociometric-based and teacher-reported peer acceptance. This finding provides empirical evidence consistent with the expectation that relationships with parents and with peers make unique contributions to social-behavioral and social-cognitive development (Criss, Shaw, Moilanen, Hitchings, & Ingoldsby, 2009; Sentse & Laird, 2010). Although no known study has examined the additive effects of positive parenting and peer acceptance on competent processing, cumulative risks of negative parenting and peer experiences on adjustment problem have been considered. For example, Deater-Deckard and colleagues found support for an cumulative risk model for children's adjustment problems.

Twenty risk variables from four domains (child, sociocultural, parenting, and peer-related) were assessed in preschool; eighteen (including harsh discipline and peer rejection) were found to predict later conduct problems and together accounted for 45% of the variance in conduct problems 5 years later (Deater-Deckard, Dodge, Bates, & Pettit, 1998). However, when it comes to cumulative risks for social information processing, few if any studies have examined the cumulative risks on the development of SIP. Thus, the current study is the first known study demonstrating that both positive parenting (i.e., maternal warmth) and peer experience (i.e., peer acceptance) additively contribute to children's competent problem solving. This noteworthy finding, with a multi-informant conservative design, helps confirm the biopsychosocial model by Dodge and Pettit (2003), which suggested that earlier social and contextual factors such as experiences with parents and peers operate on the development of social cognition by shaping a child's social knowledge and characteristic styles of processing information about the social world.

Demographic Difference on CPS and Parenting and Peer Acceptance

Gender. No gender differences were found in positive parenting. With respect to CPS and peer acceptance, consistent with abundant studies, the current study found that girls are more likely to generate high proportion of competent responses at 1st, 2nd, and 3rd grade, and have higher peer-nominated peer acceptance, compared to boys (Gottfried, 2013; Mize & Pettit, 1997; Walker, 2005). Girls consistently behave at least somewhat more prosocially than do boys (Eisenberg et al., 1996), and even among the same peer status category, popular girls are rated as more prosocial than are popular boys (LaFontana & Cillessen, 2002).

Of greater interest in the present study was whether there are gender differences in growth patterns of CPS. In fact, gender did marginally predict the growth of competent response

generation. That is, compared with boys, girls' competent response generation increased faster from kindergarten to 3rd grade. As shown in Figure 1, girls' competent response generation was higher than boys', and the difference between girls' and boys' percentage score becomes larger from kindergarten to 3rd grade. Although no known study has examined gender difference in developmental patterns of competent processing, research has shown that girls are more skilled in many facets of social cognitive knowledge than are boys in such areas as determining the intentions of others and in generating effective solutions to social problems (Gottfried, 2013; Schultz et al., 2000). For example, Zhou et al. (2002) found that both mothers and teachers reported that girls had higher social competence than boys at both kindergarten and third grade, and girls' increases were larger than boys' from kindergarten ($M_{girls} = 3.39$, $M_{boyls} = 2.99$) to third grade ($M_{girls} = 3.48$, $M_{boyls} = 2.96$). Mayeux and Ciliessen (2003) likewise found that prosocial response generation remained stable from kindergarten to 1st grade only for boys. Since girls have higher peer acceptance than boys, it is likely that positive peer events may have more impact on girls than boys. It is also plausible that parents socialize differently based on gender-specific behaviors and styles of social interaction, such as the distinct social norms and expectations for boys and girls, contribute to the different development pattern of competent response generation (Walker, 2005). Perhaps it is premature to attempt to draw strong conclusions about sex differences in developmental patterns of processing, because of the limited relevant research

Race/Ethnicity. Ethnic differences were found in CPS, parenting, and peer acceptance. Specifically, European Americans (EA) had a higher score of competent response generation at 2nd and 3rd grade, and higher competent response evaluation at kindergarten, 1st and 2nd grade, than African Americans (AA). Among indices of positive parenting, EAs were more likely to

have higher maternal warmth, involvement, and proactive guidance than AAs. Among indices of positive peer experience, EAs were more likely to be nominated by peers as peer accepted than AAs. Using the sample of the current study, Dodge, Pettit, and Bates (1994) found that compared with EAs, AAs experience harsher discipline, greater exposure to violence, less peer group stability, more life stresses, less cognitive stimulation, and their mothers experience less social support and hold more aggressive values for the children. Some of the parenting strategies of AAs may be reflected in parents' reactions to living in economic deprivation situations and danger (Dodge et al., 1994).

However, our growth model results indicated that, though AAs had a lower score of competent response evaluation a kindergarten, they had a faster growth rate over the early school years than EAs (Figure 2). All of these ethnicity differences supported the ideas of Dodge and Pettit (2003) that life experiences may have quite different effects on groups that vary in cultural background and ethnicity. Thus, developmental models may be group specific (i.e., competent response evaluation), or vary across groups. Developmental models should articulate broadly or at least allow for a diversity of pathways across groups (Dodge & Pettit, 2003). The underlying mechanism of those race/ethnicity differences is crucial to our understanding the specificity of development patterns of children's competent processing, but they are not yet clear. Due to the absence of theory and replicated findings, it is premature to assign a high amount of developmental significance to these findings.

SES. Consistent with a vast number of studies showing that SES is associated with a broad range of cognitive and socioemotional outcomes in children, with effects start before birth and continue into adulthood (see Bradley & Corwyn, 2002, for a review), the current study found that children who come from high socioeconomic status families are more likely to generate

93

competent responses at kindergarten, 1st, 2nd, and 3rd grades, evaluate a competent response as positive at kindergarten, 1st, and 2nd grades, but have low competent response efficacy at kindergarten. It is also not surprising to find that children from a high socioeconomic status families are more likely to have parents who are warm, involved in their social activities and provide proactive guidance, and have greater peer acceptance reported by both peers and teachers. No SES differences in growth patterns of CPS emerged.

Limitations and Future Directions

Although the results of the present study advance knowledge about associations among positive parenting, peer acceptance, and competent problem solving across the early school years, future studies can extend this research in several ways. First, future studies should strengthen measurement of the positive parenting variables examined in the present study by including multiple time points and assessments of parenting, such as parental involvement at 1st, 2nd, and 3rd grades. Parents utilize different strategies at different ages to adjust to their children's cognitive changes and social needs. Indeed, researchers have found that early proactive parenting is an important early form of parental monitoring, which was predictive of later parental monitoring and lower levels of behavior problems in childhood and adolescence (Gardner et al., 2007; Pettit & Bates, 1989; Pettit et al., 2001). Including multiple assessments of the same parenting strategy across times could test whether the parenting strategy is stable or changing, and whether the *changes* in parenting are associated with *changes* in children's CPS.

There has been increasing attention paid to "direct" parenting practice (i.e., parenting behaviors, such as coaching that are intended to address specific socialization goals), especially domain-specific parenting (i.e., parenting in the domain of children's peer relationships), because in fact, measuring domain-specific parenting allows researchers to better predict child outcomes

94

within a specific domain (Mize & Pettit, 1997; Gregson et al., 2015; Su et al., 2016). It would be interesting to examine whether parenting coaching strategies (e.g., benign cognitive framing, prosocial advice-giving) that promote children's social cognition play a unique role in the development of CPS, and whether general parenting (like the maternal warmth measure in the current study) and domain-specific parentings have additive or redundant effects on CPS (see Mize & Pettit, 1997, for an early and important demonstration of such additive affects). It also is possible that general parenting (e.g., parent warmth) moderates the association between specific parenting and CPS. For example, Gregson et al. (2015) found that parental social coaching, such as directly giving prosocial strategies suggestions, or guiding children to benign interpretations in social situations, was more strongly predictive of adolescent receptivity to coaching in a positive emotional climate (i.e., high warmth, low hostility), compared to a negative emotional climate (see also Mize & Pettit, 1997).

The present study did not confirm our expectation that peer acceptance contributes to the development (i.e., growth) of CPS. As discussed earlier, peer acceptance in the current study was assessed at only a single time point—kindergarten—and it very well may be that growth in CPS parallels changes in peer acceptance (and qualities of peer experience more broadly) than peer acceptance in kindergarten. Thus, future studies may consider examining the links between changes in peer acceptance and changes in CPS to better capture these associations concurrent and longitudinally across the elementary school years. Moreover, future researchers may explore other indicators of peer experience, such as mutual friends (Witviet et al., 2009), positive behaviors of friends (Tu et al., 2012), and frequency of positive peer interaction, as predictors of CPS. Further, future studies may examine the reciprocal associations between CPS and peer acceptance. When a child is facing a peer provocation, whether a friendly or withdrawal schema

is accessed depends, partly, on recent environmental and internal cues or events, so that a child is more likely to access a schema that is consistent with a recent event or the emotion that accompanied the event. Thus, children who have recently been well liked and had a good time with friends may be more likely to access a prosocial construct.

Additionally, the CPS measure used in the current study were not specifically designed to capture children's competent information processing. In fact, the original protocol was designed to assess aggressive information processing style (Dodge, 2006; Dodge, Bates, & Pettit, 1990; Lansford et al., 2006; Pettit et al., 2001). For example, step 1, encoding, tends to focus on whether children noticed possible hostility (Pettit et al., 1994); step 2, mental representation, is mainly utilized to measure children's hostile attribution (Dodge, 2006); step 3, response generation, primarily examined whether aggressive children came up with more aggressive behaviors (Dodge & Price, 1994); and step 4, response evaluation, is used to assess whether children evaluate aggressive behavior as positively and socio-morally acceptable (Dodge et al., 2003; Lochman et al., 2012; Rubin & Pepler, 2013). To some degree, these steps reflect the underlying mental processes of an aggressive action, often a "hot" cognitive process that is driven by emotion (Dodge & Pettit, 2003; Fontaine, 2010), but competent processing is a more "cold" cognition that may require emotional-control and calm thinking. Thus, the CPS measure in the current study only captures some aspects of competent processing, but ideally, future researchers should develop a measure of CPS that is designed to reveal the precise and comprehensive mental processing pattern of prosocial behavior.

Although the measure of competent response generation used in the current study captures both the quantity and quality of children's response generation (expressed as the proportion of all generated responses that were competent), a limitation of this measure was that

96

the complexity of the competent response was not considered. For example, when a child tried to join a group of children to play soccer together but was rejected, a competent response could be, "I will let you play with my ball tomorrow if you let me play now." Another competent response would be "I have trained to play soccer for two years, and you seem to play very well too, so if we are a team, we could win the game." The second competent response is more sophisticated and skilled than the first, and is more likely to be a response made by an older child. It would be interesting to see whether there is a variety within the competent responses generated by children at different ages, and whether responses of lower or higher complexity are associated with different social status and peer relationship outcomes.

Finally, there are also limitations in the competent response efficacy measure in the present study. As noted, this CPS measure was less reliable, with regard to internal consistency, than the other CPS measures. Perhaps because of measurement limitations, competent response efficacy was less likely to be associated with any parenting or peer variable. The current study created a composite of competent response efficacy across three peer challenging situations because we were interested in capturing children's overall competent response efficacy. However, we reasoned that children's feelings of efficacy varied depending on the situation. For example, children may feel it is easier to say, "I will let you play my toy tomorrow if you let me play now" when they were joining a group of peers (i.e., group entry scenario), than to say "I will let you cut in the line now if you let me cut next time" when they facing another child cut in front of their line (i.e., peer provocation scenarios). Further, unlike other competent response measures in the current study, in which 32 scenarios were presented to measure competent response generation, and 24 scenarios were presented to assess competent response evaluation, competent response efficacy only had three scenarios. The limited scenarios constrained the

possibility of getting a higher reliability. Further, because efficacy in each situation may be somewhat distinct, it is possible that efficacy in each situation influences the overarching construct of efficacy (i.e., causal indicators), as compared to the possibility that an underlying efficacy influences efficacy across these situations (i.e., effect indicators) (Bollen & Lennox, 1991; Kuhn & Laird, 2011). As Streiner (2003) pointed out, the reliability of an index formed from causal indicators is not necessarily assessed accurately by internal consistency across situations. Therefore, future studies should consider the nature of social efficacy to design the social situations in a way that consistently measure the same domain of social efficacy and, thus, improve reliability.

Conclusion

Despite the limitations noted above, the present study advanced prior work by providing a deeper examination of the developmental trajectory of three components of children's competent processing across the early school years, and how early positive parenting and peer acceptance affect—or at least predict--these developmental patterns. Results suggest that all three domains of CPS grow as children get older. Maternal warmth and involvement are most salient for children's competent response generation and evaluation. Peer acceptance is especially helpful for children's development of competent response generation. Additionally, findings support an additive (cumulative) effect of maternal warmth and peer acceptance on children's competent response generation. This is one of the very first studies to examine competent processing in a developmental perspective. Further research is needed that examines a broader array of possible socialization precursors and that considers the parallel growth (i.e., bidirectional processes) of parenting, peer relations, and problems-solving patterns across development.

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Appendix A

Table 1

Summary of descriptive statistics for all study variables

	Kindergarten	1st grade	2nd grade	3rd grade	Range
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	
CPS outcomes					
Generation	0.33 (.19)	0.39 (.18)	0.47 (.19)	0.52 (.18)	0 - 1
Evaluation	2.86 (.64)	3.06 (.59)	3.22 (.51)	3.16 (.56)	1 - 4
Efficacy	2.86 (.76)	2.87 (.80)	2.96 (.77)	3.09 (.68)	1 - 4
Parenting Predictors					
Maternal Warmth	2.52 (1.09)				0 - 4
Parenting Involvement	3.25 (1.05)				1 - 5
Proactive Guidance	2.26 (1.66)				0 - 5
Peer Predictors					
SOC peer acceptance	.15 (.97)				-2.78 - 2.62
TR peer acceptance	4.10 (.67)				1 - 5

Notes. CPS = competent problem solving; SOC = sociometric; TR = teacher-reported

Table 2
Correlation among CPS (competent problem solving) outcomes and demographic controls.

	1	2	3	4	5	6	7	8	9	10	11	12
1. K Generation	-											
2. 1st Generation	.36***	-										
3. 2nd Generation	.29***	.36***	-									
4. 3rd Generation	.25***	.31***	.38***	-								
5. K Evaluation	.08~	.09*	.08~	.13**	-							
6. 1st Evaluation	.10*	.04	.10*	.14**	.45***	-						
7. 2nd Evaluation	.09~	.10*	.07	.09~	.28***	.44***	-					
8. 3rd Evaluation	.04	-.01	.01	.11*	.02	.08~	.25***	-				
9. K Efficacy	.04	-.04	.05	-.03	.16***	.09*	.04	-.07	-			
10. 1st Efficacy	-.10**	-.01	-.02	-.05	.01	.09~	-.05	.00	.20***	-		
11. 2nd Efficacy	.01	-.02	.09*	-.03	.09~	.08	.06	.03	.03	.19***	-	
12. 3rd Efficacy	.03	.06	-.02	.04	.03	.07	.08~	.06	.03	.19***	.15**	-
Controls												
Gender	.06	.14**	.18***	.14**	.02	.03	.03	.07	-.03	.01	-.05	-.04
Ethnicity	-.06	-.06	-.13**	-.17***	-.18***	-.12*	-.12*	-.01	.01	.08	-.04	-.07
SES	.15***	.13**	.15**	.19***	.19***	.11*	.18***	-.01	.06	-.12*	.03	.06

Note. K = kindergarten; Gender coded as Male = 0; Female = 1;
Ethnicity/Race coded as European American = 0; African American = 1
~$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$;

Table 3

Correlation among predictors, outcome, and demographic control variables

	Warmth	Involvement	Proactive guidance	SOC peer acceptance	TR peer acceptance
CPS outcomes					
K Generation	.09*	.09*	-.01	.16***	.18***
1st Generation	.06	.08~	-.05	.24***	.17***
2nd Generation	.13**	.10*	.04	.25***	.26***
3rd Generation	.15**	.14**	.07	.15*	.18***
K Evaluation	-.04	.11*	.08~	.02	.07
1st Evaluation	.03	.09*	.09~	.04	.07
2nd Evaluation	.04	.07	.01	.04	.04
3rd Evaluation	.16***	.07	-.07	.04	.07
K Efficacy	-.07	.02	.05	-.02	.04
1st Efficacy	-.03	-.01	.01	.00	.01
2nd Efficacy	.07	.02	-.02	.06	.07
3rd Efficacy	.01	.07	-.04	-.02	-.03
Predictors					
Involvement	.24***	-			
Proactive guidance	.00	.21***	-		
SOC peer accept	.07	.13**	.02	-	
TR peer acceptance	.10*	.10*	.10*	.51***	
Controls					
Gender	.06	-.02	.01	.17***	.07~
Ethnicity	-.12**	-.21***	-.13**	-.08*	-.05
SES	.18**	.36***	.19***	.14**	.21***

Note. K = kindergarten; SOC = sociometric; CPS = competent problem solving; TR = teacher-reported. Gender coded as Male = 0; Female = 1; Ethnicity/Race coded as European American = 0; African American = 1.

$\sim p < .10$; $*p < .05$; $**p < .01$; $***p < .001$;

Table 4

*Taxonomy of multilevel models for change describing the effects of positive parenting behaviors and positive peer experiences at kindergarten on children's competent response **generation** growth trajectories from kindergartens to 3rd grade.*

	Param.	Model A (UG)	Model B	Model C	Model D	Model E	Model F	Model G	Model H (final)
Fixed Effects									
Initial Status	γ_{00}	.327***	.243***	.294***	.280***	.335***	.321***	.111*	.047
gender	γ_{01}		.030*						.028~
ethnicity	γ_{02}		-.004						
SES	γ_{03}		.002**						.002***
Maternal warmth	γ_{04}			.014*					.012*
Involvement	γ_{05}				.014*				.005
Proactive guide	γ_{06}					-.003			
SOC peer acceptance	γ_{07}						.039***		
TR peer acceptance	γ_{08}							.053***	.044***
Rate of Change	γ_{10}	.067***	.064***	.058***	.058***	.059***	.067***	.064**	.056**
gender	γ_{11}		.011~						.020***
ethnicity	γ_{12}		-.017~						
SES	γ_{13}		.001						
Maternal warmth	γ_{14}			.003					
Involvement	γ_{15}				.003				
Proactive guide	γ_{16}					.003			

		Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H
SOC peer acceptance	γ_{17}								-.001
TR peer acceptance	γ_{18}							.001	
Variances components									
Level 1									
Within person	σ^2_ε	.021***	.021***	.021***	.021***	.021***	.021***	.021***	.021***
Level 2									
Initial Status	σ^2_0	.015***	.014***	.015***	.015***	.015***	.014***	.014***	.013***
Rate of change	σ^2_1	.001***	.001***	.001***	.001***	.001***	.001***	.001***	.001***
Covariance	σ_{10}	-.002***	-.002***	-.002***	-.002***	-.002***	-.002***	-.002***	-.002***
Goodness of fit									
-2LL		-1350.14	-1385.53	-1302.23	-1345.01	-1336.98	-1346.54	-1359.80	-1300.75
AIC		-1338.14	-1361.53	-1286.23	-1329.01	-1320.98	-1330.54	-1343.80	-1278.75
BIC		-1304.38	-1294.27	-1241.67	-1284.06	-1276.07	-1285.75	-1298.89	-1218.00

Note. Model A is an unconditional growth model. Model B shows the effect of demographic. Model C – G displays the main effect of each of the five parenting and peer predictors. Model H is the final model with the best model fit.
Gender coded as Male = 0; Female = 1; Ethnicity/Race coded as European American = 0; African American = 1.
SOC = sociometric; TR = teacher-reported; -2LL = -2 log-likelihood; AIC = Akaike information criterion; BIC = Bayesian information criterion.
~$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

Table 5

*Taxonomy of multilevel models for change describing the effects of positive parenting behaviors and positive peer experiences at kindergarten on children's competent response **evaluation** growth trajectories from kindergartens to 3rd grade.*

	Param.	Model A (UG)	Model B	Model C	Model D	Model E	Model F	Model G	Model H (final)
Fixed Effects									
Initial Status	γ_{00}	2.905***	2.668***	2.960***	2.681***	2.812***	2.902***	2.644***	2.854***
gender	γ_{01}		.021						
ethnicity	γ_{02}		-.207**						-.313***
SES	γ_{03}		.007***						
Maternal warmth	γ_{04}			-.025					-.039
Involvement	γ_{05}				.069**				
Proactive guide	γ_{06}					.041*			.036*
SOC peer acceptance	γ_{07}						.016		
TR peer acceptance	γ_{08}							.064	.028
Rate of Change	γ_{10}	.108***	.169***	.034	.157***	.154***	.108***	.152*	.054
gender	γ_{11}		.009						
ethnicity	γ_{12}		.063~						.095**
SES	γ_{13}		-.002						
Maternal warmth	γ_{14}			.031**					.034**
Involvement	γ_{15}				-.015				
Proactive guide	γ_{16}					-.020**			-.019*

125

		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
SOC peer acceptance	γ_{17}						.001		
TR peer acceptance	γ_{18}							-.010	
Variances components									
Level 1									
Within person	σ^2_{ε}	.197***	.201***	.200***	.200***	.199***	.203***	.198***	.202***
Level 2									
Initial Status	σ^2_0	.243***	.226***	.240***	.238***	.240***	.242***	.238***	.219***
Rate of change	σ^2_1	.035***	.034***	.033***	.035***	.034***	.035***	.035***	.031***
Covariance	σ_{10}	-.076***	-.070***	-.073***	-.074***	-.074***	-.076***	-.075***	-.066***
Goodness of fit									
-2LL		3338.67	3261.29	3169.91	3306.40	3295.95	3259.97	3284.94	3081.79
AIC		3350.67	3285.29	3185.91	3322.40	3311.95	3275.97	3300.94	3107.79
BIC		3384.33	3352.36	3230.32	3367.20	3356.73	3320.62	3345.70	3179.75

Note. Model A is an unconditional growth model. Model B shows the effect of demographic. Model C – G displays the main effect of each of the five parenting and peer predictors. Model H is the final model with the best model fit.

Gender coded as Male = 0; Female = 1; Ethnicity/Race coded as European American = 0; African American = 1.

SOC = sociometric; TR = teacher-reported; -2LL = -2 log-likelihood; AIC = Akaike information criterion; BIC = Bayesian information criterion.

~$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

Table 6

*Taxonomy of multilevel models for change describing the effects of positive parenting behaviors and positive peer experiences at kindergarten on children's competent response **efficacy** growth trajectories from kindergartens to 3rd grade.*

	Param.	Model A (UG)	Model B	Model C	Model D	Model E	Model F	Model G	Model H (final)
Fixed Effects									
Initial Status	γ_{00}	2.830***	2.805***	2.913***	2.841***	2.781***	2.830***	2.605***	2.826***
gender	γ_{01}		-.017						
ethnicity	γ_{02}		.096						
SES	γ_{03}		.001						
Maternal warmth	γ_{04}			-.035					
Involvement	γ_{05}				-.004				
Proactive guide	γ_{06}					.020			
SOC peer acceptance	γ_{07}						-.006		.010
TR peer acceptance	γ_{08}							.055	
Rate of Change	γ_{10}	.081***	.119*	.023	.030	.114***	.078***	.140	.065**
gender	γ_{11}		-.020						
ethnicity	γ_{12}		-.072~						-.033
SES	γ_{13}		-.001						
Maternal warmth	γ_{14}			.025~					.010
Involvement	γ_{15}				.015				
Proactive guide	γ_{16}					-.014			

SOC peer acceptance	γ_{17}						.007		
TR peer acceptance	γ_{18}							-.015	
Variances components									
Level 1									
Within person	σ^2_ε	.477***	.477***	.467***	.478***	.478***	.484***	.475***	.474***
Level 2									
Initial Status	σ^2_0	.121***	.121***	.138***	.123***	.121***	.113***	.123***	.131***
Rate of change	σ^2_1	.008***	.008***	.011***	.008***	.007***	.007***	.008***	.010***
Covariance	σ_{10}	-.021***	-.022***	-.025***	-.021***	-.020***	-.017***	-.023***	-.023***
Goodness of fit									
-2LL		4534.92	4440.48	4273.60	4500.50	4474.31	4428.54	4466.90	4168.12
AIC		4546.92	4464.48	4289.60	4516.50	4490.31	4444.54	4482.90	4186.12
BIC		4580.57	4513.55	4334.02	4561.30	4535.08	4489.19	4527.66	4235.82

Note. Model A is an unconditional growth model. Model B shows the effect of demographic. Model C – G displays the main effect of each of the five parenting and peer predictors. Model H is the final model with the best model fit.
Gender coded as Male = 0; Female = 1; Ethnicity/Race coded as European American = 0; African American = 1.
SOC = sociometric; TR = teacher-reported; -2LL = -2 log-likelihood; AIC = Akaike information criterion; BIC = Bayesian information criterion.
~*p* < .10; **p* < .05; ***p* < .01; ****p* < .001

Figure 1: Competent problem-solving solution generation trajectories from kindergarten to third grade for girls and boys, controlling for socioeconomic status, maternal warmth, peer acceptance, and parental involvement at kindergarten.
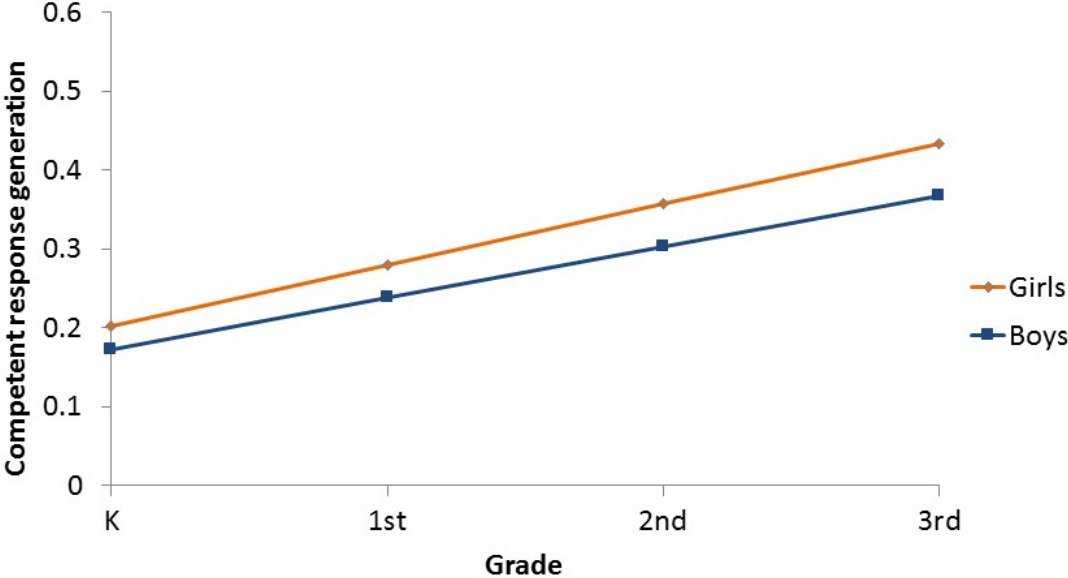
Figure 2: Competent problem evaluation trajectories from kindergarten to third grade for European American and African American children, controlling for maternal warmth and proactive guidance at kindergarten.
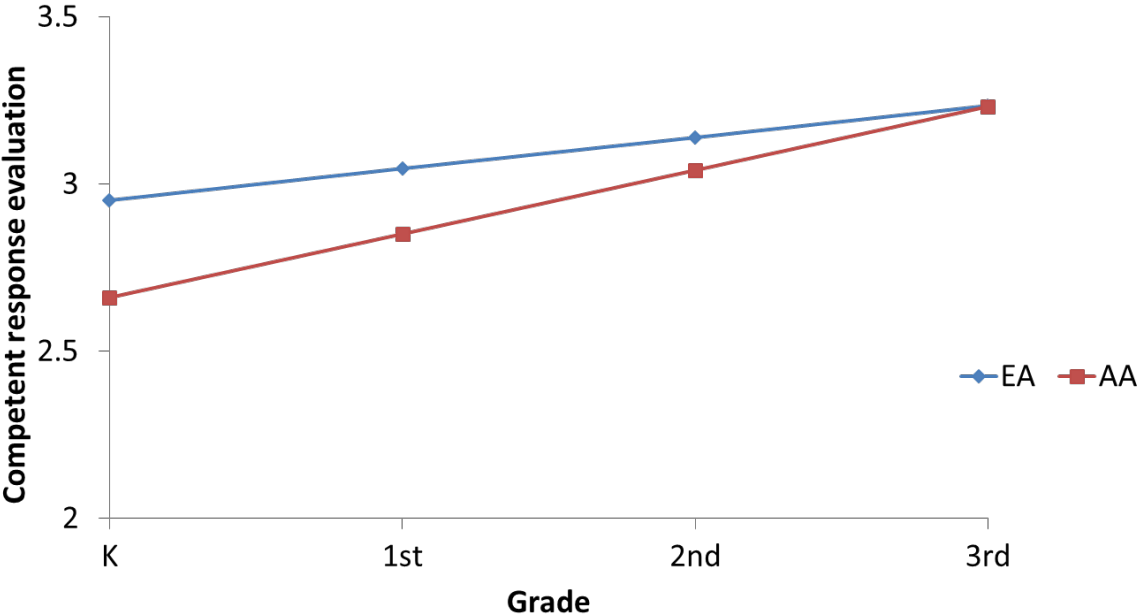
Figure 3: Competent problem evaluation trajectories from kindergarten to third grade for children with high- and low-levels of maternal warmth, controlling for ethnicity and proactive guidance at kindergarten.
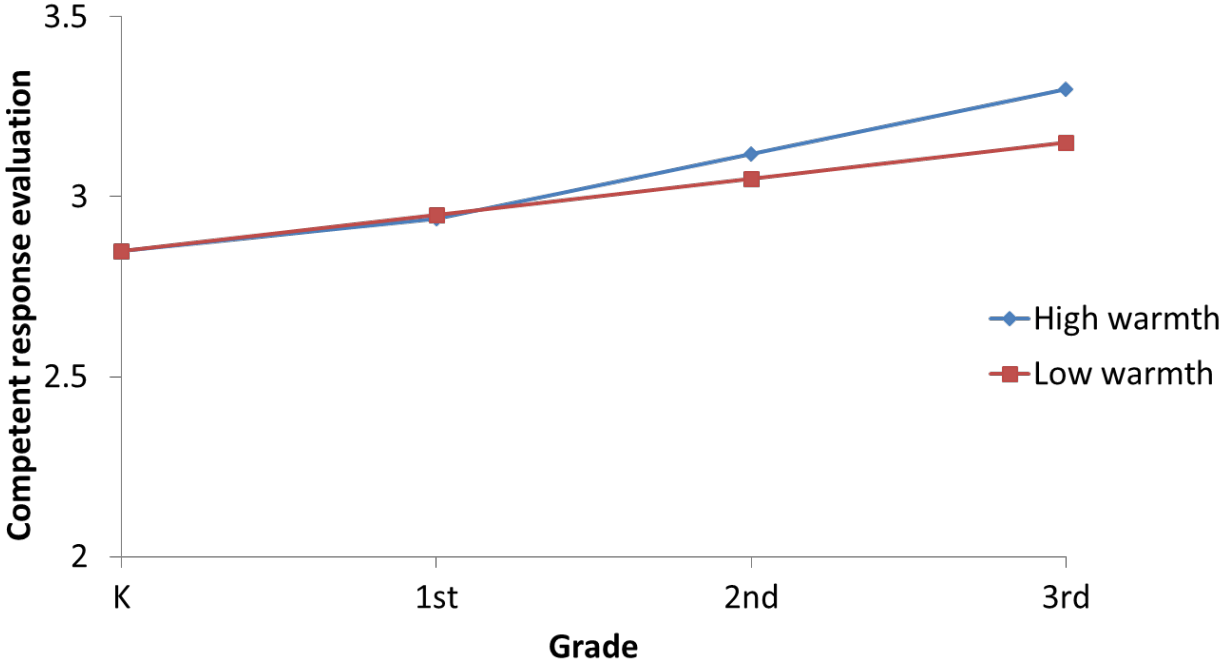
Figure 4: Competent problem evaluation trajectories from kindergarten to third grade for children with high- and low-levels of proactive guidance, controlling for ethnicity, and maternal warmth at kindergarten.