

Within-Family Dynamics and Self-Regulation in Preschoolers

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ISBN-10: 90-393-4429-9

ISBN-13: 978-90-393-4429-3

Printed by Print Partners Ipskamp, Enschede, the Netherlands

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Within-Family Dynamics and Self-Regulation in Preschoolers

Gezinsdynamiek en Zelfregulatie bij Peuters

(met een samenvatting in het Nederlands)

Proefschrift

ter verkrijging van de graad van doctor

aan de Universiteit Utrecht

op gezag van de rector magnificus, prof. dr. W. H. Gispen,

ingevolge het besluit van het college voor promoties

in het openbaar te verdedigen

op 21 december 2006 des middags te 2.30 uur

door

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geboren op 25 april 1979, te Bergen op Zoom

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A. Karreman - Within-Family Dynamics and Self-Regulation in Preschoolers

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A. Karreman - Within-Family Dynamics and Self-Regulation in Preschoolers

Chapter 1

General Introduction

1.1 Aim of the present thesis

Separate research lines have stressed the importance of self-regulation on the one hand and within-family dynamics on the other for the development and stability of problem behavior in young children. Children who have difficulty modulating levels of arousal and irritability have been found to be at risk for the development of problem behavior (Murray & Kochanska, 2002; Rothbart, Ahadi, Hershey, & Fisher, 2001). In addition to early temperamental self-regulation, family processes have been found to play an important role in the prediction of problem behavior (Gardner, 1994; Shaw, Winslow, Owens, Vondra, Cohn, & Bell, 1998).

However, personal and environmental factors can be considered as reciprocally influencing each other, instead of being two separate entities (Magnusson & Stattin, 1998). The classical interactionist perspective emphasizes that the individual and his or her environment form a system in which the individual functions as the active, purposeful agent, responding to and selecting specific contexts. Bronfenbrenner (1986) advocated the interplay of person and environment by proposing the person-process-context model as a promising research paradigm for the study of human development. The process character of this model emphasizes that the impact of the external environment on the family is not the same irrespective of the personal characteristics of individual family members. Personal characteristics of parents and children are of importance in determining the effects of the external environment. A modern holistic interactionist perspective builds on this traditional view and emphasizes the continuously ongoing, bidirectional processes of interaction between the person and his or her environment, as well as among mental, biological, and behavioral factors within the individual (Magnusson & Stattin, 1998).

Although the idea of integrating person and environment has a long history, few empirical studies have directly addressed the relation between temperament (personal characteristics) and family processes (environmental characteristics) (see Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Van Aken, van Lieshout, Scholte, & Haselager, 2002; Van Aken, 2004). Instead, most research focuses on the main effects of temperament and family processes on developmental outcomes, such as externalizing problems. However, recent studies point towards

the importance of person x environment interactions in the prediction of developmental outcomes (Bates, Pettit, Dodge, & Ridge, 1998; Kochanska, 1997). The aim of the present thesis is to examine the interplay of within-family dynamics and self-regulation in preschoolers.

In this chapter, we first describe the key concepts of the present thesis. The personal variables under study are preschoolers' self-regulation and parental personality. Maternal and paternal parenting and coparenting are studied as environmental variables. The outcome variable investigated is externalizing problem behavior in preschoolers. We describe the literature on associations between the variables, but we restrict this description to the associations that are examined in this thesis. Next, we present a comprehensive model that links the key concepts discussed here. We then formulate the research questions deriving from this model. We continue with comments on the research design and conclude this introduction by presenting the outline of the thesis.

1.2 Key concepts

1.2.1 Self-regulation of preschoolers

Temperament and self-regulation

Temperament in young children can be considered as forming the evolutionarily conserved core from which personality develops (Rothbart, Ellis, & Posner, 2004). It has been defined as 'individual differences in reactivity and self-regulation assumed to have a constitutional basis' (Rothbart & Derryberry, 1981; Rothbart, Ahadi, & Evans, 2000). Rothbart and Derryberry (1981) defined *constitutional* as 'the relatively enduring biological makeup of the organism, influenced over time by heredity, maturation, and experience'. *Reactivity* refers to the excitability, responsivity or arousability of the behavioral and physiological systems of the organism. *Self-regulation* refers to neural and behavioral processes functioning to modulate the underlying reactivity. Thus, children who score high on self-regulation are able to adapt their level of reactivity according to environmental demands.

As pointed out by Van Aken et al. (2002), the dimensions self-regulation and reactivity resemble Block and Block's (1980) dimensions ego-resiliency and ego-control in personality research. Rothbart and Derryberry (1981), as well as Block and Block (1980), assume curvilinear relations between the two dimensions. Children scoring high on self-regulation or ego-resiliency have the capacity to regulate their level of reactivity or ego-control following situational demands.

Children scoring low on self-regulation or ego-resiliency do not have the same capacity. They usually act impulsively (high reactivity or low ego-control) or timidly (low reactivity or high ego-control). With respect to Block and Block's paradigm, research on personality types (Asendorpf & Van Aken, 1999) has confirmed the existence of three types: the resilient, the undercontrollers and the overcontrollers. Similar types have been found using temperamental variables in 3-year-olds (Caspi, 2000).

Research on the temperament factors self-regulation and reactivity and research on ego-resiliency and ego-control have shown the importance of these constructs for the child's functioning. The self-regulatory aspect may be particularly strongly implicated in socialization and may be critical to development (Kochanska, Murray, & Coy, 1997). Children high on self-regulation or ego-resiliency tend to function relatively well (Asendorpf & Van Aken, 1999; Kochanska et al., 1997; Murray & Kochanska, 2002). Children low on self-regulation or ego-resiliency tend to show behavioral problems, depending on whether they are also high on reactivity (externalizing problems) or low on reactivity (internalizing problems) (Van Aken et al., 2002).

The development of self-regulation

The development of self-regulation is described in Kopp's (1982) model. The central idea is that as children grow older, a move from externally to internally regulated behavior takes place, in response to parental socialization and accompanied by the maturation of attention (Calkins, Smith, Gill, & Johnson, 1998; Kochanska, Coy, & Murray, 2001; Rothbart & Bates, 1998).

According to Kopp's model, children between 12 and 18 months of age become capable of control, which encompasses the awareness of social demands and the ability to comply with parental requests (Kochanska et al., 2001; Kopp, 1982; Kuczynski & Kochanska, 1995). By following parental directives, children become increasingly aware of the expectations and demands of the social environment, which leads to internalization of societal values and norms (Abe & Izard, 1999; Kagan, 1984; Kopp, 1982; Maccoby & Martin, 1983). By 24 months, children have developed self-control, which includes the ability to inhibit behavior and to regulate simple behaviors, even when parents are absent. At 36 months, children begin to be capable of self-regulation, or behavior that is totally modulated by the child and that meets changing social demands.

Various conceptualizations of self-regulation exist, emphasizing different capacities of children. The concept of *compliance* refers to children's ability to initiate, cease, or modulate their behavior in response to parental requests (Kochanska et al., 2001; Kopp, 1982). *Inhibition* reflects self-control, delay of

gratification, or inhibition of behavior in the absence of external monitors (Kopp, 1982). Inhibition can be defined as the continuum of possible initial behavioral reactions to unfamiliar objects or challenging social situations (Kochanska, 1991; Stevenson-Hinde, 1989). *Emotion regulation* refers to processes that serve to manage emotional arousal and support adaptive responses (Calkins et al., 1998; Eisenberg & Fabes, 1998; Thompson, 1991). A final concept of self-regulation is *effortful control*, which is a key concept of this thesis.

Effortful control

Rothbart (1989) introduced the concept of effortful control and defined it as ‘the ability to suppress a dominant response and to perform a subdominant response’. Since effortful control includes the ability to perform a subdominant response, it requires more maturation in children than the other aspects of self-regulation. As the child develops, reactive forms of regulation are supplemented by an increasing capacity for voluntary or effortful forms of control (Rothbart, Posner, & Boylan, 1990), which emerges as attentional mechanisms become fully developed (Eisenberg et al., 2004; Posner & Rothbart, 2000; Rothbart, Derryberry, & Posner, 1994; Rothbart, Ellis, Rueda, & Posner, 2003). Effortful control is assumed to be evident at 3 years of age (Kochanska, Murray, & Harlan, 2000; Kochanska & Knaack, 2003). It is involved in multiple domains of functioning, such as cognitive, social, motor, and behavioral domains, although it reflects a highly coherent underlying broad competence (Kochanska et al., 2000; Murray & Kochanska, 2002).

In this thesis, we focus on children aged 3. At the age of three, most children have developed the capacity to overcome reactive responses. However, there is considerable inter-individual variation in the exercise of effortful control (Kochanska et al., 2000). Furthermore, few studies have examined effortful control in relation to within-family dynamics, whereas it has been shown to be a developmental milestone, crucial to later development (Murray & Kochanska, 2002; Olson, Sameroff, Kerr, Lopez, & Wellman, 2005).

Although effortful control has constitutional origins, the development of effortful control is assumed to be part of the socialization process. In this process children can learn to control their emotional and behavioral impulses and to develop more socially acceptable behaviors (Eisenberg, Zhou, Spinrad, Valiente, Fabes, & Liew, 2005b; Kochanska et al., 2000; Kopp, 1982).

1.2.2 Parenting

Parenting dimensions

Research on parenting has been an important part of long-standing efforts to understand socialization processes (Collins et al., 2000). Parents are expected to play an important role in the socialization process by guiding, modeling, and correcting their children's behavior and by selecting and changing environments in which children function.

In this thesis we examine a broad range of observed and parent-reported parenting behavior, grouped into three dimensions: positive control, negative control and responsiveness (or warmth). *Positive control* refers to parental behavior aimed at guiding the child's behavior, for instance by setting limits, by teaching and by providing structure. *Negative control* consists of power-assertive techniques to control the child's behavior, such as verbal and physical punishment and intrusiveness. It should be noted that positive and negative control are not regarded as two ends of one continuum, because the two dimensions comprise distinct behaviors that are not necessarily reversely associated. *Responsiveness* or *warmth* refers to affection, support and acceptance shown toward the child.

Associations between parenting and effortful control

The parenting dimensions just described are expected to be related to self-regulation. Parents who use positive control and guide their children, by encouraging them to work through problems themselves and by rewarding successful self-regulation, may foster the self-regulatory capabilities of their children (Putnam, Spritz, & Stifter, 2002; Strand, 2002). Negative control may undermine the emerging internalization of the child and can therefore be responsible for a lack of self-regulation (Kochanska & Aksan, 1995; Silverman & Ragusa, 1990). On the other hand, children who behave in a self-regulatory way may elicit parental guidance, whereas children who do not comply or show a lack of self-regulation skills can force their parents to enhance their power assertion (Kochanska & Aksan, 1995; Silverman & Ragusa, 1990). Parents who show warm, accepting behavior toward their child may create an emotionally interactive context in which the child feels comfortable and which promotes internalization and thus self-regulation (Kochanska & Aksan, 1995; Parpal & Maccoby, 1985). However, it is also reasonable to assume that when children show good self-regulatory behavior, parents feel positive emotions which they express to their children or share with them (Dix, 1991; Kochanska & Aksan, 1995). In sum, a reciprocal relation is expected between self-regulation and both positive and negative parenting dimensions.

Although the role of parenting in socialization practices has been acknowledged for a long time, little is known about differences in the relation between parenting dimensions and various definitions of self-regulation.

Associations have been found between parenting and effortful control. It has been found that more negative control is related to a lower level of effortful control in preschoolers (Kochanska & Knaack, 2003). Furthermore, more warmth or responsiveness is related to a higher level of effortful control (Kochanska et al., 2000; Olson et al., 2005). Generally, stronger associations were found when the same method (parent report or observation) was used to measure parenting and effortful control (Gartstein & Fagot, 2003; Olson et al., 2005).

Fathering

Generally, most studies on parenting focus on mothers (Park, Belsky, Putnam, & Crnic, 1997). This is partly because fathers are difficult to involve in research (Mangelsdorf, Schoppe, & Buur, 2000). In addition, the majority of child care tasks are still performed by mothers (see Parke, 2002). This may be because the fathering role is less scripted by social convention than the mothering role (Gable, Belsky, & Crnic, 1992). Nowadays however, the pattern of parenting practices among spouses, as well as social convention, is likely to be subject to change because of the growing number of mothers working outside the home. Indeed, fathers today have a greater role in the parenting of children compared to the past (Bailey, 1994; Bonney, Kelley, & Levant, 1999; Pleck, 1997). Examples of important determinants of father involvement are parental attitudes, motivation, skills and personality (Parke, 2002).

Although generally mothers spend more time in child-rearing, fathers spend a greater proportion of the time available for interaction in play activities than do mothers (see Parke, 2002). Play interaction patterns appear to differ between mothers and fathers: fathers are tactile and physical, and mothers tend to be verbal, didactic and toy-mediated in their play (Parke, 2002). Because of the clear differences between the parenting practices of mothers and fathers, one would expect that fathers' parenting makes a contribution to children's development above and beyond mothers' parenting practices. Paternal warmth and negative control have been found to be related to effortful control (Eiden, Edwards, & Leonard, 2004; Gartstein & Fagot, 2003). However, it has not yet been investigated whether fathers make a unique contribution to effortful control, or self-regulation in general (Grolnick & Farkas, 2002).

1.2.3 Coparenting

Coparenting dimensions

The field of family research has been moving beyond studies on the parent-child dyad as a unit of analysis to studies on the broader family context of parenting. This development stems from the family systems perspective, which conceptualizes the family as a system, an organized whole that is greater than the sum of its parts (Cox & Paley, 1997). Individual family members are assumed to reciprocally influence one another. The family member is embedded in the larger family system and can never be fully understood independent of the context of that system (Minuchin, 1985). Furthermore, the family is considered as a hierarchically organized system, comprised of smaller subsystems which are systems in their own right (e.g., the dyadic relationships). The family as a whole has properties that cannot be understood from the combined characteristics of each subsystem.

The coparenting relationship is a family subsystem that has recently received attention. Coparenting can be defined as ‘the quality of coordination between adults in their roles as parents’ (McHale, 1997). The essence of coparenting involves mutual support of parents and commitment to parenting the child (McHale, Kuersten-Hogan, Lauretti, & Rasmussen, 2000). Coparenting varies among dimensions of cooperation and antagonism.

The triadic unit of analysis of coparenting dynamics (Gable et al., 1992) distinguishes the coparental subsystem from the marital subsystem, which exists at a dyadic level (Hayden et al., 1998). Coparenting also follows its own developmental trajectory in representing the partners’ bond as parents (Cowan & McHale, 1996). According to Gable et al. (1992), a major difference between the coparenting and marital relationship is that effective coparenting is motivated by concern for the welfare of the child, whereas a strong marital relationship is motivated by concern for the welfare of the partner, for oneself, or for the two-person marital relationship.

Three observed and three parent-reported coparenting variables are used in this thesis. The observed coparenting variables are: family harmony, hostility-competitiveness, and parenting discrepancies (McHale, 1995). *Family harmony* reflects warmth and supportiveness among family members. *Hostility-competitiveness* reflects parent-centered, negativistic one-upmanship in the coparenting relationship. *Parenting discrepancy* refers to absolute differences in warmth and investment between parents, shown to their child in family-group context. Parents’ behavior in triadic interactions can be different from their behavior in dyadic interactions (McHale et al., 2000). For example, the presence of one parent can have the effect of making the other parent withdraw or, conversely,

become more engaged. Family harmony is considered to be supportive coparenting, whereas hostility-competitiveness and parenting discrepancy are considered to be unsupportive coparenting variables.

The parent-reported coparenting variables are: family integrity, conflict, and disparagement (McHale, 1997; McHale et al., 2000). *Family integrity* reflects active attempts of parents to promote a sense of togetherness among family members. *Disparagement* refers to active disparagement of the partner and undermining his or her authority. *Conflict* measures the frequency of mild and intense interparental disputes expressed in front of the child. The parent-reported variables do not completely correspond to the observed variables. A difference that should be noted is that observed coparenting includes overt behaviors only, whereas parent-reported coparenting also includes covert behaviors (McHale, 1997; McHale et al., 2000). Overt behaviors refer to interactions between parents and child, when all family members are physically present. Covert behaviors reflect parent-to-child communications about the family and about the child's other parent when the other parent is absent (McHale, 1997). Family integrity and disparagement describe both overt and covert behaviors. Covert family integrity for instance refers to speaking positively about the other partner and the family when alone with the child. Covert disparagement is the utterance of negative comments about the coparenting partner to the child in private. Conflict refers to overt interparental disagreement only. Covert communications to the child about the absent coparent contribute to the child's sense of family (McHale, 1997).

Associations between parenting, coparenting and effortful control

The way in which parents behave toward each other in the triad may or may not create a stimulating environment for socialization separately from the dyadic parenting relationship. Coparenting is part of the social arena in which parents model negotiation patterns, through which children learn to suppress minor frustrations, impatience and other negative emotions and to show more socially acceptable behaviors.

Coparenting has been found to represent a unique family sphere, separate from the parenting relationship, since increasing evidence suggests that coparenting makes an independent contribution to child adjustment beyond the influence of parenting (Cowan & McHale, 1996). Studies have found only low to modest associations between coparenting and parenting (Margolin, Gordis, & John, 2001; McHale et al., 2000).

Few studies have investigated the effects of coparenting on child self-regulation. McHale, Kuersten, and Lauretti (1996) found that supportive and unsupportive coparenting processes were related to emotion regulation in

preschoolers. Belsky, Putnam, and Crnic (1996) found that, even after controlling for parenting behavior, observed unsupportive coparenting was a negative predictor of toddlers' observed behavioral inhibition.

1.2.4 Parental personality

Personality dimensions

Personality can be defined as 'the dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to his environment' (Allport, 1937). Adult personality can be considered as one of the outcomes of temperament that arises from our genes and that influences and is influenced by the experience of each individual (Rothbart et al., 2000). Evidence exists that early temperament is linked to personality traits in young adulthood (Caspi & Silva, 1995). Parental personality is likely to be an important determinant of family processes (Belsky & Barends, 2002).

A widely used taxonomy of personality dimensions is the Big Five (John & Srivastava, 1999), also named the five-factor model (Costa & McCrae, 1992). The Big Five factors, labeled as neuroticism, extraversion, openness to experience, agreeableness and conscientiousness, are conceptualized as broadband constructs, each having lower level components (Costa & McCrae, 1992; John & Srivastava, 1999). The dimension *Neuroticism* or emotional instability reflects the general tendency to experience negative affects and to be prone to psychological distress, unrealistic ideas, excessive cravings or urges, and maladaptive coping responses. *Extraversion* refers to the tendency to be sociable, assertive, and talkative. *Openness to experience* reflects an active imagination, aesthetic sensitivity, intellectual curiosity, and independence of judgment. *Agreeableness* refers to the tendency to be altruistic, sympathetic, helpful, trustful and forgiving. *Conscientiousness* indicates the tendency to be planful, organized, persistent, and motivated during the fulfillment of goal-directed task behaviors. Because of the ability to predict various domains of functioning across a range of ages, the Big Five model of personality is regarded as a valuable taxonomy for the study of associations between parental personality and family processes (Belsky & Barends, 2002).

Personality and parenting practices

Parental personality has been proposed as an important source of influence on parenting behavior in Belsky's process model (Belsky, 1984). On the basis of his research on parents who maltreat their children, Belsky (1984) developed a general model for the determinants of parenting. In this model, parenting is

considered to be determined by three factors, namely parental personality or psychological resources, the child's individual characteristics, and contextual sources of stress and support. Each of these factors was assumed to directly influence parenting quality, and through parenting, child development. Parental characteristics have indeed been found to be indirectly associated with externalizing problems through their effect on parenting practices (Deković, Janssens, & Van As, 2003).

Parental personality is assumed to be important for parenting practices, because in order to behave in sensitive and responsive ways, parents need to possess sufficient psychological maturity: they must continue to be nurturant and firm even in response to frustrating child behavior (Belsky & Barends, 2002). Furthermore, parents need to be able to take the perspective of others, control impulses, feel secure in their own lives, and be able to find ways to have their needs met.

An important issue concerning the predictive value of personality has been put forward by Johnson (1997). He stated that having a trait does not mean that one's reactions are identical in every situation. Rather, having a trait implies reacting fairly consistently to similar situations, not to different situations. Belsky and Barends (2002) added that one should be aware that parental personality will thus not necessarily predict a substantial proportion of the variance in parenting behavior that is measured in a single observation. Most likely, personality predicts childrearing behavior that is measured across situations that are similar to each other. Environment does not always yield the same personality measurements; it determines the specific forms in which personality traits are expressed (McCrae et al., 2000). This is consistent with an interactionist perspective, which posits that individual and situational components both influence behavior.

Associations between parental personality, effortful control and parenting

It is likely that effortful control plays a moderating role in the association between parental personality and parenting. Parenting preschoolers with a low level of self-regulation will probably be more demanding than parenting preschoolers with a high level of self-regulation. In this demanding situation, parents probably show more of themselves and, depending on their personality, they will be more or less likely to meet their children's needs. In this demanding situation in particular, parents will be forced to use disciplinary strategies, and they will use strategies that fit their personalities. This line of reasoning fits the theory developed by Caspi and Moffitt (1993), which states that individual differences in personality are most likely to be accentuated during stressful situations. Thus,

interactions are expected between parental personality and effortful control in the prediction of parenting practices.

Main effects have been found between the Big Five personality traits and parenting behaviors. Neuroticism has been found to be associated with more negative control (Belsky, Crnic, & Woodworth, 1995; Clark et al., 2000; Kochanska, Clark, & Goldman, 1997), whereas agreeableness has been found to be associated with less negative control and more warmth and supportive behavior (Belsky et al., 1995; Kochanska et al., 1997). Extraversion was associated with more negative control (Belsky et al., 1995; Clark et al., 2000), but also with more warmth and supportive behavior (Mangelsdorf, Gunnar, Kestenbaum, Lang, & Andreas, 1990). Conscientiousness has been found to be associated with responsiveness. No association has been found between openness and parenting (Clark et al., 2000).

No studies have examined the moderating role of effortful control in the relation between parental personality and parenting. However, Clark et al. (2000) found infants' negative emotionality, another aspect of temperament, to interact with extraversion in mothers in relation to parental power assertion. When children were high in negative emotionality, mothers who were high in extraversion were more power assertive, but when children were low in negative emotionality, mothers' extraversion was not associated with power assertion. Studies of the moderating role of effortful control in the relation between parental personality and parenting are needed.

1.2.5 Externalizing problems

Development of externalizing problems

Externalizing problems refer to problem behaviors that are directed outwards. The externalizing problems that are examined in this thesis reflect a composite score of conduct problems and hyperactivity. Early markers of externalizing problems are important for detecting hard-to-manage children at risk of developing more severe problems. Campbell (1995) reviewed research on behavior problems and she reported that externalizing problems in nonclinical samples tend to increase from age 2 to 3 and to decrease from age 3 to 5. Studies conducted in various Western and non-Western countries show some consensus that roughly 10-15% of preschool children have mild to moderate problems. Some studies have reported higher externalizing problems in boys than in girls, but others have found relatively trivial sex differences. A remarkably high stability over 1 and 2-year periods has been found, which means that children tend to maintain their rank order, even when the overall level of externalizing problems declines (see

Campbell, 1995). Longer-term follow-up studies likewise report relatively high stability from preschool age to elementary school age (Campbell, 1995). Furthermore, there is increasing evidence indicating that behavior problems identified in preschool-aged children are predictive of externalizing problems later in life (Campbell, 1995; Campbell, Shaw, & Gilliom, 2000, Moffitt, 1993). Revealing the antecedents of early externalizing problems is a major concern.

Associations between within-family dynamics, effortful control and externalizing problems

There are several ways in which self-regulation and family processes can contribute to externalizing problems in preschoolers. A low level of effortful control is likely to be a risk factor, a condition that is associated with a higher likelihood of negative outcome (Deković, 1999). Preschoolers with a low level of effortful control are limited in their strategies for coping with impulses and stresses in the environment. They are less effective in shifting attention from immediate impulse gratification to its subsequent consequences and, as a result, are more likely to show impulsive and disruptive behaviors (Olson et al., 2005). On the other hand, a high level of effortful control may enable children to inhibit impulses on their own and to regulate their behavior in response to environmental demands. A high level of effortful control may constitute a protective factor. Protective factors can be seen as those personal, social, and institutional resources that foster competence and promote successful development, and thus decrease the likelihood of engaging in problem behavior (Deković, 1999).

Parents can use strategies to prevent disruptive behaviors by disciplining, supporting and guiding the child (Kochanska et al., 2000). Negative control is likely to be a risk factor for young children, interfering with the internalization of social morals (Kochanska, 1997). Positive control and responsiveness are likely to be protective factors against the development of externalizing problems by affording a safe context of guidance and support for the internalization of social morals. Sex differences may play a role in parental reactions to externalizing behaviors. Because in the Western society overactivity and defiance are considered as more normative for boys than for girls, expressions of externalizing symptoms are more likely to be accepted and encouraged in boys than in girls (Keenan & Shaw, 1997; Zahn-Waxler, 1993).

Through undermining coparenting, parents model negative negotiation patterns in the family context and express inconsistent environmental cues. Undermining coparenting is expected to be a risk factor, heightening the chances of frustration and externalizing problems by causing uncertainty in the child (Cummings & Davies, 1995; McHale & Rasmussen, 1998). Supportive coparenting

promotes a sense of family-level security and may function as a protective factor (McHale & Rasmussen, 1998).

As discussed in paragraph 1.2, temperament can moderate the association between family processes and developmental outcomes. Parenting and coparenting will probably have different developmental outcomes for different preschoolers as a function of their temperament (Belsky, Hsieh, & Crnic, 1998; Gallagher, 2002; Kochanska, 1997). Children with different levels of effortful control are expected to respond differently to socialization practices. In accordance with Kochanska's (1993, 1997) findings, for children with a high level of effortful control, responsiveness will be sufficient to internalize social morals, whereas for children with a low level of effortful control, positive control will be the best parenting behavior to accomplish internalization, yielding stronger effects on these children (Kochanska, 1993, 1997). Negative control is expected to have the greatest effect on children with a low level of effortful control because of an accumulation of risk factors (Gallagher, 2002).

Prior studies have found effortful control to be at least moderately associated with concurrent and later externalizing problems (e.g., Murray & Kochanska, 2002; Olson et al., 2005). Generally, less strong associations have been found between parenting and externalizing problems (e.g., Belsky et al., 1998; Olson et al., 2005). Furthermore, high levels of undermining coparenting and low levels of supportive coparenting have been found to be associated with more externalizing problems in preschoolers (e.g., McHale & Rasmussen, 1998; Schoppe, Mangelsdorf, & Frosch, 2001). Some studies found that relations between family processes and externalizing tended to be stronger for boys than for girls (McConnell & Kerig, 2002; Shaw, Keenan, & Vondra, 1994).

Interaction effects have been found between young children's effortful control and parenting in the prediction of externalizing problems. Maternal negative parenting was found to be related to externalizing problems only in children with a low level of effortful control (Morris et al., 2002; Rubin, Hastings, Chen, Stewart, & McNichol, 1998, Rubin, Burgess, Dwyer, & Hastings, 2003). Other studies did not find support for interactions between negative or positive parenting and effortful control in the prediction of externalizing problems (Gartstein & Fagot, 2003; Olson et al., 2005). To our knowledge, no studies have examined the interaction between coparenting and effortful control in the prediction of externalizing problems.

1.3 Research questions

The main focus of this thesis is the interplay of person and environment. Person x environment interactions can be placed within the holistic, interactionist perspective on human development (Magnusson & Stattin, 1998; Van Aken et al., 2002). The examination of direct associations and interactions between environment (e.g., family processes) and temperament variables may lead to a better understanding of the development of temperament and its association with specific developmental outcomes (Van Aken et al., 2002).

Figure 1.1 shows the comprehensive conceptual model of the present thesis. Parent and child dispositional variables (parental personality and temperamental self-regulation of 3-year-old children) and family processes (maternal and paternal parenting and coparenting) are assumed to be associated with each other and to affect externalizing problems in 3 and 4.5-year-old children. The solid lines represent the associations that are examined in this thesis. The dotted lines represent assumed associations which were not studied.

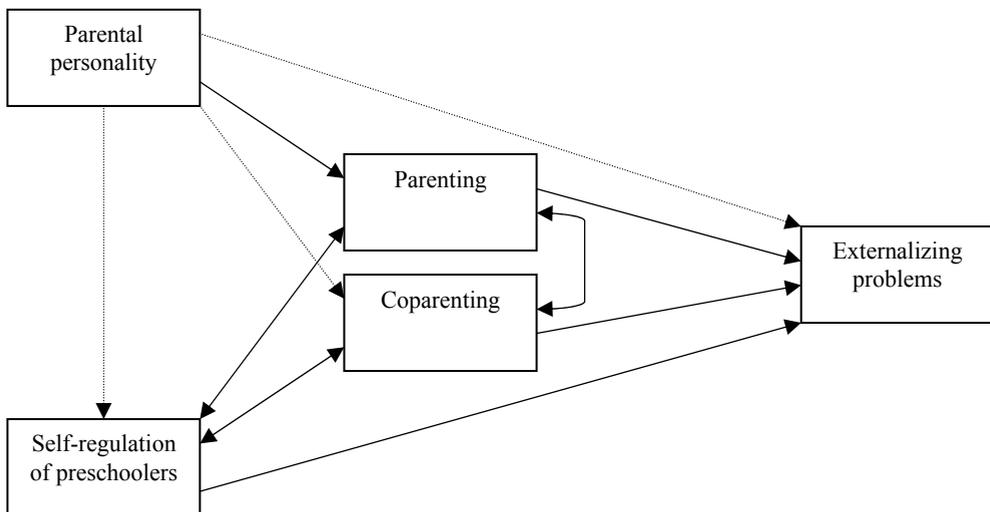


Figure 1.1. Comprehensive model of this thesis

In the present thesis, we pay attention to the interplay of self-regulation and family processes in three different contexts. First, the direct associations between self-regulation and family processes are examined. Self-regulation and family processes are expected to be reciprocally related. Children's self-regulation can

elicit responses from the environment (Dix, 1991). Furthermore, although self-regulation is assumed to have a biological basis, it can be modified by family processes (Rothbart & Derryberry, 1981). A shared genetic background can also underlie the association between self-regulation and family processes (Rutter, Moffitt, & Caspi, 2006). Regarding the concepts of this thesis, our first research question is whether family processes (parenting and coparenting) are associated with self-regulation in preschoolers.

Second, the moderating role of self-regulation in the association between parental personality and parenting practices is investigated. Belsky (1984) emphasized that parenting behavior develops in interaction with parental, child, and contextual characteristics. Clark, Kochanska, and Ready (2000) found that more extraverted mothers were more power-assertive when children were high in negative emotionality, but mothers' extraversion was not associated with power assertion when children were low in negative emotionality. Parental personality may be especially expressed in parenting practices when socializing a 'difficult' child. The second question posed in this thesis is whether preschoolers' self-regulation plays a moderating role in the relation between parental personality and parenting practices.

Third, the interaction between self-regulation and family processes is studied in the prediction of developmental outcomes. A few studies have found interactions between temperament variables and maternal parenting. For example, Kochanska (1997) found that different socialization mechanisms promoted conscience development in young children with different temperamental characteristics: in fearful children, maternal gentle discipline promoted conscience, whereas in fearless children, mother-child positive orientation (secure attachment, maternal responsiveness) promoted conscience. Furthermore, Bates and colleagues (Bates et al., 1998) found that a combination of specific maternal discipline styles and children's temperamental resistance to control was most effective in predicting externalizing problems. These studies affirm the importance of considering person x environment interactions in studying developmental outcomes. Our third question is whether self-regulation and family processes interact in the prediction of externalizing problems in preschoolers.

The research questions were examined in four studies. In order to obtain an overview of the research on parenting and self-regulation, we first conducted a meta-analysis. In this meta-analysis, the strength of the associations found between parenting dimensions and constructs of self-regulation in preschool-aged children was examined. Next, we conducted three empirical studies with data gathered on two-parent families with preschool-aged children.

1.4 Research design

This section discusses the research design that underlies the four studies of this thesis (chapters 2, 3, 4, and 5).

1.4.1 Meta-analysis

A literature search was conducted on all studies published from 1985 through 2004 presenting quantitative data on the association between parenting and self-regulation in preschoolers in English-language peer-reviewed journals. The studies had to relate to concurrent associations between parenting and self-regulation of 2 to 5-year-old children. Only studies with a nonclinical sample that were conducted in a Western society were included. The literature selection yielded 41 studies. Of these studies, we calculated effect sizes of the relation between parenting and self-regulation in preschoolers.

1.4.2 Empirical studies

Participants

Participants were 89 two-parent families with their firstborn children who were 3 years old at the start of the research project (45 boys, 44 girls). Children at the age of three were the focus of study because this is an important developmental period for both child and family. The preschool age is characterized by behavior management challenges, as children move from the dependency of infancy towards growing autonomy (Campbell, 1995). We have already noted that effortful control has developed at the age of three, but there is considerable inter-individual variation in its exercise (Kochanska et al., 2000). Furthermore, father involvement has deepened when compared to infancy, and coherent, stable family patterns have begun to crystallize (McHale et al., 2000). Coparenting and limit-setting increase in importance because the child becomes more independent and willful in the preschool years, compared to the years of infancy.

Only firstborn children were examined in this research project because socialization practices are likely to be affected by experiences with older siblings. For example, coparental child-related disagreements may be more intense with respect to the first child (Lee, Beauregard, & Bax, 2005). In the preschool years siblings have also been found to become a predominant source of conflict, in which the older sibling initiates and models aggressive behaviors most of the time (see Coie & Dodge, 1998). More specific information on the sample is presented in the method sections of the chapters 3, 4, and 5.

Procedure

Families were recruited through daycare centers and preschool playgroups in various parts of the Netherlands. The research project contains two measurement points. At T1, the children were 3 years old. Home observations and daycare center and preschool observations were used to measure family interactions (parenting and coparenting) and children's effortful control when the child was 36 months old (range 35-37). Mothers and fathers also completed questionnaires on parenting, coparenting, effortful control, personality, and externalizing problems. Furthermore, the daycare provider or playgroup teacher completed a questionnaire on externalizing problems of the target child. At T2, the children were 4.5 years old. Mothers, fathers, and the kindergarten teacher filled out a questionnaire on externalizing problems of the child in question.

Methodological considerations

In this thesis, multiple methods and multiple informants were used for the assessment of the constructs. Our decision to use observations or questionnaires to measure each concept of the research project was based on the advantages and disadvantages of the methods according to the literature, as discussed below. For each individual study we selected the measurement method for the constructs as follows: depending on the questions to be studied, we chose either multiple methods to measure a construct (when examining differences in methods; chapter 3) or single methods to measure a construct (in order to reduce the number of variables; chapters 4 and 5). When we selected a single method, we searched for the best method to avoid measurement bias across constructs. Table 1.1 shows a scheme of the measurement of constructs across the studies of this thesis.

Parent report versus observation

There is an ongoing debate about the use of parent reports or observation as accurate measures of child temperament. An advantage of using parent reports for the measurement of child variables is that parents know their child better than anyone else and that they have a large sample of behaviors to draw from in making their ratings (Mangelsdorf et al., 2000). In addition, parent-reported measures are inexpensive and easy to administer. However, criticisms of parent reports have been put forward. The study of Vaughn, Taraldson, Crichton, and Egeland (1981) represented one of the first studies to systematically investigate the validity of parent reports in the measurement of temperament. They found that there was a lack of agreement between mother and observer ratings of infant temperament. Furthermore, they found maternal characteristics to be associated with parent-reported temperament, whereas mothers' behavior with their infants was not

associated with parent-reported temperament. Because of these findings, Vaughn et al. (1981) raised concerns about the validity of parent reports, suggesting that they may be an assessment of maternal characteristics as well as of maternal perceptions of temperament. Bates (1980) also proposed that parent reports contained both an objective component (actual child behavior) and a subjective component (parental characteristics). The study of Vaughn et al. (1981) was the subject of numerous commentaries. Two important commentaries were presented by Seifer (2002) and Rothbart and Hwang (2002).

Seifer (2002) suggested two decades later that the issues raised by Vaughn et al. (1981) about the validity of parent reports remained critical concerns. Other researchers also found weak-to-modest correlations between parent reports and observation of temperament, typically in the .20-.40 range (see Seifer, Sameroff, Barrett, & Krafchuk, 1994, Seifer, 2002). Seifer et al. (1994) give as possible explanations for this poor convergence that parents may be biased about the behavior of their own children, that parents may not have enough experience with a broad range of children to place their own children on the continuum of normative temperamental behavior, or that measurement instruments (parent reports or observation techniques) may be flawed. Rothbart and Hwang (2002) reported that evidence over time had not supported the idea that parent reports are invalid perceptions. Rothbart and Bates (1998) concluded in a review that parent reports of temperament have established a fair degree of objective validity. They also posited that parent-report measures have contributed to substantial empirical advances, such as our current understanding of the structure of temperament in relation to the Big Five. They considered that the validity of other assessment approaches, such as observer ratings, could also be questioned. Another interpretation of the associations between parental characteristics and parent-reported temperament is that the findings may reflect genetic inheritance of infants from their biological mothers (Diener, Goldstein, & Mangelsdorf, 1995).

The issue of measurement by means of parent reports versus observation is also an important topic in the literature on family processes (Kochanska, Kuczynski, & Radke-Yarrow, 1989). Some researchers have failed to find an association between parent-reported and observed parenting (Bornstein, Cote, & Venuti, 2001; Cote & Bornstein, 2000), whereas others found some degree of association (Deković et al., 1991; Kochanska, Kuczynski, & Radke-Yarrow, 1989; Slade, Belsky, Aber, & Phelps; 1999). Mixed results have been found for parent-reported and observed coparenting (McHale et al., 2000; Stright & Bales, 2003). The same concerns are raised as with reports of child temperament, namely that parental characteristics influence the reporting of parents' socialization practices (Kerig, 2001). However, a difficulty in comparing parent-reported and observed

parenting behavior is that in most cases they have not corresponded in conceptual terms (Bornstein, Cote, & Venuti, 2001). This might be more of an issue than with child temperament, which may be more straightforward and delineated. Parent-reported and observed family processes measure different aspects of behavior, and each therefore has its own advantages. Whereas parent reports are useful for measuring parental attitudes or perceptions of family functioning, observations are useful for measuring more dynamic aspects of behavior (Kerig, 2001).

More consensus exists about the method of measuring children's behavior problems and parental personality. Parent and teacher reports are the most widely used methods to assess behavioral problems (Mangelsdorf et al., 2000). Observations are not often used to measure problem behavior. Parents and teachers have a strong advantage over even well-trained observers of child behavior because they know more about the child, which increases the accuracy of their judgments (Mangelsdorf et al., 2000). Including teachers yields information about different contexts of the child's behavior and lessens effects of perceptions or personality traits of informants. For the measurement of parental personality, self-report is the most commonly used measurement method. Personality is difficult to observe because reactions are not identical in every situation (Johnson, 1997). Parents know themselves best and draw on a wide range of behaviors in different situations in making their ratings.

Interparental agreement and parent-observer agreement

Agreement between mothers and fathers concerning children's temperament has been found to be generally higher than agreement between parents (predominantly mothers) and observers (Mangelsdorf et al., 2000). Interparental agreement may be a result of objectively perceivable infant characteristics, but it may also be inflated as a result of parents' discussions about the child's behavior (Bates, 1980). Interparental agreement and parent-observer agreement of child temperament is considerably higher at the toddler-preschool age than during the infancy period (Mangelsdorf et al., 2000). Results of a number of investigations revealed that observer-parent convergence in ratings was higher if the context was clearly specified in both assessments. The magnitude of parent-observer associations increased when multiple observations of child behavior were obtained and aggregated (Mangelsdorf, 1992; Seifer et al., 1994). In addition, interparental agreement and parent-observer agreement tend to be higher on more overt dimensions of child behavior, and lower on more subtle dimensions. Because externalizing problems are fairly overt, informants are more likely to agree on these problems than on the more covert aspects of temperament (Mangelsdorf et al., 2000). In general, because of the often problematic correspondence between

different judges, we have to be aware of who the informant is when interpreting information about child behavior (see Seifer, 2002).

Table 1.1

The assessment of concepts in this thesis

Concept	Measured variables	Method	Instrument	Measurement point	Informant	Chapter
Child self-regulation	Effortful control	Preschool/daycare center observation	Effortful Control Battery (Kochanska et al., 2000)	3 years	Observer	3, 4, 5
		Questionnaire	CBQ (Rothbart et al., 2001)	3 years	Mothers, fathers	3
Maternal and paternal parenting	Positive control, Negative control, Warmth	Home observation	CFRS (McHale, 1995)	3 years	Observer	3, 4, 5
	Positive control, Negative control, Responsiveness	Questionnaire	PDI (Slater & Power, 1987)	3 years	Mothers, fathers	3
Coparenting	Family harmony, Hostility-competitiveness, Parenting discrepancy	Home observation	CFRS (McHale, 1995)	3 years	Observer	3, 5
	Family integrity, Conflict, Disparagement	Questionnaire	Coparenting Scale (McHale et al., 2000)	3 years	Mothers, fathers	3
Parental personality	Neuroticism, Extraversion, Openness, Agreeableness, Conscientiousness	Questionnaire	NEO-FFI (Costa & McCrae, 1992)	3 years	Mothers, fathers	4
Child externalizing problems	Externalizing problems	Questionnaire	SDQ (Goodman, 1997)	3 years	Mothers, fathers, child care providers/preschool teachers	5
				4.5 years	Mothers, fathers, kindergarten teachers	5

1.5 Outline of the present thesis

In the following chapters, four studies examining the research questions on within-family dynamics and self-regulation in preschoolers are discussed. Chapter 2 describes a meta-analysis of the relation between parenting and self-regulation in preschoolers. This meta-analysis examined whether categories of parenting (positive control, negative control, and responsiveness) are related to preschoolers' self-regulation. In addition, it investigated whether various conceptualizations of self-regulations (compliance, inhibition, and emotion regulation) are differently related to parenting. Chapters 3, 4 and 5 comprise empirical studies. Chapter 3 concerns a study of the associations between parenting, coparenting, and effortful control in 3-year-old children. More specifically, this study examined whether coparenting contributes to effortful control, over and above maternal and paternal parenting. The analyses were conducted with both parent reports and observations of effortful control and family processes. Chapter 4 presents a study on the moderating role of observed effortful control of 3-year-old children in the relation between self-reported parental personality and observed parenting. Chapter 5 focuses on interactions between child characteristics (observed effortful control and sex) and observed family processes (parenting and coparenting) in the prediction of parent and teacher-reported externalizing problems. These relations were examined concurrently, when the child was 3 years old, and longitudinally at 4.5 years. Finally, in chapter 6, we discuss on the basis of the findings of the four studies the research questions described in the current chapter.

A. Karreman - Within-Family Dynamics and Self-Regulation in Preschoolers

Chapter 2

Parenting and Self-Regulation in Preschoolers: A Meta-Analysis

Karreman, A., Van Tuijl, C., Van Aken, M. A. G., & Deković, M. (in press). Parenting and self-regulation in preschoolers: A meta-analysis. *Infant and Child Development*.

A meta-analysis of 41 studies was conducted to examine the strength of the relation between parenting (positive control, negative control and responsiveness) and self-regulation in preschoolers. Results revealed significant associations between both types of parental control and self-regulation, with effect sizes being small in magnitude. There was no significant association between self-regulation and responsiveness. The strength of the association between parenting and self-regulation varied with different conceptualizations of self-regulation; positive and negative control were associated with child compliance, but not with inhibition and emotion regulation.

2.1 Introduction

Self-regulation, or the ability to manage levels of arousal and irritability (Rothbart & Derryberry, 1981), has received much attention in research on young children. It has been shown to be an important predictor of internalization of social rules and moral standards (Eisenberg, 2000; Kochanska, 1997, 2002; Kochanska, Aksan, & Koenig, 1995; Kochanska, Coy, & Murray, 2001; Krueger, Caspi, Moffitt, White, & Stouthamer-Loeber, 1996; White et al., 1994). Although self-regulation is considered to have a temperamental basis, most researchers posit an interplay with social experience, especially with parental socialization practices (Casey & Fuller, 1994; Eisenberg et al., 2005; Grolnick & Farkas, 2002; Kochanska, Murray, & Harlan, 2000; Kopp, 1982). Many studies have revealed associations between self-regulation and parenting behaviors (see Eisenberg, Smith, Sadovsky, & Spinrad, 2004; Grolnick & Farkas, 2002; McCabe, Cunnington, & Brooks-Gunn, 2004). According to narrative reviews, these associations are relatively weak (Crockenberg & Litman, 1990; Maccoby & Martin, 1983; Rothbaum & Crockenberg, 1995). A quantitative meta-approach to examining the associations between parenting and self-regulation in young children is, however, still lacking. In addition, few studies have investigated the relation between parenting behaviors and different conceptualizations of self-regulation. The field of self-regulation research is complex and there are numerous definitions and conceptualizations of self-regulation in circulation (see also Kochanska et al., 2000). A quantitative analysis of studies examining the relation between parenting and self-regulation in young children is therefore needed. The present meta-analysis is intended to shed light on the links between parenting and self-regulation in preschoolers. It addresses the following research questions: (a) Are three categories of parenting (positive control, negative control and responsiveness) related to self-regulation in preschoolers? (b) Are various conceptualizations of self-regulation (compliance, inhibition and emotion regulation) differently related to parenting?

2.1.1 Self-regulation

The development of self-regulation is described in Kopp's (1982) model. The central idea is that as children grow older, the move from externally to internally regulated behavior takes place, accompanied by the maturation of attention and in response to parental socialization (Calkins et al., 1998; Kochanska et al., 2001; Rothbart & Bates, 1998). According to Kopp's model, between 12 and 18 months of age, children become capable of control, which encompasses

awareness of social demands and the ability to comply with parental requests (Kochanska et al., 2001; Kopp, 1982; Kuczynski & Kochanska, 1995). By following parental directives, children become increasingly aware of the expectations and demands of the social environment, which leads to internalization of societal values and norms (Abe & Izard, 1999; Kagan, 1984; Kopp, 1982; Maccoby & Martin, 1983). By 24 months, children have developed self-control, which includes the ability to inhibit behavior and to regulate behavior even when parents are absent. At 36 months, children begin to be capable of self-regulation, or behavior that is totally modulated by the child and that meets changing situational demands.

Various categories of self-regulation can be distinguished. *Compliance* is a prototypic form of early self-regulation that reflects the ability of children to initiate, cease, or modulate their behavior in response to parental requests (Kochanska et al., 2001; Kopp, 1982). Compliance is mostly measured by the actions of the child in response to a request made by a parent or researcher. *Inhibition* reflects self-control, or the delay or inhibition of behavior in the absence of external monitors (Kopp, 1982). Inhibition can be defined as a continuum of possible initial behavioral reactions to unfamiliar objects or challenging social situations (Kochanska, 1991; Stevenson-Hinde, 1989). In young children, it is usually marked by a child's latency to approach unfamiliar objects or a stranger, latency to speak to an unfamiliar adult, and time spent near or away from the mother (Kagan, 1989; Rubin, Burgess, & Hastings, 2002). Delay of gratification also belongs to the category of inhibition. Asking a young child to postpone immediate gratification because of future consequences can be considered as a challenging situation, in which behavioral inhibition is required (Mauro & Harris, 2000; Mischel, 1974). *Emotion regulation* refers to processes that serve to manage emotional arousal and support adaptive responses (Calkins et al., 1998; Eisenberg & Fabes, 1998; Thompson, 1991). Emotion regulation is often operationalized as behavioral strategies in frustrating or fear-eliciting situations, for example as self-comforting, help-seeking, and distraction behaviors. These strategies may assist the child in managing early temperament-driven responses in situations where control of negative emotions may be necessary (Calkins et al., 1998; Stifter & Braungart, 1995). *Effortful control* is a type of mature self-regulation, which includes the ability to suppress a dominant response in order to perform a subdominant response (Kochanska et al., 2000; Rothbart, 1989; Rothbart & Bates, 1998). The categories of self-regulation all refer to the modulation of behavior and/or emotions, but they differ in the degree of internalization required (e.g., inhibition requires more internalization than compliance), the kind of modulation (e.g., compliance and inhibition refer to the suppression of behavior, emotion regulation and effortful

control to the suppression and initiation of behavior), and the primary domains of behaviors/emotions that are modulated (e.g., compliance focuses primarily on the behavioral domain, emotion regulation on the affective domain).

In the present meta-analysis of the relation between parenting and self-regulation in preschoolers, three categories of self-regulation, namely compliance, inhibition and emotion regulation, are examined. Effortful control is not studied in this meta-analysis because of the limited number of studies examining parenting and effortful control in preschoolers (Eiden, Edwards, & Leonard, 2004; Gartstein & Fagot, 2003; Kochanska et al., 2000). The focus of the meta-analysis is on 2-5-year-old children, because the preschool years are assumed to be the period in which self-regulation develops (Kopp, 1982) and in which parents play a fundamental role in enhancing self-regulation skills by formulating and managing rules and giving a young child space to internalize these rules (Grolnick & Farkas, 2002). In school-aged children, the requirements, responsibilities and social experiences at school may affect the relation between parenting and self-regulation (Grolnick, Kurowski, & Gurland, 1999).

2.1.2 Parenting and self-regulation

The majority of studies on parenting and self-regulation have focused on parental control. Some studies have found that parental controlling behavior has positive implications for children's self-regulation (Belsky, Rha, & Park, 2000; Eiden, Leonard, & Morrissey, 2001; Feldman & Klein, 2003; Feldman, Greenbaum, & Yirmiya, 1999), whereas other studies have found parental controlling behavior to be associated with self-regulation difficulties (Kochanska & Knaack, 2003; Silverman & Ragusa, 1990; Stansbury & Zimmermann, 1999). These inconsistent findings might be explained by the distinction between positive and negative control (Braungart-Rieker, Garwood, & Stifter, 1997; Grusec & Kuczynski, 1980; Westerman, 1990). Positive control refers to parental behavior that is directive, and characterized by specific attempts at teaching, encouraging and guiding the child's behavior. It is expected to be positively associated with self-regulation. Negative control, which has often been conceptualized as power-assertive control, consists of behaviors such as anger, harshness, and criticism, and excessive or intrusive control characterized in particular by physical intervention, and is expected to be negatively associated with self-regulation. Positive and negative control can be antecedents or consequences of the child's self-regulated behavior. For instance, parents who use positive controlling strategies and guide their children by encouraging them to work through problems themselves and by rewarding successful self-regulation may foster the self-regulatory capabilities of their

children (Putnam, Spritz, & Stifter, 2002; Strand, 2002). Negative controlling strategies may undermine the emerging internalization of the child and can therefore be responsible for a lack of self-regulation (Kochanska & Aksan, 1995; Silverman & Ragusa, 1990). On the other hand, children who behave in a self-regulatory way elicit and benefit from parental guidance, whereas children who do not comply or show a lack of self-regulation skills can force their parents to enhance their power assertion (Kochanska & Aksan, 1995; Silverman & Ragusa, 1990).

Other parenting behaviors examined in relation to self-regulation can be categorized as responsiveness, consisting of behaviors such as positive affect, accepting and responsive behavior, sensitivity, processes of coordination, and warm, synchronous or contingent behavior between parent and child (Kochanska & Aksan, 1995; Lindsey, Mize, & Pettit, 1997; Maccoby & Martin, 1983). All these behaviors contain an affective component between parent and child. Parents who coordinate their behavior with the child's actions, as well as showing warm, accepting behavior toward their child, may create an emotionally interactive context in which the child feels comfortable and which promotes internalization and thus self-regulation (Kochanska & Aksan, 1995; Pappalardo & Maccoby, 1985). However, it is also reasonable to assume that when children show good self-regulatory behavior, parents feel positive emotions, which they express to their child or share with him or her (Dix, 1991; Kochanska & Aksan, 1995). Research has indeed shown a positive correlation between responsiveness and self-regulation (Belsky et al., 2000; Kochanska & Kuczynski, 1991; Shamir-Essakow, Ungerer, Rapee, & Safier, 2004; Smith & Walden, 2001).

2.1.3 Parenting and categories of self-regulation

Instead of examining self-regulation in general, the various categories of self-regulation can be examined in more detail. Studies of parenting and self-regulation seem to reveal differences in the relation between parenting and the various categories of self-regulation. Positive control and responsiveness are typically associated with higher levels of compliance in children (Braungart-Rieker et al., 1997; Crockenberg & Litman, 1990; Kochanska & Aksan, 1995; Smith, Calkins, Keane, Anastopoulos, & Shelton, 2004; Strand, 2002), although some studies also report a negative relation between positive controlling behaviors and compliance (Crockenberg & Litman, 1990; Donovan, Leavitt, & Walsh, 2000; Laible & Thompson, 2000; Rescorla & Fechnay, 1996). Negative control has consistently been found to be associated with lower levels of compliance (Braungart-Rieker et al., 1997; Campbell, Pierce, March, & Ewing, 1991;

Crockenberg & Litman, 1990; Donovan et al., 2000; Kochanska & Aksan, 1995; Koenig, Cicchetti, & Rogosch, 2000; Smith et al., 2004).

With regard to inhibition, the results are more mixed. Research has shown positive control to be associated with a higher level of self-control or inhibition (Belsky et al., 2000; Feldman et al., 1999; Silverman & Ragusa, 1990). On the other hand, it has also been found that when parents use more positive control strategies, children show a lower level of inhibition and delay of gratification (Chen et al., 1998; Putnam et al., 2002; Silverman & Ragusa, 1990). In the same way, some researchers have found higher levels of negative, intrusive control to be associated with less behavioral inhibition or delay in preschoolers (Loukas, Fitzgerald, & Zucker, & von Eye, 2001; Park, Belsky, Putnam, & Crnic, 1997; Rubin et al., 2002; Silverman & Ragusa, 1990), while others have found negative control to be positively related to inhibition (Belsky et al., 2000; Chen et al., 1998). Responsiveness appeared to be related to greater inhibition (Belsky et al., 2000; Shamir-Essakow et al., 2004). However, mothers' acceptance has also been found to be negatively related to inhibition (Chen et al., 1998; Kienbaum, Volland, & Ulich, 2001). Some researchers did not find a relation between parenting and inhibition (Park et al., 1997; Shamir-Essakow et al., 2004).

The correlations found between emotion regulation and the parenting categories are mostly found to be in the same direction. In general, positive control has been found to be related to more adaptive emotion regulation by preschoolers and less unadaptive emotion regulation (Feldman & Klein, 2003; Putnam et al., 2002). Parental negative control was found to be related to less adaptive emotion regulation by preschoolers, such as the use of fewer cognitive and distraction strategies for handling emotion-arousing situations (Calkins et al., 1998; Stansbury & Zimmermann, 1999) and more unadaptive strategies, e.g., instrumental strategies such as orienting on a forbidden object (Calkins et al., 1998; Smith & Walden, 2001; Stansbury & Zimmermann, 1999). However, many researchers failed to find a relation between negative control and unadaptive strategies, such as aggression or venting (Calkins et al., 1998; Garner & Spears, 2000; Smith & Walden, 2001). Responsiveness has been found to be associated with better emotion regulation, but again a non-significant correlation was found with some emotion regulation strategies too (Smith & Walden, 2001; Raver 1996). To conclude, the relation between the different parenting categories and self-regulation seemed to be most consistent for compliance, whereas for inhibition the correlation sometimes proved to be in the opposite direction, and for emotion regulation the association was often non-significant.

2.1.4 Present study

In the current study, meta-analysis is used to examine the relation between parenting and self-regulation in preschoolers. The following hypotheses are addressed: (a) three dimensions of parenting (positive control, negative control and responsiveness) are expected to be related to self-regulation in preschoolers. Positive control and responsiveness are expected to be associated with higher levels of self-regulation, whereas negative control is expected to be associated with lower levels of self-regulation; (b) the various categories of self-regulation (compliance, inhibition and emotion regulation) are expected to be differently related to parenting. Compliance is expected to show the strongest correlation with the parenting categories, while inhibition and emotion regulation are expected to have a weaker correlation. Exploratively, moderator analyses are conducted to examine potential conditions under which the relation between parenting categories and self-regulation may vary in magnitude.

2.2 Method

2.2.1 Selection of studies

A literature search was conducted for all studies published from 1985 through 2004, presenting quantitative data on the association between parenting and self-regulation in preschoolers. The primary search method involved a computerized literature search of the databases PsychINFO and ERIC (Educational Resources Information Center). Combinations of several keywords related to self-regulation were used in the searches, namely self-regulation, emotion regulation, behavior(al) regulation, affect regulation, effortful control, inhibitory control, inhibition, self-control, delay-of-gratification, compliance, attention(al) regulation, and keywords related to parenting, namely parenting, parental behavior, mother(s), mothering, father(s), fathering, maternal, paternal, parent-child, child-rearing. Furthermore, the ancestry method was used, in which reference lists in articles were checked for relevant studies. Finally, issues of journals reporting relevant studies were hand searched to retrieve additional articles.

2.2.2 Inclusion criteria

To be included in the meta-analysis, a study had to meet seven criteria. First, the study had to have been published in an English-language peer-reviewed

journal. The use of peer-reviewed journals provides some degree of quality control in the selection of studies (Joiner & Wagner, 1995; Lovejoy, Graczyk, O'Hare, & Neuman, 2000). Second, the study had to use measures of parenting and self-regulation. We included studies only if at least four other studies measured the same category of parenting or self-regulation (defined later in this section). Because we are interested in parents' naturally occurring parenting behaviors, the studies that involved experimental manipulation of parenting behavior (i.e., the parent receives an instruction from the researcher to behave in a certain way) were excluded from this meta-analysis. Third, only studies covering children from the age of 2 to 5 (with a range of 6 months) were included. Fourth, the study had to be conducted in a western culture (United States, Europe, Australia and New Zealand). Non-western societies were excluded because of assumed cross-cultural differences between western and non-western cultures in both parenting and self-regulation (Chen et al., 1998; Friedlmeier & Trommsdorff, 1999). Fifth, the studies had to entail concurrent parent-child associations, in which the time between measurement of parenting and self-regulation was at most six months. In case of longitudinal designs, an *a priori* decision was made to include only the data from the first measurement moment. Sixth, the studies had to provide sufficient information to allow computation of effect sizes, or effect sizes had to be available after contacting authors. Finally, studies with clinical (e.g., ADHD, Conduct Disorder) or other special samples of children (e.g., children with intellectual disabilities, chronically ill children) or parents (e.g., alcoholic parents, depressive parents) were not included. Extreme groups may yield different effects than would be found in community samples (Lytton, 1990; Rothbaum & Weisz, 1994). However, studies in which the researchers did not use official clinical instruments to select children or parents were included in the meta-analysis. Where studies relied on the same data, the first study that yielded sufficient information to calculate an effect size was included in the meta-analysis. The literature selection yielded 41 studies.

2.2.3 Information extracted

Information on the following variables was extracted from the studies: publication year, number of participating families, ethnic status (> 90% white, > 90% black, ethnic diverse), mean age of child, gender of parent, gender of child, parenting category, assessment method parenting (questionnaire/interview, home observation, laboratory observation), self-regulation category, assessment method self-regulation (questionnaire, home/preschool/daycare center observation, laboratory observation). These variables were selected because they were

theoretically considered as potential moderating variables in the relation between parenting and self-regulation.

Studies were coded by a team of four coders. To assess reliability, a random 32% of the articles ($n = 13$) was double coded. Inter-rater agreement was 92% for number of participants and age of child. Cohen's kappa was .87 for self-regulation category, .82 for parenting category, .77 for assessment method parenting and .72 for ethnicity. For all other coding, Cohen's kappa was 1.00.

Categories of parenting

Parenting variables were grouped into three categories: positive control, negative control and responsiveness. Selection of these categories was partly based on theoretical considerations, partly on commonly measured variables in the relation between parenting and self-regulation. The category positive control includes behaviors like limit-setting, directiveness with low to moderate power assertion, guidance and instructional behavior (Crockenberg & Litman, 1990; Kochanska & Aksan, 1995; Pappalardo & Maccoby, 1985; Putnam et al., 2002). Negative control includes behaviors such as power-assertive control, negativity, coercive behaviors, hostility, utterance of criticism, intrusiveness, over-control and over-involvement (Crockenberg & Litman, 1990; Kochanska & Aksan, 1995; Pappalardo & Maccoby, 1985, Silverman & Ragusa, 1990). Responsiveness consists of behaviors like warmth, acceptance, approval, affection, synchrony between parent and child, contingent behavior, responsiveness, sensitivity and involvement (Kochanska & Aksan, 1995; Kochanska & Kuczynski, 1991; Lindsey et al., 1997; Pappalardo & Maccoby, 1985; Putnam et al., 2002; Shamir-Essakow et al., 2004; Smith & Walden, 2001).

Categories of self-regulation

Three categories of self-regulation concepts were selected, namely compliance, inhibition and emotion regulation. The category compliance includes behaviors representing the ability to comply with requests in the presence of an external monitor, such as a parent or researcher (Kochanska et al., 2001; Kopp, 1982). The category inhibition includes behaviors like self-control and behavioral inhibition, i.e., the suppression of behavior in reaction to unfamiliar objects or challenging social situations (Kochanska, 1991; Stevenson-Hinde, 1989) and the ability to delay gratification. Emotion regulation encompasses all behavior strategies dealing with the regulation of internal feelings or emotions (Calkins et al., 1998; Eisenberg & Fabes, 1998; Stifter & Braungart, 1995; Thompson, 1991). Some of these behavioral strategies, such as venting and aggression, are seen as less adequate and we consequently recoded them, in order to obtain a score for

more adequate ways of handling emotional states. Thus, a higher score on emotion regulation refers to a use of strategies by the child to handle his or her emotions better.

2.2.4 Calculation and analysis of effect sizes

All reported statistics were converted to a Pearson's product-moment correlation by means of macros developed by Lipsey and Wilson (2001), which are used in combination with the SPSS program. When investigators reported a non-significant effect without sufficient information to compute an effect size, an effect size of .00 was assigned. This is a commonly used but conservative strategy, yielding an underestimate of true effect sizes (Durlak & Lipsey, 1991).

Many studies examined different constructs of parenting within the same study. A first step in the calculation of effect sizes was to average effect sizes assessing the same parenting category within each study using Fisher's r to z transformation. In this way we computed different effect sizes for the categories of parenting. For example, for a study in which effect sizes were available for the relation between synchrony and inhibition as well as that between warmth and inhibition, both assessing associations between responsiveness and inhibition, the effect sizes were averaged to calculate one effect size for the relation between responsiveness and inhibition. The same procedure was followed for studies measuring more than one category of self-regulation. Calculating effect sizes per category proved to be the best procedure for dealing with differences in number of correlations reported within studies without losing information on different categories (Durlak & Lipsey, 1991).

Second, a mean weighted effect size was calculated across studies for associations between self-regulation and the three categories of parenting. To weight the study effect sizes for their sample size, each effect size was weighted by the inverse of the sampling variance (Lipsey & Wilson, 2001). The composite mean weighted effect sizes were tested to determine whether they differed significantly from zero. A homogeneity analysis was conducted to test the assumption that all effect sizes estimated the same population value. A significant homogeneity statistic (Q) indicates heterogeneity of effect sizes, which means that the variation in effect sizes within the analysis has some other source than sampling error. To ascertain whether publication bias exists, a file drawer analysis was conducted. Rosenthal's (1991, 1995) fail-safe N was calculated, indicating the number of unpublished studies with non-significant results that is needed to bring the mean effect size to non-significance (Durlak & Lipsey, 1991).

In the case of heterogeneity of the mean effect size for the relation between a parenting category and self-regulation, a moderator search was conducted to examine whether the relation between these parenting categories and self-regulation differed for the various categories of self-regulation, using the random effects model (Lipsey & Wilson, 2001). A categorical model testing procedure, analogous to an analysis of variance (ANOVA), was used, with effect sizes grouped according to the categories of self-regulation. These groups were compared to examine whether they differ significantly from each other. Categorical model testing yields two homogeneity estimates, a within-groups Q (Q_w) and a between-groups Q (Q_b). A non-significant Q_w indicates that the effect sizes within each category of self-regulation are homogeneous. A significant Q_b indicates that the subgroups of effect sizes are significantly different from one another. We statistically qualified the relation between a parenting category and self-regulation to differ for the various categories of self-regulation if Q_b was significant and if the Q_w s were not significant. The exploratory moderator analyses were conducted in the same way for categorical variables. For each moderator analysis, effect sizes were calculated per moderator category. For continuous variables multiple regression analyses were conducted to examine whether these variables can significantly predict effect sizes between parenting categories and self-regulation.

2.3 Results

The 41 studies included in the meta-analysis reported data on 3799 families, ranging from $N = 16$ to 1085. The average sample size was $N = 93$. The mean age of the children included in the meta-analysis was 38.35 months, ranging from 24.00 to 66.20 months. Thirty-three studies examined only mothers' parenting, whereas 8 studies examined both mothers' and fathers' parenting. For details of study characteristics, see Appendix A.

2.3.1 Association between parenting and self-regulation

Results of the analyses for the associations between three categories of parenting and self-regulation are shown in Table 2.1. For positive control, the weighted mean effect size was .08 ($p < .05$) and for negative control -.14 ($p < .01$). In general, the more positive or the less negative control parents exhibit in interaction with their child, the more self-regulated behavior children show. Responsiveness did not appear to be significantly related to self-regulation: the weighted mean effect size was .03.

Homogeneity statistics were significant for positive control ($Q = 54.09, p < .01$) and negative control ($Q = 107.47, p < .001$), indicating significant variation in effect sizes. No significant homogeneity statistic was found for responsiveness ($Q = 25.41, ns$). Moderator analyses were therefore conducted only for positive control and negative control to examine whether these parenting categories were differently related to various categories of self-regulation.

Table 2.1

Effect Sizes for the Association between Three Parenting Categories and Self-Regulation

	<i>n</i>	<i>k</i>	Weighted mean <i>r</i>	95% CI	<i>Q</i>	Fail-safe <i>N</i>
Positive control	1910	31	.08*	.01/.14	54.09**	31
Negative control	2290	26	-.14**	-.22/-.05	107.47***	61
Responsiveness	2248	19	.03	-.02/.07	25.41	-9

Note. *n* = the number of the families; *k* = the number of the studies; CI = confidence interval; *Q* = homogeneity estimate.

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

2.3.2 Association between parenting and categories of self-regulation

Table 2.2 presents the results of the analyses examining the differences in the associations between three categories of self-regulation, namely compliance, inhibition and emotion regulation, and positive and negative control respectively. Only for negative control were significant between-groups homogeneity ($Q_b = 9.90, p < .01$) and non-significant within-groups homogeneities found, indicating that the association between negative control and self-regulation differs between the various categories of self-regulation. Compliance appeared to be significantly negatively related to negative control ($r = -.24, p < .001$), whereas inhibition and emotion regulation did not appear to be related to negative control. The same pattern appeared for positive control, with compliance being significantly related to positive control ($r = .11, p < .01$) and inhibition and emotion regulation not being significantly related to positive control. However, for positive control the differences between the categories of self-regulation did not reach significance.

There was a wide range of sample sizes in the studies. To check whether the results were not biased by disproportional sample sizes, analyses were rerun after

screening out studies with a sample size of less than 20 (Rescorla & Fechnay, 1996; Strand, 2002; Westerman, 1990) and after recoding the largest sample size ($N = 1085$; NICHD, 1998) to the next largest sample size ($N = 215$; Eiden et al., 2001), a procedure which has been called Windsorizing (Lipsey & Wilson, 2001). The relation between the parenting categories and self-regulation as well as between the parenting categories and the various conceptualizations of self-regulation proved to be similar; the effect sizes did not deviate by more than one decimal point from the effect sizes that were found in the total sample of studies.

Table 2.2
ANOVA for Studies Examining the Association between Parenting and Self-Regulation: Categories of Self-Regulation as a Moderator

Concept	Positive control					Negative control				
	<i>k</i>	<i>r</i>	95% CI	Q_b	Q_w	<i>k</i>	<i>r</i>	95% CI	Q_b	Q_w
				1.63					9.90**	
Compliance	20	.11*	.03/.19		18.68	15	-.24***	-.35/-.14		16.52
Inhibition	7	.00	-.13/.14		5.11	7	-.03	-.18/.12		3.33
Emotion regulation	4	.07	-.10/.24		.93	4	.07	-.13/.28		1.32

Note. *k* = the number of the studies; CI = confidence interval; Q_b = between-groups homogeneity estimate; Q_w = within-groups homogeneity estimate.

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

Additionally, to check whether the lack of results for inhibition, emotion regulation and responsiveness were not caused by the fact that we combined subcategories, we tested more fine-grained categories. For inhibition, we split up the main category into two categories, namely self-control, or the capacity to inhibit a prepotent response to an event and to stop an ongoing event (Barkley, 1997; Kopp, 1982) and social inhibition, or the reaction of a child to unfamiliar social situations (Kagan, 1989; Rubin et al., 2002). The two subcategories of inhibition did not yield different associations with the two types of parental control, which supports the notion that subcategories can be reduced to the main category of inhibition (Rothbart, 1988). We also examined whether subcategories of emotion regulation strategies, namely support-seeking (including orienting to mother, orienting to other), self-comforting (including self-soothing) and distraction (including instrumental regulation, cognitive regulation, avoidance, venting) yielded different results. Again, no differences were found between the categories

of emotion regulation. We also tried to examine more specific aspects of responsiveness, for example synchrony and warmth, but more studies on responsiveness and self-regulation are needed to make it possible to compare subcategories of responsiveness.

2.3.3 Exploratory analyses: moderating variables in the association between parenting and self-regulation

Besides examining the category of self-regulation, we exploratively examined whether there are other variables that moderate the relation between positive control and self-regulation and negative control and self-regulation. By means of categorical moderator analyses, the moderating effects of the following categorical variables were examined: ethnic status, gender of parent, gender of child, assessment method of self-regulation, assessment method of parenting. No significant between-groups effects were found, indicating no moderator effects. However, the data provided by the studies were limited; the number of studies examining some subgroups of moderators was very low, which made it difficult to conduct an appropriate moderator analysis. For example, very few studies examined fathers (positive control: $k = 6$; negative control: $k = 4$), or reported results separately for boys (positive control: $k = 3$; negative control: $k = 6$) and girls (positive control: $k = 1$; negative control: $k = 2$). Low SES samples (positive control: $k = 2$; negative control: $k = 3$) and black samples (positive control: $k = 0$; negative control: $k = 2$) were also rarely studied. Furthermore, the majority of studies used laboratory observations to measure self-regulation (positive control: $k = 24$; negative control: $k = 19$), compared to home or preschool observations (positive control: $k = 5$; negative control: $k = 5$) or questionnaires (positive control: $k = 0$; negative control: $k = 2$). The same is the case for the measurement of parenting, where most studies used laboratory observations (positive control: $k = 26$; negative control: $k = 19$) and very few studies used home observations (positive control: $k = 3$; negative control: $k = 3$), or questionnaires or interviews (positive control: $k = 2$; negative control: $k = 4$). The lack of significant results could therefore be due to insufficient sample size.

Multiple regression analyses were conducted to examine whether the continuous moderator variables year of publication and mean age of children in the samples can predict effect sizes for the relation between parenting categories and self-regulation. Year of publication was found to significantly predict the relation between positive control and self-regulation ($\beta = .37, p < .05$) and negative control and self-regulation ($\beta = .38, p < .05$). Studies published more recently found

greater effect sizes. Child mean age did not appear to significantly moderate the associations between the parenting categories and self-regulation.

2.4 Discussion

The aim of the present meta-analysis was to examine the relation between parenting and self-regulation in preschoolers. First, the strength of the association between three categories of parenting, namely positive control, negative control and responsiveness, and self-regulation in preschoolers was studied. Results revealed that the way in which parents discipline their child is related to children's self-regulatory capacities. Positive control, defined as limit-setting activities with mild to moderate power-assertion and the use of clear guidance and instructions while directing the child, was found to be positively associated with self-regulated behaviors ($r = .08$). Conversely, more negative types of control (i.e., power-assertive limit-setting activities and coercive behaviors, critical comments or even hostility) were negatively associated with self-regulated behavior ($r = -.14$). Responsiveness, consisting of behaviors such as positive affect, acceptance, sensitivity, processes of coordination, and warm, synchronous or contingent behavior between parent and child, was not significantly related to self-regulation. Second, we examined whether various categories of self-regulation (compliance, inhibition, and emotion regulation) were differently related to parenting. Because no significant variation in effect sizes was found for responsiveness, moderator analyses were conducted only for the relation between positive and negative control respectively and self-regulation. For negative control, different associations were found among categories of self-regulation. Compliance was negatively related to negative control, whereas no significant correlation was found for inhibition and emotion regulation. Compliance was also found to be positively related to positive control, whereas inhibition and emotion regulation did not appear to be related to positive control, but these differences did not reach significance.

The relation between positive and negative control, and self-regulation corresponds with expectations based on research findings (Casey & Fuller, 1994; Eisenberg et al., 2004; Grolnick & Farkas, 2002; McCabe et al., 2004). When parents use more guiding, teaching and encouragement to control their child, children are more likely to have higher levels of self-regulation. The use of more power-assertive controlling strategies is associated with a lower level of self-regulation in children. Effect sizes between parenting control categories and self-regulation were found to be small, which has also been reported in narrative reviews on parenting and self-regulation (Crockenberg & Litman, 1990; Maccoby

& Martin, 1983; Rothbaum & Crockenberg, 1995). Although responsiveness was also expected to be associated with self-regulation (Belsky et al., 2000; Kochanska & Aksan, 1995; Putnam et al., 2002; Shamir-Essakow et al., 2004; Smith & Walden, 2001), it did not appear to be an important parenting dimension in relation to self-regulatory capabilities in children. Responsiveness may be more important for the development of aspects of individualism, like well-being, self-concept, etc. (Amato & Fowler, 2002; Brophy & Dunn, 2002). However, the findings should be interpreted with caution. Many studies focused on community samples, in which there was little variability in responsiveness between parents. It is possible that most parents provided good enough parenting in this domain, which makes a significant correlation between responsiveness and self-regulation less likely to appear. Parents in general tend to create a warm, emotional climate, but some children might elicit more parental control than other children (Kochanska & Aksan, 1995; Putnam et al., 2002; Pappalardo & Maccoby, 1985; Silverman & Ragusa, 1990).

Compliance was more strongly related to parental control than the self-regulation categories inhibition and emotion regulation, which was in accordance with our expectations. Because compliance can be considered as a precursor of internalized self-regulation (Kopp, 1982; Kochanska et al., 2001), it is possible that children who do not (yet) possess the ability to behave in a self-regulated way, have to be corrected more often and with more power assertion than children who are better able to regulate their behavior. In other words, more control by the parents can be demanded or elicited by the child (Kochanska & Aksan, 1995; Silverman & Ragusa, 1990). A possible explanation for the lack of association between parental control, and inhibition and emotion regulation is that these two categories of self-regulation can be considered as constructs that reflect more internalized self-regulation, that is, in the absence of external monitoring, for which parental behavioral control strategies are less appropriate (Calkins et al., 1998; Kochanska et al., 2001; Kopp, 1982; Stifter & Braungart, 1995). Children may have developed a general level of ability to control behavior or may have developed an individual repertoire of strategies for regulating their emotions, and are therefore not much affected by parental behavioral control strategies.

In addition to investigating whether the relation between parenting and self-regulation differed for the various categories, we exploratively examined whether there were other conditions under which the association between parenting and self-regulation varied in magnitude: ethnic status, gender of parent, gender of child, assessment method of self-regulation and assessment method of parenting. The analyses shed light on a limitation of the parenting and self-regulation studies conducted so far, namely that there is an extreme lack of variation in many study

characteristics. For instance, the majority of studies investigated white, high to middle SES samples, included only mothers in the study, did not examine boys and girls separately and used laboratory observations to measure parenting and self-regulation. This limitation could probably explain the non-significant results that were found for the moderator variables. More variation in study characteristics is needed in order to make adequate moderator analyses possible. Two continuous moderator variables were examined, namely the mean age of the children and the year of publication. The mean age of the children did not moderate the relations between the two types of control and self-regulation. According to Kopp's developmental model, however, an age effect could be expected, with a stronger relation between parenting and self-regulation in the case of younger children, who do not yet have internalized self-regulation, than of older children, who have internalized self-regulation (Kopp, 1982; Kochanska et al., 2001). This would correspond with the stronger effect that was found for compliance, the precursor of self-regulation, than for inhibition and emotion regulation, categories that reflect more internalized self-regulation. However, compliance was also measured when children had grown older and because older children are assumed to have developed compliance, it is perhaps not a good indicator to measure individual differences in self-regulation at later age. The year of publication turned out to be a significant moderator variable. Studies published more recently found greater effect sizes for the relation between positive control and self-regulation and negative control and self-regulation. An explanation could be that recent studies have focused more on aspects of parenting that have been shown to be related to self-regulation than earlier studies.

Several limitations of the present meta-analysis should be noted. First, this meta-analysis included cross-sectional data only. Consequently, no conclusion about the direction of effects in the relation between parenting and self-regulation could be drawn. Many authors interpreted their results as suggesting that parenting influences self-regulation (Baumrind, 1989; Crockenberg & Litman, 1990; Holden & West, 1989; Kuczynski, 1984; Patterson & Bank, 1989; Silverman & Ragusa, 1990). However, parenting might be a consequence of rather than a contributor to children's ability to self-regulate (Campbell et al., 1991; Kochanska & Aksan, 1995; Silverman & Ragusa, 1990). Reciprocal relations in time between parenting and self-regulation are also a possible mechanism (Bell & Chapman, 1986; Scaramella & Leve, 2004). Inclusion of longitudinal studies is needed to determine the direction of the relation.

Second, we categorized both parenting and self-regulation behaviors in three groups. Some of these categories could be differentiated further into more fine-grained categories. We tested for effects within categories of responsiveness,

emotion regulation and inhibition, but the number of studies that examined the smaller categories was very low, which could have affected the results. More studies on parenting and self-regulation are needed to examine this.

Third, because of the lack in variation in study characteristics, adequate moderator analyses to examine the effects of third variables on the relation between parenting and self-regulation were not possible. Future empirical studies should focus more on fathers, black or ethnically diverse groups and child gender differences and should use various methods for the assessment of both parenting and self-regulation. More variation in study characteristics would contribute to a further understanding of potential moderator effects in the relation between parenting and self-regulation in preschoolers. Moreover, more studies are needed of effortful control to make it possible to study this category of self-regulation.

To summarize, the present meta-analysis is the first quantitative review of the relation between parenting and self-regulation in preschoolers. It provides an overview of the research that has been carried out over the past twenty years. Parental use of positive controlling strategies, such as directiveness with low to moderate power assertion, guidance and instruction, was positively related to self-regulation. Conversely, negative controlling strategies, such as power-assertive limit-setting activities and coercive behaviors, were negatively associated with self-regulation. Effect sizes proved to be small in magnitude. There was no significant association between responsiveness and self-regulation. The strength of the relation between parenting and self-regulation varied among different categories of self-regulation, with stronger associations found for child compliance than for inhibition and emotion regulation.

Appendix A

The characteristics of studies in the meta-analytic sample is given in Table A1.

Table A1

Characteristics of studies in the meta-analytic sample

Study	N	Ethnic		Parent	Child	Child	Self-regulation		Parenting	
		status	SES	gender	gender	age	Concept	Measure	Concept	Measure
Abe and Izard (1999)	46	W	M/H	Mothers	Mix	65.50	C	Lab	PC	Lab
Belsky et al. (2000)	63	W	M/H	Both	Boys	36.50	I	Lab	PC, NC, R	Lab
Braungart-Rieker et al. (1997)	57	W	M/H	Mothers	Mix	30.00	C	Lab	PC, NC	Lab
Calkins et al. (1998)	65	Mix	M/H	Mothers	Both	24.00	C, ER	Lab	PC, NC	Lab
Campbell et al. (1991)	175	-	M/H	Mothers	Both	41.00	C	Lab	NC	Lab
Chen et al. (1998)	82	W	M/H	Mothers	Mix	24.99	I	Lab	PC, NC, R, Q	
Crockenberg and Litman (1990)	94	Mix	M/H	Mothers	Mix	24.50	C	Lab, H	PC, NC, R	Lab, H
Donovan et al. (2000)	57	W	M/H	Mothers	Mix	24.00	C	Lab	PC, NC	Lab
Eiden et al. (2001)	215	W	M/H	Both	Mix	24.00	C	Lab	PC, NC	Lab
Feldman and Klein (2003)	90	W	M/H	Both	Mix	26.40	C, ER	Lab	PC	Lab
Feldman and Sarnat (1986)	47	W	M/H	Mothers	Mix	30.80	C	Lab	PC	Lab
Feldman et al. (1999)	33	W	M/H	Mothers	Mix	24.30	I	Lab	PC	Lab
Garner and Spears (2000)	63	B	L	Mothers	Mix	53.98	ER	H	NC	Q
Gottman and Katz (1989)	56	W	M/H	Mix	Mix	53.50	ER	Lab	R	Lab
Himmelfarb, Hock, and Wenar (1985)	62	-	M/H	Mothers	Mix	47.40	C	H	PC, NC, R	H
Kalpidou, Rothbaum, and Rosen (1998)	44	W	M/H	Mothers	Mix	48.00	C	Lab	NC	Lab

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Table A1 (continued)

Study	N	Ethnic		Parent	Child	Child	Self-regulation		Parenting	
		status	SES	gender	gender	age	Concept	Measure	Concept	Measure
Kienbaum et al. (2001)	77	W	M/H	Mothers	Mix	66.20	I	Q	R	Q
Kochanska and Aksan (1995)	103	Mix	M/H	Mothers	Mix	32.86	C	H, Lab	PC, NC	H, Lab
Kochanska and Kuczynski (1991)	24	-	M/H	Mothers	Mix	65.50	C	Lab	PC, NC	Lab
Koenig et al. (2000)	43	-	L	Mothers	Mix	43.43	C	Lab	PC, NC, R	Lab
Laible and Thompson (2000)	42	Mix	M/H	Mothers	Mix	47.80	C	Lab	PC	Lab
Lecuyer-Maus and Houck (2002)	126	Mix	M/H	Mothers	Mix	24.00	C	Lab	PC, NC	Lab
Lindsey et al. (1997)	35	Mix	M/H	Both	Mix	60.77	C	Lab	PC, R	Lab
Loukas et al. (2001)	208	W	M/H	Both	Boys	48.21	I	Q	NC	Q
Mauro and Harris (2000)	30	W	M/H	Mothers	Mix	51.36	I	Lab	PC, NC, R	Q, Lab
NICHD (1998)	1085	B	M/H	Mothers	Mix	24.00	C	H, Lab	R	Lab
Park et al. (1997)	125	W	M/H	Both	Boys	34.75	I	Lab	NC, R	H
Power, McGrath, Hughes, and Manire (1994)	42	W	M/H	Both	Mix	24.20	C	H	PC	H
Putnam et al. (2002)	58	W	M/H	Mothers	Mix	30.00	I, ER	Lab	PC	Lab
Raver (1996)	47	-	L	Mothers	Mix	24.00	ER	Lab	R	Lab
Rescorla and Fechnay (1996)	18	W	M/H	Mothers	Boys	25.28	C	Lab	PC, R	Lab
Rubin et al. (2002)	104	W	M/H	Mothers	Mix	25.00	I	Lab	NC	Lab
Shamir-Essakow et al. (2004)	70	W	M/H	Mothers	Mix	46.57	I	Q, Lab	PC, R	Q
Shaw et al. (1998)	125	-	M/H	Mothers	Both	24.00	C	L	NC	Lab
Silverman and Ragusa (1990)	41	W	M/H	Mothers	Mix	24.00	C, I	H	PC, NC, R	Q, H
Smith et al. (2004)	153	Mix	M/H	Mothers	Mix	29.50	C	Lab	NC, R	Lab

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Table A1 (*continued*)

Study	N	Ethnic		Parent	Child	Child	Self-regulation		Parenting	
		status	SES	gender	gender	age	Concept	Measure	Concept	Measure
Smith and Walden (2001)	46	B	L	Mothers	Mix	53.50	ER	Q	NC, R	Q
Stansbury and Sigman (2000)	52	W	M/H	Mothers	Mix	46.21	ER	Lab	PC, R	Lab
Stansbury and Zimmermann (1999)	78	W	M/H	Mothers	Mix	47.42	ER	Lab	NC	Lab
Strand (2002)	17	Mix	L	Mothers	Mix	47.75	C	Lab	PC	Lab
Westerman (1990)	16	Mix	M/H	Mothers	Mix	47.25	C	Q, Lab	PC	Lab

Note. W = White; B = Black; Mix = Mixed; M = Middle; H = High; L = Low; C = Compliance; I = Inhibition; ER = Emotion Regulation; H = Home, preschool, daycare center; Q = Questionnaire, interview; PC = Positive Control; NC = Negative Control; R= Responsiveness.

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Chapter 3

Relations between Parenting, Coparenting, and Effortful Control in Preschoolers

Karreman, A., Van Tuijl, C., Van Aken, M.A.G., & Deković, M. (2006). Relations between parenting, coparenting, and effortful control in preschoolers. *Manuscript submitted for publication.*

In this study, the relations between parenting, coparenting, and effortful control in preschoolers were studied. More specifically, we examined whether coparenting contributed to effortful control, additional to the contribution of maternal and paternal parenting. The sample included 89 two-parent families and their firstborn 36-month-old children. Information was obtained by means of parent-report questionnaires and observation. In general, maternal parenting, paternal parenting and coparenting were related to effortful control. Relations were stronger when the same measurement method (observation or parent reports) was used. For both observation and parent reports, coparenting contributed to effortful control over and above maternal and paternal parenting. The results indicate the importance of adding indicators of triadic family processes to the study of parenting and young children's effortful control.

3.1 Introduction

Effortful control, the self-regulatory aspect of temperament, affects young children's behavioral and emotional adjustment in childhood, adolescence, and adulthood (Eisenberg et al., 2001; Eisenberg et al., 2005a; Kochanska & Knaack, 2003; Kochanska, Murray, & Coy, 1997; Rothbart, Ellis, & Posner, 2004). Effortful control can be defined as 'the ability to suppress a dominant response to perform a subdominant response' (Rothbart, 1989; Rothbart & Bates, 1998). Although effortful control is involved in several aspects of functioning, including cognitive, social, emotional, motor, and behavioral functioning, it was found to reflect a highly coherent underlying broad competence (Kochanska, Murray, & Harlan, 2000; Murray & Kochanska, 2002). It can be distinguished from emotion regulation by emphasizing these diverse aspects of functioning, whereas emotion regulation is mainly based on affective aspects. The additional ability of performing a subdominant response requires extra effort, which distinguishes effortful control from other constructs of self-regulation, such as delay-of-gratification and inhibition, which only refer to the suppression of a dominant response. Effortful control starts to develop late in infancy and continues to develop throughout the early years (Rothbart et al., 2004). As the child develops, reactive forms of regulation are supplemented by an increasing capacity for voluntary or effortful forms of control (Rothbart, Posner, & Boylan, 1990), emerging as attentional mechanisms become fully developed (Eisenberg et al., 2004; Posner & Rothbart, 2000; Rothbart, Derryberry, & Posner, 1994; Rothbart, Ellis, Rueda, & Posner, 2003). This study focuses on effortful control of three-year-old children, because at this age most children have developed the capacity to overcome reactive responses, but there is considerable inter-individual variation in the exercise of effortful control (Kochanska et al., 2000).

Although effortful control has constitutional origins, the development of effortful control is part of the socialization process, during which children can learn to control their emotional and behavioral impulses and to show more socially acceptable behaviors (Eisenberg et al., 2005b; Kochanska et al., 2000; Kopp, 1982). Behavior becomes internally, rather than externally, regulated (Kochanska, Coy, & Murray, 2001). Parents play an important role in this process, by guiding, modeling, and correcting their children's behavior.

Several studies have examined the relation between parenting and effortful control in preschoolers (Eiden, Edwards, & Leonard, 2004; Gartstein & Fagot, 2003; Kochanska et al., 2000; Kochanska & Knaack, 2003; Olson, Sameroff, Kerr, Lopez, & Wellman, 2005), and in most of these studies parenting and effortful control were measured by observation, the latter usually by means of the multitask

behavioral battery of Kochanska et al. (1997, 2000). Maternal power assertion, observed during mother-child interactions, has been found to be related to a lower level of effortful control in preschoolers (Kochanska & Knaack, 2003), whereas maternal warmth has been found to be related to a higher level of effortful control (Kochanska et al., 2000). Similar results were found for observed maternal and paternal warmth in a sample of children with non-alcoholic and alcoholic fathers (Eiden et al., 2004). However, if different methods were used to measure parenting and effortful control, such as self-report and observation, the correlation between the two variables was generally weaker. Observed maternal or paternal cognitive guidance was not related to effortful control in 5-year-old children, measured by the Children's Behavior Questionnaire, whereas observed maternal or paternal coercion had a significant, but weak, negative correlation with effortful control (Gartstein & Fagot, 2003). In a study using self-report of maternal parenting, warm, responsive parenting appeared not to be significantly related to effortful control, measured by the Kochanska effortful control battery (Olson et al., 2005), whereas punitive discipline was negatively related to observed effortful control. Olson and colleagues found self-reported responsiveness and punitive discipline to be related to mother-reported effortful control in 3-year-old children, measured by the Children's Behavior Questionnaire. Thus methodology appears to affect the association found between parenting and effortful control.

The present study is designed to overcome a lack of different measurement methods for constructs within one study, by using both observations and parent-report questionnaires for the measurement of parenting and effortful control. Moreover, in contrast to many studies that focus on only one aspect of parenting, in the present study we examine a broad range of parenting behavior grouped into three dimensions, namely positive control, negative control and responsiveness/warmth. Positive control refers to parental behavior aimed to guide the child's behavior, for instance limit setting, teaching and providing structure. Negative control consists of power-assertive techniques to control the child's behavior, such as verbal and physical punishment and intrusiveness. Responsiveness and warmth refer to affective, accepting and responsive behavior shown toward the child. Positive control and responsiveness/warmth are expected to be positively associated with effortful control, whereas negative control is expected to be negatively associated with effortful control. Relations are expected to be stronger when the same measurement method is used for the assessment of parenting and effortful control.

There were only two studies examining paternal parenting and effortful control in preschoolers. Generally, most studies on parenting still focus on mothers (Park, Belsky, Putnam, & Crnic, 1997). Nowadays however fathers have a greater

role in the parenting of children, especially in dual-earner families (Bailey, 1994; Bonney, Kelley, & Levant, 1999; Pleck, 1997). Furthermore, fathers spend a greater proportion of the time available for interaction in play activities than do mothers (Parke, 2002). The studies on preschoolers' effortful control also found relations with paternal parenting (Eiden et al., 2004; Gartstein & Fagot, 2003). Some other researchers have also demonstrated relations between parenting and preschoolers' inhibition for fathers (Belsky, Rha, & Park, 2000; Loukas, Fitzgerald, Zucker, & von Eye, 2001; Park et al., 1997). The results highlight the importance of including paternal parenting in the study of child self-regulation. However, we do not know whether fathers make independent contributions to self-regulation (Grolnick & Farkas, 2002). The current study examined the prediction of effortful control by paternal parenting behaviors above contributions of maternal parenting behaviors.

Various family subsystems, and relations among them, are important to study with respect to a child's development (Margolin, Gordis, & John, 2001; Minuchin, 1974). Coparenting provides additional information about family functioning beyond the perspective on the parenting relationship and shows the coordination between adults in their roles as parents (McHale, 1997; McHale, Kuersten-Hogan, Lauretti, & Rasmussen, 2000). Clearly, one could hypothesize that coparenting is part of the social arena in which parents model and children learn to suppress minor frustrations, impatience and other negative emotions and to show more socially acceptable behaviors. Coparenting includes supportive and hostile-competitive dimensions, as well as discrepancies between partners in parent-child warmth and investment (Schoppe, Mangelsdorf, & Frosch, 2001; McHale, 1997). Coparenting can be distinguished from marital behavior, as it focuses on the (triadic) family system instead of the dyadic system (Gable, Belsky, & Crnic, 1992). Coparenting represents the partners' bond as parents (Cowan & McHale, 1996) and encompasses support and coordination between parents in raising their child when the partner is absent (McHale, 1997). Studies have found only low to modest relations between coparenting and parenting (Margolin et al., 2001; McHale et al., 2000; Stright & Neitzel, 2003), and thus coparenting should be included in studies of preschoolers' effortful control, to achieve a more complete picture of relations between family subsystems and the mechanisms by which they are related to effortful control.

Yet few studies have investigated the effects of coparenting on child temperament or self-regulation more specifically. Stright and Bales (2003) found supportive and unsupportive coparenting not to be related to difficult temperament in preschoolers, whereas McHale, Kuersten and Lauretti (1996) found that coparenting processes were related to emotion regulation in 30-month-old children

performing frustration-tolerance tasks. For instance, interparental cooperation and positive feelings among family members were found to account for variations in children's positive affect during performance of these tasks, even after accounting for maternal warmth. Observed verbal sparring between parents appeared to be related to more frustration in children. Belsky, Putnam, and Crnic (1996) found that, even after controlling for parenting behavior, observed coparenting was a predictor of toddlers' observed behavioral inhibition.

We studied three observed versus three parent-reported coparenting variables, which resemble each other, namely family harmony versus integrity, hostility-competitiveness versus conflict, and parenting discrepancies versus disparagement. Family harmony or integrity in the coparenting relationship is expected to create an environment conducive to socialization, by enhancing children's emotional health and social competence (Feinberg, 2002). On the other hand, hostility-competitiveness or conflict between parents, as well as parenting discrepancies or disparagement, can be expected to reduce the socialization process by affecting the child's feelings of home as a safe haven and to withhold the child from modeling how to adaptively display emotions and behavior. Thus, the way in which parents behave toward each other in the triad may or may not create a stimulating environment for socialization practices, and is expected to be associated with children's effortful control apart from the directly guiding relationship by a parent toward the child. We therefore expect coparenting to contribute to child effortful control above contributions of parenting.

The current study is the first European study that investigates the relation between parenting, coparenting and effortful control in 3-year-old children. The strengths of this study are the inclusion of paternal parenting in addition to maternal parenting, and the use of observations and parent reports for the assessment of parenting, coparenting and preschoolers' effortful control. We hypothesize that parental positive control and responsiveness or warmth will be positively associated with effortful control, and that parental negative control will be negatively associated with effortful control. We expect paternal parenting to contribute to effortful control above maternal parenting. Furthermore, coparental family warmth and integrity are hypothesized to be positively related to effortful control, whereas coparental hostility-competitiveness, conflict, parenting discrepancies and disparagement are hypothesized to be negatively related to effortful control. We expect relations to be stronger when the same measurement method is used for the assessment of respectively parenting and coparenting, and effortful control. Lastly, we hypothesize that coparenting contributes to effortful control over and above maternal and paternal parenting.

3.2 Method

3.2.2 Participants

Participants were 89 two-parent families raising firstborn preschool-aged children. Children (45 boys, 44 girls) were 36 months old (range 35-37) at the time of the study. Mothers' mean age was 34.5 years ($SD = 4.2$, range 21-46); fathers' mean age was 36.5 years ($SD = 4.7$, range 22-50). All mothers and fathers were the biological parents of the children. In 56 percent of the families, the child had a younger sibling. On average, couples had been together for 10.3 years ($SD = 4.7$, range 3-22). Ninety-eight percent of the fathers and 99 percent of the mothers had Dutch nationality. The majority of the parents were highly educated (23.9% of the mothers and 30.7% of the fathers had a university education) and worked outside the home.

3.2.3 Procedure

This study was part of a research project on family dynamics and child adjustment. Families were recruited through daycare centers and preschool playgroups in different parts of the Netherlands. After agreeing to participate, daycare centers and playgroups distributed letters among parents of preschool aged children, asking them to participate in the study. Parents who indicated willingness to participate were selected if the parents lived together and if the target firstborn child was nearly 3 years old. In the selected families, home observations and daycare center and preschool playgroup observations were used to measure family interaction and child effortful control. After the home visit, the parents were each asked to complete a questionnaire.

Parenting and coparenting were measured during the home visits on the basis of (a) dyadic mother-child play sessions, (b) dyadic father-child play sessions and (c) triadic play sessions. Each session consisted of unstructured and structured play tasks, most of them followed by a clean-up period. For dyadic sessions, the tasks involved solving a matching game, engaging in a building game, and reading a picture book. The tasks were similar for both parents. For the triadic session, the tasks involved building pathways with dominoes, pretending to have a family meal, and constructing a marble track. All sessions were videotaped and afterwards independently coded by a trained coding team.

At daycare centers and preschool playgroups, children were observed while they performed twelve tasks measuring effortful control. The session took place in a room where no other children were present. All tasks were presented as games

and after each task the child was rewarded, regardless of his/her performance. The children received two gifts, which were part of the observation battery. The tasks were independently coded by a team of trained coders.

3.2.4 Observational measures

Coparenting and Family Ratings System

Parenting and coparenting interactions were measured, using the videotaped records, with the Coparenting and Family Rating System (CFRS; McHale, 1995). Rating scales were translated into Dutch and pilot tested. Parenting scales measure behaviors during dyadic mother-child and father-child interactions. Coparenting scales capture behaviors that can only be perceived within the context of the family group, as well as differences in parental behavior in the family-group context, i.e., parental discrepancies (McHale et al., 2000).

Six dimensions of parenting behavior were measured using a 7-point Likert-type scale and seven dimensions of coparenting behavior were measured using a 5-point scale. For all three tasks, we rated behavior in 3 minutes of family interaction: the first, middle, and last minute of each task. Thus, for each dyadic and triadic session, nine ratings per dimension were created. This way of combining a micro and macro system of coding allowed us to benefit from both methods, limiting overlap between scales and observing interactions in more detail. The six parenting scales were Warmth, Investment, Limit-Setting, Sensitivity, Provision of Structure, and Negativity (McHale, 1995; McHale et al., 2000). *Warmth* measures the frequency and intensity of affect shown toward the child by a parent, such as encouragement, smiles, laughter, and physical affection. *Investment* assesses the extent to which a parent is involved and concerned that the child behaves or performs tasks correctly. *Limit-Setting* measures the extent to which a parent prevents the child from wandering away from assigned tasks. *Sensitivity* refers to the timing and quality of a parent's interventions with the child. *Provision of Structure* refers to the extent to which a parent structures the task and provides information about it, and *Negativity* measures the degree to which a parent criticizes, ignores the child, and is overtly annoyed during the session.

Principal components analysis with varimax rotation yielded three parenting factors: Positive Control, Negative Control, and Warmth. For both mothers and fathers, the three-factor solution accounted for 74% of the variance in parenting scores. Factors were created by averaging the scale scores. *Positive Control* consisted of the scales Provision of Structure, Limit-Setting, and Sensitivity. *Negative Control* contained Negativity and Investment. The positive loading of Investment on Negative Control can be explained by the aspect of over-

involvement: when a parent is continually present, which was rated in most mothers and fathers, it may be intrusive for the child. The factor *Warmth* consisted of the scale Warmth. All factor loadings were above .51 for mothers and .64 for fathers.

Coparenting scales were Competition, Cooperation, Verbal Sparring, Coparental Warmth, Child-Centeredness, Parent-Child Warmth, and Parent-Child Investment (McHale, 1995; McHale et al., 2000). *Competition* refers to the frequency with which parents actively interfere with or sabotage one another's initiatives and interventions with the child. *Cooperation* reflects the extent to which parents collaborate, actively support one another's interventions with the child, and respect each other as parents. *Verbal Sparring* refers to the frequency and degree of parents' sarcastic-to-hostile remarks to one another. *Child-Centeredness* indicates which family member's ideas and initiations predominantly shape the direction of family play, those of the parents (low scores) or those of the child (high scores). *Coparental Warmth* assesses the level of positive affect parents show to one another, such as joking, warm glances, and verbal and physical affection. *Parent-Child Warmth* and *Investment* reflect the same behaviors as parenting Warmth but measured in triadic context. A total *Family Warmth* score was created by summing standardized values for Coparental Warmth, Mother-Child Warmth, and Father-Child Warmth during triadic interactions. *Parenting discrepancy* scores were constructed by calculating the absolute value of the difference in Warmth and Investment shown by the parents to the child in triadic context. The discrepancy scores were used as an indication of differences in behavior between the two parents in a family-group context. Following McHale (1995), three standardized coparenting scores were created: *Family Harmony* (Family Warmth and Cooperation), *Hostility-Competitiveness* (Verbal Sparring, Competition and Child-Centeredness (reversed)), and *Parenting Discrepancies* (discrepancies Warmth and discrepancies Investment).

All parenting and coparenting scales were coded by two coders. Interrater reliability for each pair of coders was based on approximately 15% of all cases. Gamma was used as a measure of reliability, because it is a statistic that controls for chance agreement, but is more appropriate for ordinal data than Kappa (Liebetrau, 1983; Schoppe et al., 2001). Mean Gamma for maternal parenting was .88, ranging from .81 (Sensitivity) to .96 (Limit-Setting) and mean Gamma for paternal parenting was .88, ranging from .79 (Sensitivity) to .92 (Limit-Setting). The mean Gamma for coparenting was .87, ranging from .78 (Warmth father-child) to .97 (Child-Centeredness).

Effortful Control Battery

Eleven tasks of the Effortful Control Battery (Kochanska et al., 2000) were translated and adapted into Dutch and pilot tested for the observation of effortful control. On the basis of the one-factor solution of a principal components analysis of the total sample of this study, five tasks with factor loadings lower than .30 were deleted.

Tasks included were Snack Delay, Wrapped Gift, Gift-in-Bag, Tongue task, Dinky Toys, and Shapes. The task *Snack Delay* measures the ability of a child to keep his or her hands on a mat on the table in front of a piece of candy under a transparent cup until the researcher lifts and eventually rings a bell as permission to pick up the candy. The snack delay score consists of the ability to delay (four trials, with delays from 10 to 30 s). Scores range from 1 (child eats candy before the bell is lifted) to 7 (child waits until bell rings). Points are added, with a maximum of 2 points, for the child's ability to keep his or her hands on the mat. *Wrapped Gift* assesses the child's ability not to peek when the gift is wrapped behind his or her back and, secondly, not to touch the gift until the researcher returns from getting a bow for the gift. Scores include latency to peeking during wrapping (60 s if never) and latency to touching, lifting, or opening the gift during the absence of the researcher (180 s if never). Additional scores indicate the extent of peeking during wrapping, ranging from 1 (turns around and continues to peek) to 5 (does not peek), and the extent of touching when the researcher has left the room (1 = opens gift to 4 = does not touch). *Gift-in-Bag* is a similar task in which the child has to wait while the researcher leaves the room for 3 minutes to get a bow for the gift. Besides latency, scores reflect behavior involving the bag (1 = pulls gift from bag to 5 = does not touch bag) and the time the child remains sitting in his or her seat (1 = less than 30 s to 4 = more than 120 s). The *Tongue task* measures whether the child can keep candy in his or her mouth without chewing it. The score reflects average latency to chewing or swallowing the candy across four trials with delays of 10 to 30 s. *Dinky Toys* refers to a task which captures the child's ability to keep his or her hands on his or her knees while telling the researcher what toy he or she finds most attractive to play with from a box filled with toys. Scores reflect the ability not to remove hands from knees (0 = grabs toy to 5 = keeps hands on knees). The *Shapes task* assesses the ability to focus on a subdominant rather than dominant picture. After practicing names of fruit and the meaning of 'big' versus 'little', the child is asked to point to the image of a small fruit that is embedded in a dominant picture of a large fruit. Scores for three trials were averaged, resulting in a score ranging from 1 (all answers incorrect) to 3 (all answers correct).

The tasks were coded from videotapes by five coders. Reliability, based on approximately 15% of all cases, was computed for all pairs of coders. Following

Kochanska et al. (2000), Cohen's Kappa was calculated for all aspects of each task using categorical scores (Wouters, 1988) and percentage agreement was calculated for aspects of the tasks using latency scores. The mean Kappa was .79 with mean Kappa per task ranging from .63 (Gift-in-Bag) to .85 (Wrapped Gift). The mean percentage agreement was 92% (scores coded within 1 s), ranging per task from 88% (Wrapped Gift) to 99% (Tongue task). A composite score for *Effortful Control* was calculated by averaging standardized task scores.

3.2.5 Parent reports

Parenting Dimensions Inventory

The self-administered 25 items questionnaire Parenting Dimensions Inventory (PDI; Slater & Power, 1987; Dutch translation version for 3- to 5-year-olds Gerrits, Groenendaal, Deković, & Noom, 1997) was used to measure maternal and paternal parenting behavior. A series of descriptive childrearing statements (e.g., "I encourage my child to be curious, to explore, and to question things") were scored on a 6-point scale, ranging from 1 (*not at all descriptive of me*) to 6 (*highly descriptive of me*). These statements measured Nurturance (6 items), Responsiveness (4 items), and Consistency (4 items). *Nurturance* refers to the emotional climate of the parent-child relationship, including warmth, support and affection. *Responsiveness* reflects the openness of the parent to consider the feelings and desires of the child when making decisions and *Consistency* refers to the predictability of the parent. Furthermore, parents had to indicate on a 5-point scale how likely it is that they would use seven different types of discipline practices for six situations (1 *very unlikely* to 5 *very likely*). An example of a situation is: "Your child becomes sassy while you discipline him or her". The types of discipline practices measured were Material/Social Consequences, Physical Punishment, Reasoning, Ignoring, Sending away, Raising Voice, Refraining from Privileges, and Reminding. The responses were summed across six situations.

The mean Alpha of mothers' scales was .74, ranging from .54 (Responsiveness) to .87 (Refraining from Privileges) and the mean Alpha for fathers' scales was .70, ranging from .50 (Material/Social Consequences) to .84 (Refraining from Privileges and Reminding). Principal components analysis yielded three factors for mothers and fathers, accounting for 56% and 57% of the variance in scores, respectively. Factors were constructed by averaging the scores on the scales. The first factor, *Positive Control*, consisted of the discipline practices Material/Social Consequences, Reasoning, and Reminding. The second factor, *Negative Control*, contained the discipline practices Ignoring, Physical Punishment, Sending away, and Refraining from Privileges. The third factor,

Responsiveness, consisted of the scales Nurturance, Responsiveness, and Consistency. Factor loadings were higher than .52 for fathers and .40 for mothers, with the exception of .29 for maternal Ignoring. The discipline practice Raising Voice did not load on any of the factors, and for this reason the scale was deleted.

Coparenting Scale

The revised Coparenting Scale (McHale, 1997; McHale et al., 2000) is a 16-item questionnaire assessing the parenting role parents share with their partner. Overt coparenting (displayed by the parent in the family triad) as well as covert coparenting behavior (displayed by the parent when alone with the child) is measured. Questionnaire items were translated into Dutch and were tested in a pilot study. Parents were asked to think back over the last few weeks and to indicate how frequently, on average, they engaged in each of the behaviors described. Parents rated each item on a 7-point scale, ranging from 1 (*absolutely never*) to 7 (*almost constantly; 1-2 times an hour*). An example of an item is: “How often in a typical week (when all three of you are together) do you say to your partner “You need to handle this” when your child is acting up?”

Constructs measured by the Coparenting Scale are Family Integrity, Disparagement, Conflict, and Reprimand. *Family Integrity* reflects active attempts of parents at promoting a sense of togetherness among family members. *Disparagement* refers to active disparagement of the partner and undermining his or her authority. *Conflict* refers to overt interparental disagreement. *Reprimand* reflects limit setting by both parents. Construct scores were calculated by averaging the item scores. Scores of fathers and mothers were averaged to include behaviors of both parents in the coparenting scores. The alpha values of the constructs were .83 for Family integrity, .63 for Disparagement, .69 for Conflict, and .44 for Reprimand. Because of the low alpha for Reprimand, this construct was not included in the analyses.

Children's Behavior Questionnaire

The Inhibitory Control scale of the Children's Behavior Questionnaire (CBQ; Rothbart, Ahadi, Hershey, & Fisher, 2001) was used to measure paternal and maternal report of their child's effortful control (see also Kochanska et al., 2000). The CBQ is a widely used questionnaire for the measurement of temperament in 3- to 7-year-old children. We used an adapted and translated Dutch version (Majdandžić & Van den Boom, in press). The scale Inhibitory Control consists of the mean score of thirteen items scored using a 7-point Likert scale, ranging from 1 (*extremely untrue of your child*) to 7 (*extremely true of your child*) on the basis of the child's characteristics over the last 6 months. An example of an

item is: 'Can easily stop an activity when she/he is told no'. Parents were also provided with an option indicating '*non applicable*', when the child had not been observed in the situation described.

Cronbach's alpha was .74 for mothers and .76 for fathers. Because of the high correlation between mothers' and fathers' report of their child's effortful control ($r = .60, p < .001$), these scores were averaged to create a score for *Effortful Control* reported by parents.

3.3 Results

3.3.1 Descriptive analyses

The sample size varied for parent reports ($N = 72$) and observational data ($N = 89$). The families of the parent reports, which were subject to missing data, did not significantly differ from the families of the observational data on any of the following variables: educational level ($\chi^2 = 1.04, ns$ mothers; $\chi^2 = 1.50, ns$ fathers), nationality ($\chi^2 = .18, ns$ mothers, $\chi^2 = 1.66, ns$ fathers), marital status ($\chi^2 = .07, ns$), gender of child ($\chi^2 = .19, ns$), one versus more children ($\chi^2 = .07, ns$), age of parents ($t(158) = .63, ns$ mothers, $t(158) = .40, ns$ fathers), hours work outside the home ($t(151) = .57, ns$ mothers, $t(153) = .04, ns$ fathers), amount of years together with partner ($t(158) = .78, ns$).

Means and standard deviations of the variables are presented in Table 3.1. Fathers and mothers differed in their parenting regarding observed positive control and observed negative control. Fathers showed more negative control, $t(87) = 2.34, p < .05$, and less positive control than mothers, $t(87) = -4.72, p < .001$. No significant differences between fathers and mothers were found for other parenting variables.

Intercorrelations among parenting, coparenting, and effortful control variables are shown in Table 2. Significant relations were found between paternal and maternal parenting, with the exception of parent-reported positive control. Observed effortful control was positively related to effortful control reported by both parents. Observed parenting and coparenting variables were not significantly related to parent-reported parenting and coparenting variables respectively.

The most significant relations between parenting and coparenting were found when the same method was used to assess the variables. More observed paternal positive control was related to less observed parenting discrepancy. More observed paternal or maternal negative control was related to more observed hostility-competitiveness between parents. Observed maternal or paternal warmth

was positively related to observed family harmony, whereas observed paternal warmth was negatively related to observed parenting discrepancy. Mother-reported responsiveness was related to all parent-reported coparenting variables. More mother-reported responsiveness was related to more family integrity and to less conflict and disparagement in the family. Father-reported positive control was related to more family integrity and father-reported positive control and responsiveness were related to less conflict between parents, whereas mother-reported negative control was related to less family integrity and more disparagement. Observed maternal negative control was related to more reported coparenting conflict and disparagement. Parent-reported parenting was not related to observed coparenting.

Table 3.1
Means and Standard Deviations of All Variables

	<i>M</i>	<i>SD</i>
Observed effortful control	-.01	.54
Parent-reported effortful control	4.52	.72
Observed parenting		
Positive control mothers	5.51	.51
Positive control fathers	5.23	.69
Negative control mothers	2.95	.36
Negative control fathers	3.05	.40
Warmth mothers	4.31	.63
Warmth fathers	4.42	.57
Parent-reported parenting		
Positive control mothers	4.12	.51
Positive control fathers	4.10	.49
Negative control mothers	1.84	.49
Negative control fathers	1.93	.49
Responsiveness mothers	4.91	.52
Responsiveness fathers	4.78	.48
Observed coparenting		
Family harmony	.00	.85
Hostility-competitiveness	.00	.67
Parenting discrepancy	.00	.84
Parent-reported coparenting		
Family integrity	5.40	.42
Conflict	3.09	.78
Disparagement	2.29	.59

Table 3.2
Correlations Among All Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
1. Effortful control (O)	-																			
2. Effortful control (P)	.35**	-																		
3. Positive control M (O)	.31**	.19	-																	
4. Positive control F (O)	.19	.20	.59***	-																
5. Negative control M (O)	-.21	-.28*	-.01	.03	-															
6. Negative control F (O)	-.35**	-.26*	.04	.11	.37***	-														
7. Warmth M (O)	.02	-.01	.05	-.02	.04	-.02	-													
8. Warmth F (O)	.04	.16	-.13	.04	-.24*	-.14	.32**	-												
9. Positive control M (P)	.07	.22	.06	.01	-.18	-.09	-.05	-.06	-											
10. Positive control F (P)	-.01	.33**	.04	.16	-.04	.11	-.01	-.09	-.04	-										
11. Negative control M (P)	-.15	-.22	-.03	.02	.10	.10	.02	.08	-.05	-.16	-									
12. Negative control F (P)	-.31*	-.18	-.06	.11	.17	.15	.07	.07	-.12	.08	.24*	-								
13. Responsiveness M (P)	-.06	.42***	-.01	.07	-.13	-.03	-.03	.04	.29*	.16	-.21	.01	-							
14. Responsiveness F (P)	-.08	.27*	-.06	.06	-.17	-.05	-.14	-.07	.07	.19	.01	.05	.37**	-						
15. Family harmony (O)	-.07	.16	-.10	.15	-.13	-.02	.31**	.36**	-.10	.22	-.01	.11	-.02	.13	-					
16. Hostility-competitiveness (O)	-.34**	.01	.12	.19	.30**	.30**	-.02	.09	-.05	.14	-.03	.23	.05	-.06	.26*	-				
17. Parenting discrepancy (O)	-.11	.05	.02	-.25*	-.04	-.13	-.20	-.27*	-.15	-.01	-.19	-.02	.08	-.04	-.31**	.13	-			
18. Family integrity (P)	.08	.42***	.13	.17	-.11	-.13	.06	.06	.12	.33**	-.36**	-.04	.40***	.07	.13	.09	.11	-		
19. Conflict (P)	-.11	-.44***	-.01	-.00	.36**	.12	-.04	-.10	-.05	-.27*	.18	-.06	-.41***	-.30**	.02	.07	-.13	-.29*	-	
20. Disparagement (P)	-.17	-.32**	-.08	.04	.29*	.14	-.03	-.08	-.09	-.10	.26*	.18	-.27*	-.15	.05	.17	.08	-.22	.60***	

Note. *N* ranges from 70 to 88; M = Mothers, F = Fathers, O = observation, P = parent report

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

3.3.2 Relations between parenting, coparenting, and effortful control

More observed maternal positive control was related to a higher level of observed effortful control. More observed paternal negative control was related to a lower level of observed and parent-reported effortful control and more observed maternal negative control was related to a lower level of parent-reported effortful control. Observed warmth was not significantly related to observed or reported effortful control. More father-reported positive control was related to a higher level of parent-reported effortful control in children. More father-reported negative control was related to a lower level of observed effortful control in children. When father and mothers reported more responsiveness, children were more likely to have higher levels of parent-reported effortful control. No significant relations were found between parent-reported responsiveness and observed effortful control.

Of the observed coparenting variables, hostility-competitiveness was related to a lower level of observed effortful control. The three parent-reported coparenting variables were significantly related to parent-reported effortful control, with more family integrity being related to a higher level of effortful control, and more conflict and disparagement being related to a lower level of effortful control.

Table 3.3

Contribution of Observed Parenting and Coparenting to Observed Effortful Control

Step	Independent variable	Model 1		Model 2		Model 3	
		ΔR^2	β	ΔR^2	β	ΔR^2	β
1.	Parenting mothers	.14**		.14**		.14**	
	Positive control		.31**		.31*		.34*
	Negative control		-.21		-.09		-.02
	Warmth		.03		.01		-.03
2.	Parenting fathers			.09*		.09*	
	Positive control				.01		-.00
	Negative control				-.32**		-.28*
	Warmth				.00		.06
3.	Coparenting					.09*	
	Family Harmony						-.05
	Hostility-competitiveness						-.27*
	Parenting discrepancy						-.12

$N = 81$; * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3.4

Contribution of Reported Parenting and Coparenting to Reported Effortful Control

Step	Independent variable	Model 1		Model 2		Model 3	
		ΔR^2	β	ΔR^2	β	ΔR^2	β
1.	Parenting mothers	.18**		.18**		.18**	
	Positive control		.11		.11		.11
	Negative control		-.15		-.07		.02
	Responsiveness		.33**		.26*		.12
2.	Parenting fathers			.11*		.11*	
	Positive control				.28*		.19
	Negative control				-.20		-.19
	Responsiveness				.10		.07
3.	Coparenting					.09*	
	Family Integrity						.20
	Conflict						-.20
	Disparagement						-.08

$N = 70$; * $p < .05$, ** $p < .01$, *** $p < .001$

3.3.3 Contribution of parenting and coparenting to effortful control

To examine whether effortful control can be predicted on the basis of family processes, hierarchical regression analyses were performed. Parenting variables of mothers were entered in the first step, parenting variables of fathers in the second step and coparenting variables in the third step. Reported and observed measures were analyzed separately.

Observed maternal and paternal parenting and coparenting explained together 31% ($p < .001$) of the variance in observed effortful control (see Table 3.3). Maternal positive control was a significant predictor of effortful control, with more positive control being associated with a higher level of effortful control. In fathers, negative control was significantly negatively related to effortful control (see Model 2 and 3). Coparenting was a predictor of effortful control, above maternal and paternal parenting (see Model 3). This contribution was caused by hostility-competitiveness in triadic interactions. More hostility-competitiveness in families was related to a lower level of effortful control in preschoolers.

Reported maternal and paternal parenting and coparenting explained together 38% ($p < .001$) of the variance in reported effortful control (see Table 3.4). Maternal responsiveness was a significant predictor of reported effortful control, with more maternal responsiveness being related to a higher level of

effortful control (see Model 1). Moreover, paternal positive control was a significant predictor of effortful control, with more positive control being related to higher levels of effortful control (see Model 2). Coparenting significantly contributed to effortful control over and above maternal and paternal parenting, although none of the coparenting variables was a significant predictor (see Model 3).

3.4 Discussion

In this study, we investigated the relation between parenting, coparenting, and effortful control in 3-year-old children. In general, maternal and paternal parenting behaviors were related to effortful control for both observation and parent report. Corresponding with our hypothesis, paternal parenting contributed to effortful control above maternal parenting. This result stresses the importance of including fathers when investigating parenting and young children's self-regulation. Furthermore, coparenting, or the way in which parents coordinate their child-rearing practices together, was related to effortful control in preschoolers over and above maternal and paternal parenting, for observation and parent report. This finding is consistent with previous research, which found coparenting to contribute to young children's temperament in addition to parenting (Belsky et al., 1996; McHale et al., 1996), but shows for the first time that coparenting is related to effortful control. It indicates that future research should not focus on parenting alone but also on coparenting, in order to obtain a complete understanding of young children's effortful control.

Maternal positive control and paternal negative control were the parenting dimensions that were most strongly related to preschoolers' observed effortful control. Positive control and negative control were positively and negatively related to effortful control, respectively, whereas warmth and responsiveness were not related to effortful control in both mothers and fathers. These findings are consistent with the results of a meta-analysis on parenting and self-regulation, in which positive and negative control were more strongly related to self-regulation than was responsiveness (Karreman, Van Tuijl, Van Aken, & Deković, in press). Positive and negative control may be important strategies for helping a child to achieve higher levels of effortful control. Parental monitoring and control help children to learn to suppress a dominant response and to initiate a subdominant response. Parental responsiveness might be more important for the development of aspects of individualization, such as well-being and self-concept (Amato & Fowler, 2002; Brophy & Dunn, 2002). However, only paternal positive control was

associated with reported effortful control. Mother-reported responsiveness, but not control, was the most important parenting dimension in relation to reported effortful control. It should be noted that when coparenting was entered in the model, these two parenting behaviors were not significantly related to reported effortful control. In prior studies, relations between parental warmth and effortful control have been reported (Eiden et al., 2004; Kochanska et al., 2000; Olson et al., 2005). More research on parenting and effortful control is needed to shed light on this issue.

The coparenting dimension that was most strongly related to effortful control was observed hostility-competitiveness. As expected, more hostility-competitiveness between parents was related to a lower level of effortful control in preschoolers. Thus, the more signs of subtle conflict and undermining coparenting practices between parents there were, the more problems children had regulating their emotions and behavior. The conflict between the parents probably did not create a stimulating and modeling environment for socialization practices. Belsky et al. (1996) also found an association between observed undermining and observed inhibition in toddlers. However, parenting discrepancies, another dimension of observed undermining coparenting, was not related to effortful control. An explanation for this apparent discrepancy is that conflict between parents may be more apparent to children than parental discrepancies and hence have a greater influence on their behavior. In research on marital adjustment, conflict was demonstrated to have the strongest association with child adjustment, compared with other aspects of marital adjustment (Davies & Cummings, 1994; Grych & Fincham, 2001).

As expected, parent-reported parenting and coparenting were more strongly related to parent-reported effortful control than to observed effortful control. The same was true, but less pronounced, for observed parenting and coparenting variables. These results are consistent with earlier research, in which weaker relations were found when different methods were used to measure parenting and effortful control (Gartstein & Fagot, 2003; Olson et al., 2005). The two methods measure different aspects of behavior, which may explain the weaker relations between different measures. Questionnaire data reflect exhibited behavior or attitudes of parents, whereas observations tap situation-specific behavior or face-to-face interactions. Because of these differences, both methods should be used in research. This is emphasized by our finding that observed parenting and coparenting were not related to parent-reported parenting and coparenting. Others researchers also have failed to find an association between parent-reported and observed parenting (Bornstein, Cote, & Venuti, 2001; Cote & Bornstein, 2000), whereas others found some degree of association (Deković et al., 1991; Kochanska,

Kuczynski, & Radke-Yarrow, 1989; Slade, Belsky, Aber, & Phelps; 1999). Mixed results have been found for parent-reported and observed coparenting (McHale et al., 2000; Stright & Bales, 2003). In this study, the parenting and coparenting dimensions were not exactly the same for observation and parent report (e.g., warmth versus responsiveness and parenting discrepancies versus disparagement). The different constructs might have contributed to the lack of correspondence between the methods (Goodnow, 1988).

In contrast to parenting and coparenting, parent-reported effortful control was related to observed effortful control ($r = .35, p < .01$), as has been reported earlier (Kochanska et al., 2000; Olson et al., 2005). The construct effortful control may be more straightforward than the constructs parenting and coparenting, which consist of many dimensions. Despite these methodological differences, the pattern of findings was similar for observed and parent reported behavior: coparenting contributes to effortful control in addition to the contribution of parenting.

The study had some limitations. First, participating families were primarily white, middle- to upper-middle, dual-income, and well-functioning. For generalization to other populations, the findings need to be replicated in other family samples, such as ethnically diverse, low-class and clinically distressed families. Secondly, because we assessed concurrent relations, it was not possible to determine the direction of effects. Parenting, coparenting, and effortful control can be expected to affect one another: parenting and coparenting affect effortful control by guiding the children's behavioral responses, whereas the level of effortful control of a child affects parenting and coparenting practices by eliciting differential behavior (Kieras, Tobin, Graziano, & Rothbart, 2005; Kochanska et al., 2000). Longitudinal studies should shed more light on possible causality in the relations. Thirdly, because of the restricted sample size, we did not take the child's gender into account. Studies have found different relations between coparenting and preschoolers' adjustment for boys and girls (McConnell & Kerig, 2002; McHale & Rasmussen, 1998). Future research should investigate the role of child gender, as well as combinations of parent and child gender, in relation to parenting, coparenting, and effortful control. Lastly, the relation between parenting, coparenting and effortful control should be studied in more detail, by elucidating more precisely the interplay among the variables (e.g., potential mediating and moderating effects of parenting and coparenting).

In conclusion, this is the first European study to investigate the association between parenting, coparenting, and effortful control in preschoolers. Our results tended to confirm the results of northern American studies of coparenting. Although parent report and observation appeared to measure different aspects of a certain behavior, they yielded similar results, namely, that coparenting contributes

to effortful control over and above maternal and paternal parenting. This finding has two major implications. First, it indicates the importance and complementary nature of parent report and observation. Secondly, it highlights the importance of coparenting to the development of effortful control.

Chapter 4

The Moderating Role of Preschoolers' Effortful Control in the Relation between Parental Personality and Observed Parenting

Karreman, A., Van Tuijl, C., Van Aken, M. A. G., & Deković, M. (2006). The moderating role of preschoolers' effortful control in the relation between parental personality and observed parenting. *Manuscript submitted for publication.*

In this study, the relation between self-reported parental personality and observed parenting was examined. In addition, we investigated the moderating role of observed preschoolers' temperamental effortful control (i.e., the ability to suppress a dominant response in order to perform a subdominant response) in this relation. The sample included 89 two-parent families and their firstborn 36-month-old children. Weak to modest associations were found between the Big Five and observed parenting. Effortful control appeared to moderate the relation between parental personality and parenting: fathers' neuroticism was positively associated with fathers' positive control and fathers' extraversion was positively associated with fathers' negative control, but only when children had a low level of effortful control. These findings are in line with our hypothesis that individual differences in personality are most accentuated during the stressful experience of parenting a less self-regulated child.

4.1 Introduction

Although there is a body of research on adult personality and its impact on adult psychopathology and behavioral and social functioning, few studies have investigated the role of parental personality in parenting practices (Belsky & Barends, 2002; Belsky, Crnic, & Woodworth, 1995; Clark, Kochanska, & Ready, 2000). This may seem surprising, since parental personality has been proposed as an important determinant of parenting in Belsky's process model (Belsky, 1984). In this model, parenting is considered to be determined by three factors, namely parental personality, or psychological resources, the child's individual characteristics, and contextual sources of stress and support. Each of these factors was assumed to directly influence parenting quality, and through parenting, child development. Of the three factors, Belsky (1984) argued that parental personality is the most important determinant. However, two decades later, we still do not know much about associations between parental personality and parenting (Belsky & Barends, 2002; Clark et al., 2000).

The present study examined the Big Five personality dimensions (Costa & McCrae, 1992; Goldberg, 1990) in relation to observed parenting in a Dutch community sample, consisting of mothers, fathers and their firstborn three-year-old children. Furthermore, we examined the moderating role of preschoolers' effortful control in the relation between parental personality and parenting.

4.1.1 Personality and parenting

Only a few studies have examined more than one Big Five variable in relation to parenting in young children. Belsky and colleagues (1995) studied neuroticism, agreeableness, and extraversion in mothers and fathers of firstborn 10-month-old sons, and their observed parenting behavior at 15 and 21 months. Neuroticism (emotional instability, reflecting a general tendency to experience negative affects and to be prone to psychological distress, unrealistic ideas, excessive cravings or urges, and maladaptive coping responses) was a significant predictor for negative affect and intrusiveness in mothers. Agreeableness (the tendency to be altruistic, sympathetic, helpful, trustful and forgiving) predicted more sensitivity and less detachment and negative affect in mothers. Extraversion (the tendency to be sociable, assertive, and talkative) was a predictor for more negative affect in mothers. In another study using the same sample, types of fathers were examined, and fathers who had the role of caretakers and playmates-teachers were less neurotic than fathers who were disciplinarian or disengaged, whereas no differences were found for extraversion or agreeableness (Jain, Belsky, & Crnic,

1996). Kochanska, Clark, and Goldman (1997) examined neuroticism, agreeableness and extraversion in mothers of preschoolers in relation to observed and parent-reported parenting behaviors. High neuroticism and low agreeableness were associated with more self-reported power-assertive parenting and less self-reported nurturant parenting, but the personality dimensions did not predict observed parenting. Clark et al. (2000) examined associations between the Big Five in mothers of infants and their observed style of control and responsiveness. Mothers who were high in neuroticism or extraversion used more power assertion. An interaction effect was found between extraversion and infants' negative emotionality: mothers high in extraversion were more power assertive only with children high in negative emotionality. Conscientiousness (the tendency to be planful, organized, persistent, and motivated during the fulfillment of goal-directed task behaviors) was a predictor of responsiveness. Agreeableness and openness to experience (reflecting active imagination, aesthetic sensitivity, intellectual curiosity, and independence of judgment) have not been found to be associated with control or responsiveness. Mangelsdorf, Gunnar, Kestenbaum, Lang, and Andreas (1990) found positive affectivity (or extraversion) in mothers of infants to be positively associated with observed warmth and support. They did not find an association between negative affectivity (or neuroticism) and observed warmth or support.

To summarize, neuroticism has been found to be associated with more negative controlling parenting behavior (Belsky et al., 1995; Clark et al., 2000; Kochanska et al., 1997), whereas agreeableness has been found to be associated with less negative controlling and more warm or supportive parenting behavior (Belsky et al., 1995; Kochanska et al., 1997). Extraversion was associated with more negative controlling behavior (Belsky et al., 1995; Clark et al., 2000), but also with more warm and supportive behavior (Mangelsdorf et al., 1990). Conscientiousness has been found to be associated with responsiveness and no association has been found between openness and parenting behavior (Clark et al., 2000).

4.1.2 Preschoolers' effortful control as a moderator in the relation between parental personality and parenting

This study examines the moderating role of preschoolers' effortful control in the relation between parental personality and parenting. Effortful control refers to the self-regulatory aspect of young children's temperament (Kochanska & Knaack, 2003; Rothbart, Ellis, & Posner, 2004). It is defined as 'the ability to suppress a dominant response to perform a subdominant response' (Kochanska, Murray, &

Harlan, 2000; Rothbart, 1989; Rothbart & Bates, 1998). Effortful control thus reflects inhibitory as well as initiating behaviors. Several domains of functioning are involved, including the cognitive, social, emotional, motor, and behavioral domains. However, effortful control has been found to reflect a highly coherent underlying broad competence (Kochanska et al., 2000; Murray & Kochanska, 2002).

Effortful control is expected to moderate the relation between parental personality and parenting. This expectation is based on the theory developed by Caspi and Moffitt (1993), which suggests that individual differences in personality are most likely to be accentuated during stressful situations. The individual attempts to incorporate an unpredictable, demanding and stressful situation into existing cognitive and action structures in an effort to regain control over the situation (Caspi & Moffitt, 1993). Parenting preschoolers with a low level of effortful control (i.e., children who have difficulties in modulating their emotions and impulses) will probably be more stressful than parenting preschoolers with a high level of effortful control. In order to gain control over the child with a low level of effortful control, parents use familiar and automatic responses that fit their personality and have proved effective in the past. For example, they may use instructional, guiding behavior, or they may use power-assertive techniques to control the child's dysregulated behavior. If the child has a high level of effortful control, parents have to deal with less pressure or stress and differences in parenting are less likely to be displayed. Thus, the relation between parental personality and observed parenting was expected to be stronger for children low in effortful control than for children high in effortful control.

No studies have examined the moderating role of effortful control in the relation between parental personality and parenting. As noted previously, Clark et al. (2000) found infants' negative emotionality, another aspect of temperament, to interact with extraversion in mothers in relation to parental power assertion. When children were high in negative emotionality, mothers who were high in extraversion were more power assertive, but when children were low in negative emotionality, mothers' extraversion was not associated with power assertion.

4.1.3 The present study

In this study, we examine parental personality in relation to three parenting behaviors (positive control, negative control and warmth). Parenting and effortful control are measured by means of observations, in order to avoid within-reporter bias with the self-reported personality measures.

On the basis of theoretical and empirical evidence, we formulated the following hypotheses: (a) Parents higher in neuroticism are expected to use more negative control (power-assertive techniques to control the child's behavior). Parents higher in neuroticism are expected to employ less positive control (instructional and guiding behavior) and warmth towards their children. Parents higher in openness to experience, agreeableness and conscientiousness are predicted to employ less negative control and more positive control and warmth towards their children. No predictions were made regarding extraversion, because previous results have been contradictory (Belsky et al., 1995; Clark et al., 2000; Mangelsdorf et al., 1990). (b) We expect child effortful control to moderate the relation between parental personality and parenting. A stronger association between personality and observed parenting is hypothesized for children with a low level of effortful control and a weaker association is hypothesized for children with a high level of effortful control.

4.2 Method

4.2.1 Participants

Participants were 89 two-parent families raising firstborn preschool-aged children. Children (45 boys, 44 girls) were 36 months old (range 35-37) at the time of the study. Mothers' mean age was 34.5 years ($SD = 4.2$, range 21-46); fathers' mean age was 36.5 years ($SD = 4.7$, range 22-50). All mothers and fathers were the biological parents of the children. In 56 percent of the families, the child had a younger sibling. On average, couples had been together for 10.3 years ($SD = 4.7$, range 3-22). Ninety-eight percent of the fathers and 99 percent of the mothers had Dutch nationality. The majority of the parents were highly educated (23.9% of the mothers and 30.7% of the fathers had a university education) and worked outside the home.

4.2.2 Procedure

This study was part of a research project on family dynamics and child adjustment. Families were recruited through daycare centers and preschool playgroups in different parts of the Netherlands. After agreeing to participate, daycare centers and playgroups distributed letters among parents of preschool aged children, asking them to participate in the study. Parents who indicated willingness to participate were selected if the parents lived together and if the target firstborn

child was nearly 3 years old. In the selected families, home observations and daycare center and preschool observations were used to measure family interaction and child effortful control. After the home visit, the parents were each asked to complete a questionnaire.

Parenting was measured during the home visits on the basis of a dyadic mother-child play session and a dyadic father-child play session. Each session consisted of unstructured and structured play tasks, most of them followed by a clean-up period. The tasks involved solving a matching game, engaging in a building game, and reading a picture book. The tasks were similar for both parents. All sessions were videotaped and afterwards independently coded by a trained coding team.

At daycare centers and preschool playgroups, children were observed while they performed twelve tasks measuring effortful control. The session took place in a room where no other children were present. All tasks were presented as games and after each task the child was rewarded, regardless of his/her performance. The children received two gifts, which were part of the observation battery. The tasks were independently coded by a team of trained coders.

4.2.3 Measures

Personality

The NEO-Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992; Dutch version Hoekstra, Ormel, & De Fruyt, 1996), a 60-item self-report inventory, was used to measure the Big Five dimensions of parental personality. Each dimension was constructed for mothers and fathers by adding together scores on 12 items. Items were scored using a 5-point Likert scale, ranging from 1 (*totally disagree*) to 5 (*totally agree*). Internal consistencies (Cronbach's alpha) ranged from .60 (Openness) to .81 (Neuroticism) for mothers and from .59 (Agreeableness) to .81 (Extraversion) for fathers.

Parenting

Parenting behaviors during mother-child and father-child interactions were measured, using the videotaped records, with the Coparenting and Family Rating System (CFRS; McHale, 1995). Rating scales were translated into Dutch and pilot tested.

Six dimensions of parenting behavior were measured using a 7-point Likert-type scale and seven dimensions of coparenting behavior were measured using a 5-point scale. For all three tasks, we rated behavior in three minutes of family interaction: the first, middle, and last minute of each task. Thus, for each dyadic

and triadic session, nine ratings per dimension were created. This way of combining a micro and macro system of coding allowed us to benefit from both methods, limiting overlap between scales and observing interactions in more detail. The six parenting scales were Warmth, Investment, Limit-Setting, Sensitivity, Provision of Structure, and Negativity (McHale, 1995; Mchale et al., 2000). *Warmth* measures the frequency and intensity of affect shown toward the child by a parent, such as encouragement, smiles, laughter, and physical affection. *Investment* assesses the extent to which a parent is involved and concerned that the child behaves or performs tasks correctly. *Limit-Setting* measures the extent to which a parent prevents the child from wandering away from assigned tasks. *Sensitivity* refers to the timing and quality of a parent's interventions with the child. *Provision of Structure* refers to the extent to which a parent structures the task and provides information about it, and *Negativity* measures the degree to which a parent criticizes, ignores the child, and is overtly annoyed during the session. Principal components analysis with varimax rotation yielded three parenting factors: Positive Control, Negative Control, and Warmth. For both mothers and fathers, the three-factor solution accounted for 74% of the variance in parenting scores. Factors were created by averaging the scale scores. *Positive Control* consisted of the scales Provision of Structure, Limit-Setting, and Sensitivity. *Negative Control* contained Negativity and Investment. The positive loading of Investment on Negative Control can be explained by the aspect of over-involvement: when a parent is continually present, which was rated in most mothers and fathers, it may be intrusive for the child. The factor *Warmth* consisted of the scale Warmth. All factor loadings were above .51 for mothers and .64 for fathers.

All parenting scales were coded by two coders. Interrater reliability for each pair of coders was based on approximately 15% of all cases. Gamma was used as a measure of reliability, because it is a statistic that controls for chance agreement, but is more appropriate for ordinal data than Kappa (Liebetrau, 1983; Schoppe et al., 2001). Mean Gamma for maternal parenting was .88, ranging from .81 (Sensitivity) to .96 (Limit-Setting) and mean Gamma for paternal parenting was .88, ranging from .79 (Sensitivity) to .92 (Limit-Setting).

Effortful control

Eleven tasks of the Effortful Control Battery (Kochanska et al., 2000) were translated and adapted into Dutch and pilot tested for the observation of effortful control. On the basis of the one-factor solution of a principal components analysis of the total sample of this study, five tasks with factor loadings lower than .30 were deleted.

Tasks included were Snack Delay, Wrapped Gift, Gift-in-Bag, Tongue task, Dinky Toys, and Shapes. The task *Snack Delay* measures the ability of a child to keep his or her hands on a mat on the table in front of a piece of candy under a transparent cup until the researcher lifts and eventually rings a bell as permission to pick up the candy. The snack delay score consists of the ability to delay (four trials, with delays from 10 to 30 s). Scores range from 1 (child eats candy before the bell is lifted) to 7 (child waits until bell rings). Points are added, with a maximum of 2 points, for the child's ability to keep his or her hands on the mat. *Wrapped Gift* assesses the child's ability not to peek when the gift is wrapped behind his or her back and, secondly, not to touch the gift until the researcher returns from getting a bow for the gift. Scores include latency to peeking during wrapping (60 s if never) and latency to touching, lifting, or opening the gift during the absence of the researcher (180 s if never). Additional scores indicate the extent of peeking during wrapping, ranging from 1 (turns around and continues to peek) to 5 (does not peek), and the extent of touching when the researcher has left the room (1 = opens gift to 4 = does not touch). *Gift-in-Bag* is a similar task in which the child has to wait while the researcher leaves the room for 3 minutes to get a bow for the gift. Besides latency, scores reflect behavior involving the bag (1 = pulls gift from bag to 5 = does not touch bag) and the time the child remains sitting in his or her seat (1 = less than 30 s to 4 = more than 120 s). The *Tongue task* measures whether the child can keep candy in his or her mouth without chewing it. The score reflects average latency to chewing or swallowing the candy across four trials with delays of 10 to 30 s. *Dinky Toys* refers to a task which captures the child's ability to keep his or her hands on his or her knees while telling the researcher what toy he or she finds most attractive to play with from a box filled with toys. Scores reflect the ability not to remove hands from knees (0 = grabs toy to 5 = keeps hands on knees). The *Shapes task* assesses the ability to focus on a subdominant rather than dominant picture. After practicing names of fruit and the meaning of 'big' versus 'little', the child is asked to point to the image of a small fruit that is embedded in a dominant picture of a large fruit. Scores for three trials were averaged, resulting in a score ranging from 1 (all answers incorrect) to 3 (all answers correct).

The tasks were coded from videotapes by five coders. Reliability, based on approximately 15% of all cases, was computed for all pairs of coders. Following Kochanska et al. (2000), Cohen's Kappa was calculated for all aspects of each task using categorical scores (Wouters, 1988) and percentage agreement was calculated for aspects of the tasks using latency scores. The mean Kappa was .79 with mean Kappa per task ranging from .63 (Gift-in-Bag) to .85 (Wrapped Gift). The mean percentage agreement was 92% (scores coded within 1 s), ranging per task from

88% (Wrapped Gift) to 99% (Tongue task). A composite score for *Effortful Control* was calculated by averaging standardized task scores.

4.3 Results

4.3.1 Descriptive analyses

Table 4.1 shows the means and standard deviations of maternal and paternal personality and parenting. In general, mothers scored higher on neuroticism, $t(68) = -4.16, p < .001$, and on agreeableness, $t(68) = -4.85, p < .001$, than fathers. With respect to parenting, fathers showed more negative control, $t(87) = 2.34, p < .05$, and less positive control than mothers, $t(87) = -4.72, p < .001$. The personality dimensions of mothers were not significantly associated with the dimensions of fathers; the correlations were $r = .21$ for neuroticism, $r = .04$ for extraversion, $r = .22$ for openness, $r = .00$ for agreeableness, and $r = .14$ for conscientiousness. For mothers, intercorrelations of personality dimensions were between $r = -.02, ns$ (neuroticism with agreeableness) and $r = -.36, p < .01$ (neuroticism with conscientiousness). For fathers, intercorrelations of personality dimensions were between $r = -.01, ns$ (openness with conscientiousness) and $r = -.48, p < .001$ (neuroticism with extraversion).

Table 4.1

Means and Standard Deviations of Maternal and Paternal Personality and Parenting

	Mothers		Fathers	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Personality				
Neuroticism	29.1	6.4	25.2	5.6
Extraversion	41.1	5.8	40.2	6.1
Openness	38.1	5.0	38.8	5.6
Agreeableness	46.3	4.5	43.3	4.2
Conscientiousness	45.7	5.2	44.5	5.0
Parenting				
Positive control	5.51	.51	5.23	.69
Negative control	2.95	.36	3.05	.40
Warmth	4.31	.63	4.42	.57

4.3.2 Relations between parental personality and observed parenting

Correlations between the Big Five personality dimensions of parents and parenting are presented in Table 4.2. Only openness to experience was associated with parenting: mothers and fathers who scored higher on openness generally used less parental negative control during parent-child interaction. The significant associations were moderate in size.

Table 4.2

Correlations of Parental Personality with Observed Parenting

	Positive control	Negative control	Warmth
Neuroticism M	.03	.11	-.14
Neuroticism F	.03	.11	-.13
Extraversion M	.05	-.18	.04
Extraversion F	-.10	.03	.17
Openness M	.01	-.34**	.03
Openness F	.04	-.33**	.01
Agreeableness M	.03	-.08	-.02
Agreeableness F	-.02	-.07	-.11
Conscientiousness M	-.12	.02	.12
Conscientiousness F	.10	.07	.07

* $p < .05$; ** $p < .01$; *** $p < .001$; M = Mothers, F = Fathers

4.3.3 The moderating role of child effortful control in the relation between parental personality and parenting

A series of hierarchical regression analyses was performed to examine the moderating role of effortful control of children in the relation between parental personality and observed parenting. Separate regression analyses were conducted for mothers and fathers. In each analysis, child effortful control was entered at step 1 and the five personality dimensions of the parent were entered as a block at step 2 to examine the contributions of parental personality, when controlled for effortful control of children, to the parenting behaviors. The interactions between the personality dimensions and effortful control were entered as a block at step 3. To avoid multicollinearity between the main effects and the interaction terms, the scores of the personality dimensions and effortful control were standardized before creating the interaction terms (Miles & Shevlin, 2001). Significant interactions

were interpreted by plotting regression lines for high (more than one standard deviation above the mean) and low (more than one standard deviation below the mean) standardized values of effortful control and personality dimensions (Holmbeck, 1997).

Table 4.3

Contributions (Beta-values) of Parental Personality, Child Effortful Control and the Interaction between Personality and Effortful Control to Parenting Behavior

Step		Positive control		Negative control		Warmth	
		Mothers	Fathers	Mothers	Fathers	Mothers	Fathers
1.	Effortful control	.37**	.21	-.17	-.19	-.05	-.01
2.	Effortful control	.37**	.20	-.15	-.15	-.04	.00
	Personality traits						
	Neuroticism	-.01	.06	.05	.09	-.12	-.08
	Extraversion	.09	-.10	-.17	.04	-.06	.14
	Openness	-.00	.03	-.35**	-.28*	.03	.01
	Agreeableness	-.05	-.03	-.01	.01	.00	-.17
	Conscientiousness	-.09	.15	.16	.12	.12	.03
3.	Effortful control	.42**	.36*	-.11	-.04	-.07	-.03
	Personality traits						
	Neuroticism	.05	.16	.07	.20	-.17	-.03
	Extraversion	.17	-.12	-.17	.16	-.18	.13
	Openness	-.03	-.10	-.36***	-.23	-.02	-.02
	Agreeableness	-.08	.01	.01	-.01	.00	-.13
	Conscientiousness	-.07	.12	.21	.15	.13	.05
	Interactions						
	Neuroticism x EC	-.04	-.42**	-.14	-.29	-.11	-.14
	Extraversion x EC	-.07	-.01	.05	-.40*	-.27	.12
	Openness x EC	.27	.11	-.18	-.10	-.26	.08
	Agreeableness x EC	.06	-.06	.20	.02	-.02	.01
	Conscientiousness x EC	-.09	.20	-.05	.22	.16	-.25
	R ²	.22	.25	.25	.27	.19	.15

* $p < .05$; ** $p < .01$; *** $p < .001$; EC = Effortful Control

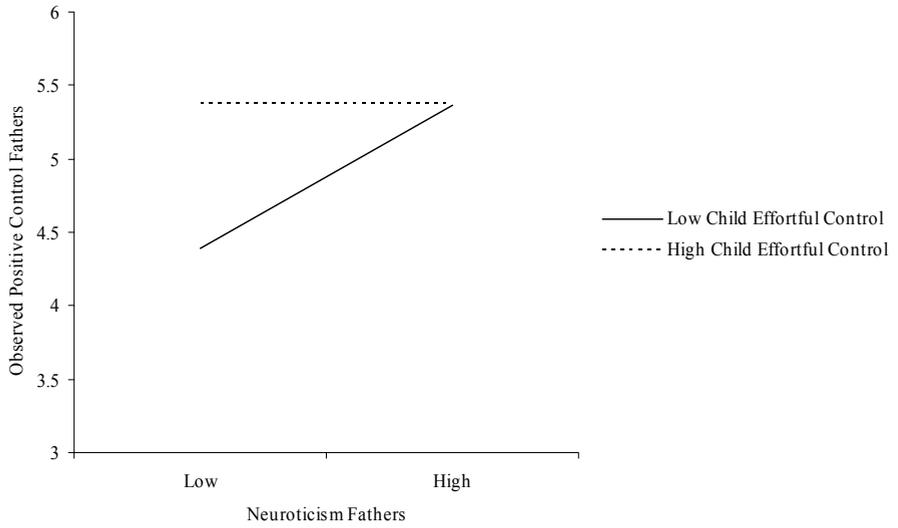


Figure 4.1. Interaction between fathers' neuroticism and child effortful control in the prediction of positive control by fathers

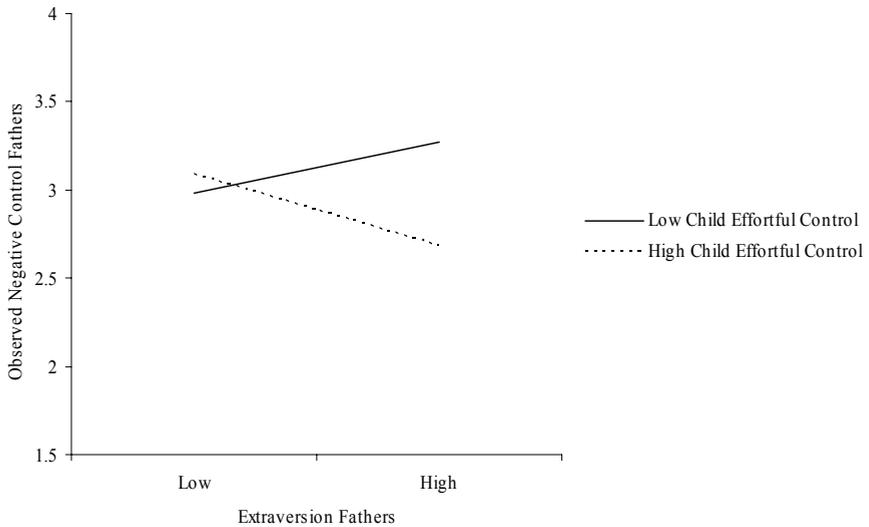


Figure 4.2. Interaction between fathers' extraversion and child effortful control in the prediction of negative control by fathers

Table 4.3 shows the contributions of child effortful control, parental personality and the interaction between personality and effortful control to the parenting behaviors of mothers and fathers. Significant main effects of effortful control of preschoolers were found for observed positive control in mothers. A higher level of effortful control was associated with more positive control. A main effect of parental personality was found for openness in mothers and fathers in relation to their negative control, indicating that parents who were more open used less negative control in interaction with their child.

Two significant interaction effects were found in the prediction of observed parenting. First, effortful control significantly moderated the relation between fathers' neuroticism and fathers' positive control. The regression lines for low and high values of effortful control, plotted in Figure 4.1, show that fathers who scored higher in neuroticism used more positive control in interaction with their child only when children had a low level of effortful control. When children had a high level of effortful control, neuroticism in fathers was not associated with positive control. Second, effortful control of children moderated the relation between fathers' extraversion and fathers' negative control. Figure 4.2 shows that extraversion in fathers was positively related to fathers' negative control when children had a low level of effortful control, but was negatively related to negative control when children had a high level of effortful control.

4.4 Discussion

The current study examined the relation between parental personality and observed parenting, as well as the moderating role of preschoolers' effortful control in this relation. The only personality dimension found to be associated with parenting was openness to experience, which was negatively associated with the use of negative control for both mothers and fathers. Clark et al. (2000) examined mothers' openness in association with mothers' observed power assertion and responsiveness, but they did not find significant associations. A negative association between openness and negative control is understandable however, because parents who are open-minded may be more creative in managing maladaptive behavior in the child and will therefore less rapidly choose negative controlling strategies to discipline their child. Studies of older children have found associations between parental openness, or related variables, and parenting behavior (Losoya, Callor, Rowe, & Goldsmith, 1997; Peterson, Smirles, & Wentworth, 1997; Prinzie, Onghena, Hellinkx, Grietens, Ghesquière, & Colpin, 2004; Spinath & O'Connor, 2003).

The weak associations between parental personality and parenting are possibly due to the different methods used for the assessment of personality and parenting. In contrast to most studies in this field, which used parent reports to measure both personality and parenting (see also Clark et al., 2000), we used observational measures to assess parenting. Questionnaires measure parental attitudes and behaviors that parents value, whereas observations reflect situation-specific behavior and behavior of which the parent is not always aware of (Bornstein, Cote, & Venuti, 2001; Goodnow, 1995). Kochanska et al. (1997) found that mothers' personality predicted their self-reported parenting, but not their observed parenting.

Effortful control positively predicted positive control by mothers: the higher the level of effortful control was in children, the more positive control mothers showed in interaction with their child. Children who were able to suppress a dominant response and to initiate a subdominant response were probably easy to handle, and therefore mothers were likely to behave sensitively and to guide the child's behavior in a positive way. The results stress the importance of examining child temperament besides parental personality for a complete understanding of parenting behaviors.

The second and last question concerned the moderating role of effortful control in preschoolers in the relation between parental personality and observed parenting. Interaction effects were found between fathers' neuroticism and effortful control in the prediction of fathers' positive control and between fathers' extraversion and effortful control in the prediction of fathers' negative control. The two interaction effects were marked by the following feature: there was a positive association between neuroticism in fathers and positive control, and between extraversion in fathers and negative control only when preschoolers had a low level of effortful control. The findings are consistent with our expectation, which was based on the theory of Caspi and Moffitt (1993), that individual differences in personality are most likely to be accentuated during the stressful experience of parenting a less self-regulated child. In interaction with a difficult child, more neurotic fathers used positive control and more extraverted fathers used negative control as responses that fit their personality and that had proven to be effective in the past. More neurotic fathers, who have the tendency to experience negative affects, set more limits in order to discipline their child, whereas less neurotic fathers probably wait longer to intervene. Furthermore, more extraverted fathers, who are assertive, talkative and expressive, probably show their negative feelings sooner than more introverted fathers, who are likely to keep their dissatisfaction to themselves. When children had a high level of effortful control, neuroticism in fathers was not related to their positive control, which was consistent with our

hypothesis that no differences in parenting were displayed in a less stressful parenting experience. More extraverted fathers, however, showed less negative control when children had a high level of effortful control. When children are able to regulate their impulses and emotions, more extraverted fathers probably have the opportunity to show their positive feelings. Clark and colleagues (2000) also found that mothers high in extraversion were more power assertive with children who were high in negative emotionality, but they found that with children who were low in negative emotionality, or who had an easy temperament, mothers' extraversion was not associated with power assertion. The different associations that we found between fathers' extraversion and negative control for preschoolers with a low and high level of effortful control might explain contradictory associations (Belsky et al., 1995; Clark et al., 2000; Mangelsdorf et al., 1990) found previously. No moderation effects were found in the prediction of warmth, probably because control is a better strategy in stressful situations to regain control over the child.

Several limitations of this study should be noted. First, the participating families were primarily white, middle- to upper-middle, dual-income, and well-functioning and the findings cannot be generalized to other populations. A stronger relation between parental personality and parenting would probably have been found in clinically distressed families. Second, the study used only cross-sectional data. Consequently, no conclusion about the direction of effects in the relation between parental personality and family processes could be drawn. However, parental personality and child effortful control are considered to have constitutional origins (McCrae et al., 2000; Rothbart & Bates, 1998; Rothbart, Ahadi, & Evans, 2000; Rothbart et al., 2004). We therefore did not consider the results to be much affected by the fact that the variables were measured concurrently. Third, because of the restricted sample size, we did not take the child's sex into account. Future studies should investigate the role of the child's sex, as well as combinations of parent and child sex, in the relation between parental personality, child effortful control and parenting.

In conclusion, the current study examined the relation between parental personality and observed parenting, and the moderating role of preschoolers' effortful control in this relation. The strengths of this study were the systematic approach to examining personality, namely by studying the Big Five, the examination of multiple parenting behaviors in both mothers and fathers, and the use of observational data for parenting and effortful control in a Dutch community sample. For both mothers and fathers, few significant associations were found between parental personality and parenting behaviors. Effortful control moderated the relation between personality and parenting. More neurotic fathers used more positive control and more extraverted fathers used more negative control, but only

when children had a low level of effortful control. These findings correspond with our hypothesis that individual differences in personality are most accentuated during the stressful experience of parenting a less self-regulated child.

Chapter 5

Predicting Young Children's Externalizing Problems: Interactions between Effortful Control, Child Sex, Parenting, and Coparenting

Karreman, A., Van Tuijl, C., Van Aken, M. A. G., & Deković, M. (2006). Predicting young children's externalizing problems: interactions between child sex, effortful control, parenting, and coparenting. *Manuscript submitted for publication.*

This study investigated interactions between child characteristics (observed temperamental effortful control and child sex) and observed family processes (parenting and coparenting) in the prediction of externalizing problems. These relations were examined concurrently when the child was 3 years old, and longitudinally at 4.5 years. The sample included 89 two-parent families and their firstborn children. Children with a low level of effortful control were most at risk of displaying externalizing problems. However, more positive control by mothers and fathers seemed to buffer this risk. In addition, boys were at risk of displaying externalizing problems, but again this was buffered by positive control by mothers and fathers. Effortful control was more strongly related to concurrent externalizing problems in boys than in girls, but girls' effortful control had a greater long-term effect on externalizing problems.

5.1 Introduction

Externalizing problems in preschool-aged children have been demonstrated to be strongly predictive of externalizing problems late in life (Campbell, 1995; Campbell, Shaw, & Gilliom, 2000). Revealing the antecedents of early externalizing problems is therefore of great importance. Several studies have examined the prediction of early externalizing problems, such as problems with attention, hyperactivity, impulsivity, oppositional or defiant behavior, and conduct problems (Keenan & Shaw, 1997). Among the predictors were individual characteristics of children (e.g., temperament, sex) and family processes (e.g., parenting) taken separately. However, interactions between these factors have been studied less often (see Gallagher, 2002; Van Aken, van Lieshout, Scholte, & Haselager, 2002; Van Aken, 2004). However, the interaction between child factors and family processes is assumed to capture the complexity of developmental processes more precisely than each of these two factors can separately (Kochanska, 1993, 1997). The present study investigated interactions between child characteristics (observed temperamental effortful control and sex) and observed parenting and coparenting in the prediction of externalizing problems. These relations were examined both concurrently when the child was 3 years old, and longitudinally at 4.5 years.

5.1.1 Effortful control and externalizing problems

A child's executive skills in regulating emotions and behaviors are considered to play a central role in the development and persistence of externalizing problems (Kochanska & Knaack, 2003; Olson, Sameroff, Kerr, Lopez, & Wellman, 2005). Effortful control is a temperamental construct, capturing the ability of a child to manage levels of arousal and irritability. Rothbart (1989) introduced the construct and defined it as the ability to suppress a dominant response and to perform a subdominant response. It emerges at the end of the first year and is assumed to be evident at 3 years of age (Kochanska, Murray, & Harlan, 2000; Kochanska & Knaack, 2003). Preschoolers with a low level of effortful control are limited in their coping strategies for handling impulses and stresses in the environment. They are less effective in shifting attention from immediate impulse gratification to its subsequent consequences and, as a result, are more likely to show impulsive and disruptive behaviors (Olson et al., 2005). A higher level of effortful control, on the other hand, may enable children to inhibit impulses on their own and to regulate their behavior in response to environmental demands.

Prior research has established that lower levels of effortful control are at least moderately associated with concurrent and later externalizing problems (Eisenberg et al., 1996; Gartstein & Fagot, 2003; Kochanska & Knaack, 2003; Murray & Kochanska, 2002; Olson et al., 2005; Rothbart, Ahadi, Hershey, & Fisher, 2001; Rubin et al., 2003). The findings suggest that effortful control is a key construct that needs to be studied in order to gain insight into the precursors of externalizing problems.

5.1.2 Family processes and externalizing problems

Parents are expected to play a major role in introducing societal and moral standards, and in disciplining, supporting and guiding the child in order to prevent disruptive behaviors (Kochanska et al., 2000). Negative controlling parenting (e.g., harmful, power-assertive, punishing behavior) is likely to have a damaging effect on young children, interfering with the internalization of social morals (Kochanska, 1997). It may therefore lead to externalizing problems. Positive controlling parenting (e.g., limit-setting in a constructive way, provision of structure, instructional behavior) and responsive parenting (e.g., warmth, acceptance) are likely to buffer the risk of externalizing problems by affording a safe context of guidance and support for the internalization of social morals.

Indeed, both negative and positive parenting have been reported to be related to externalizing problems (Belsky et al., 1998; Gardner, 1994; Gartstein & Fagot, 2003; Olson et al., 2005; Shaw, Winslow, Owens, Vondra, Cohn, & Bell, 1998), both concurrently and longitudinally. Several studies, however, did not find a direct relation between parenting and externalizing problems (Belsky et al., 1998; Rubin et al., 2003). In addition, a meta-analysis performed by Rothbaum and Weisz (1994) of cross-sectional studies on parenting and externalizing behaviors showed that the findings are often inconsistent across studies or reveal small to moderate effects.

The general focus in the study of externalizing problems in preschoolers is on the role of maternal parenting (Morris et al., 2002; Rubin et al., 2003). Comparing maternal and paternal parenting yielded different findings across studies: some studies found mothering to be a stronger predictor of externalizing problems than fathering (Belsky et al., 1998; Gartstein & Fagot, 2003), whereas other studies have found stronger effects of fathering (Cowan, Cohn, Cowan, & Pearson, 1996). Because fathers' role in rearing their children has grown in the last decade (Parke, 2002), we need to examine fathers' parenting to obtain a complete picture of family influences.

In addition to parenting of both mothers and fathers, other family contextual influences are worth studying in relation to externalizing problems (Gartstein & Fagot, 2003). Coparenting is an important family subsystem, denoting the extent to which parents cooperate as a team in rearing their child (McHale, 1997; McHale, Kuersten-Hogan, Lauretti, & Rasmussen, 2000; Schoppe, Mangelsdorf, & Frosch, 2001). Increasing evidence suggests that coparenting represents a distinct family construct that has its own influence on child functioning over and above individual parenting practices (Cowan & McHale, 1996). Through undermining coparenting, parents model negative negotiation patterns in the family context and express inconsistent environmental cues. By causing uncertainty in the child, undermining coparenting may lead to frustration and externalizing problems (Cummings & Davies, 1995; McHale & Rasmussen, 1998). Supportive coparenting promotes a sense of family-level security and may prevent the child from developing externalizing problems (McHale & Rasmussen, 1998).

High levels of undermining coparenting (e.g., hostility-competitiveness, child-rearing disagreements) and low levels of supportive coparenting (e.g., family harmony) have been found to be associated (both concurrently and longitudinally) with more externalizing problems in preschoolers (Lee, Beauregard, & Bax, 2005; McHale & Rasmussen, 1998; Schoppe et al., 2001). Katz and Low (2004) found associations between observed hostile-withdrawn coparenting and delinquency, but they did not find associations between hostile-withdrawn coparenting and aggression, nor between observed positive coparenting and delinquency or aggression.

5.1.3 Interaction between effortful control and family processes

It is likely that parenting and coparenting do not affect all children in the same way. Parenting and coparenting will probably have different developmental outcomes for different preschoolers as a function of their temperament (Belsky et al., 1998; Gallagher, 2002; Kochanska, 1997; Van Aken et al., 2000; Van Aken, 2004). Preschoolers with a high level of effortful control may be more resistant to the effects of negative parenting and coparenting, protecting themselves from developing externalizing problems through their easy temperament. Preschoolers with a low level of effortful control may be at additional risk of displaying externalizing problems because of the cumulative effects of family and temperamental risk factors. According to Belsky (1997), positive socialization may also buffer the risk of displaying externalizing problems for children with a difficult temperament (e.g., a low level of effortful control) because these children are more 'susceptible to environmental influence'. However, it is also likely that

positive parenting has stronger effects on externalizing problems for children with an easy temperament, or a high level of effortful control, because they are more likely to respond to positive parenting practices (Olson et al., 2005). Kochanska (1997) asserted that children differ in their parenting needs: for children with an easy temperament, responsiveness is sufficient to internalize social morals, whereas for children with a difficult temperament, gentle discipline (i.e., positive control) is the best parenting behavior to accomplish internalization, yielding stronger effects on these children.

Some studies have found support for an interaction effect between young children's effortful control and parenting in the prediction of externalizing problems. Maternal negative parenting was found to be related to externalizing problems only in children with a low level of effortful control (e.g., Morris et al., 2002; Rubin, Hastings, Chen, Stewart, & McNichol, 1998, Rubin et al., 2003). Other studies that examined the interactive mechanism in young children did not find support for interactions between negative or positive parenting and effortful control in the prediction of externalizing problems (Gartstein & Fagot, 2003; Olson et al., 2005). To our knowledge, no studies have examined the interaction between coparenting and effortful control in the prediction of externalizing problems.

5.1.4 Child sex

Little is known about sex differences in the prediction of externalizing problems from effortful control. Rubin et al. (2003) and Olson et al. (2005) did not find sex differences in the relation between effortful control and externalizing problems, although they reported 3 and 4-year-old boys to have more externalizing problems than girls.

In addition, the way in which the relation between parenting or coparenting and externalizing problems potentially differs between girls and boys is unclear. A different relation between parenting and coparenting behaviors and externalizing problems in girls and boys may be caused by different treatment of girls and boys by their parents. Because in Western society overactivity and defiance are considered as more normative for boys than for girls, expressions of externalizing symptoms are more likely to be accepted and encouraged in boys than in girls (Keenan & Shaw, 1997; Zahn-Waxler, 1993). One might expect that the association between coparenting and externalizing problems would be stronger for boys than for girls, because boys have been found to have more difficulty than girls in coping with interparental conflict (Gordis, Margolin, & John, 1997).

Shaw, Keenan, and Vondra (1994) found maternal responsiveness in infancy to be negatively related to externalizing problems at preschool age only in boys,

but this relation disappeared after controlling for aggression at 2 years. Rubin et al. (1998) did not find emotion dysregulation and maternal negative dominance to separately interact with child sex in the prediction of aggression or externalizing problems. However, they found support for a three-way interaction, indicating that negative dominance was related to externalizing problems only for emotionally dysregulated boys. With respect to coparenting, McConnell and Kerig (2002) found hostility-competitiveness to be significantly related to mother-reported externalizing problems in school-aged boys, but not in girls. Lee et al. (2005) did not find correlations between child-related disagreements and externalizing problems to differ between girls and boys.

5.1.5 The current study

The first aim of this study was to examine whether child effortful control, parenting, and coparenting at 3 years predict externalizing problems at 3 years and the residualized change in externalizing problems from 3 to 4.5 years (i.e., the prediction of externalizing problems at 4.5 years, after controlling for externalizing problems at 3 years) (Mason, Cauce, Gonzales, & Hiraga, 1996). We expected effortful control, parenting and coparenting to independently predict externalizing problems at 3 years and residualized change in externalizing problems from 3 to 4.5 years. Stronger associations were hypothesized for effortful control than for parenting and coparenting. The second aim was to investigate whether parenting and coparenting behaviors interact with effortful control in the prediction of externalizing problems at 3 years and residualized change in externalizing problems from 3 to 4.5 years. We hypothesized that negative parenting and coparenting would more strongly predict externalizing problems in preschoolers with a low level of effortful control. We did not formulate hypotheses for positive parenting and coparenting in interaction with effortful control, as theories and previous studies yielded inconsistent results. The third aim was to examine whether effortful control, parenting, and coparenting are differently related to externalizing problems at 3 years and residualized change from 3 to 4.5 years for girls than for boys. On the basis of albeit limited empirical findings, we hypothesized that the relation between effortful control and externalizing problems would be similar for girls and boys. We expected to find the association between parenting and coparenting behaviors and externalizing problems to be stronger for boys than for girls. Finally, we explored the issue of whether there are three-way interactions of parenting and coparenting with child sex and effortful control in the prediction of externalizing problems at 3 years and residualized change in externalizing problems from 3 to 4.5 years.

5.2 Method

5.2.1 Participants

At T1, 89 two-parent families raising firstborn 3-year-old children (45 boys, 44 girls) and 81 daycare providers or preschool playgroup teachers participated in the study. Mothers' mean age was 34.5 years ($SD = 4.2$, range 21-46); fathers' mean age was 36.5 years ($SD = 4.7$, range 22-50). All mothers and fathers were the biological parents of the children. In 56 percent of the families, the child had a younger sibling. On average, couples had been together for 10.3 years ($SD = 4.7$, range 3-22). Ninety-eight percent of the fathers and 99 percent of the mothers had Dutch nationality. The majority of the parents were highly educated (23.9% of the mothers and 30.7% of the fathers had a university education) and worked outside the home. At T2, when the children were 4.5 years old, 74 families and 68 kindergarten teachers participated.

The families of the children who dropped out from T1 to T2 differed from the rest of the families on one demographic variable: on average fathers worked more hours per week outside the home in the drop-out group, $t(79) = -2.11$, $p < .05$. No differences were found on the following demographic variables: educational level, nationality, one versus more children, age of parents, number of years together with partner. Regarding all independent and dependent variables of this study, no differences were found between the families of the children who dropped out and the rest of the families.

5.2.2 Procedure

This study was part of a research project on family dynamics and child adjustment. Families were recruited through daycare centers and preschool playgroups in different parts of the Netherlands. After agreeing to participate, daycare centers and playgroups distributed letters among parents of preschool-aged children asking them to participate in the study. Parents who indicated willingness to participate were selected if the parents lived together and if the target firstborn child was nearly 3 years old.

In the selected families, home observations and daycare center and preschool playgroup observations were used to measure family interaction and child effortful control at T1 when the child was 36 months old (range 35-37). After the home and daycare center visits, mothers, fathers and teachers were asked to complete a questionnaire. Parenting and coparenting were measured during the home visits on the basis of (a) dyadic mother-child play sessions, (b) dyadic father-child play

sessions and (c) triadic play sessions. Each session consisted of unstructured and structured play tasks, most of them followed by a clean-up period. In the dyadic sessions, the tasks involved solving a matching game, engaging in a building game, and reading a picture book. The tasks were similar for both parents. In the triadic session, the tasks involved building pathways with dominoes, pretending to have a family meal, and constructing a marble track. All sessions were videotaped and afterwards independently coded by a trained coding team.

At daycare centers and preschool playgroups, children were observed while they performed twelve tasks measuring effortful control. The session took place in a room where no other children were present. All tasks were presented as games and after each task the child was rewarded, regardless of his/her performance. The children received two gifts, which were part of the observation battery. The tasks were independently coded by a team of trained coders.

One and a half years later, at T2, parents were contacted and asked to fill out a questionnaire on externalizing problems. They were also asked to give the kindergarten teacher permission to complete the same questionnaire about their child. After their permission had been received, the kindergarten teachers were sent the questionnaire.

5.2.3 Measures

Externalizing problems at 3 and 4.5 years

Two scales - *Conduct Problems* and *Hyperactivity* - of the Strengths and Difficulties Questionnaire (SDQ, Dutch version; Goodman, 1997) were used to measure externalizing problems at 3 and 4.5 years. Each scale consisted of 5 items, which mothers, fathers and preschool teachers or childcare providers (age 3) and mothers, fathers and kindergarten teachers (age 4.5) had to answer about the child on a 3-point scale (*not true, somewhat true, certainly true*). Examples of items are: 'Often has temper tantrums or hot tempers' (Conduct Problems) and 'Constantly fidgeting or squirming' (Hyperactivity).

Cronbach's alpha ranged from .66 (father-reported Conduct Problems) to .83 (mother-reported Hyperactivity) at age 3 and from .66 (mother-reported Conduct Problems) to .89 (teacher-reported Hyperactivity) at age 4.5. Conduct Problems and Hyperactivity were significantly correlated for each informant at both times, with a range from $r = .41$ (father report at age 3) to $r = .66$ (mother report at age 4.5). The Conduct Problems and Hyperactivity scales were therefore averaged to create an externalizing behavior score for each informant at both ages. The scores of all informants loaded on a single factor at age 3 (loadings were .91 for mothers, .89 for fathers, and .81 for teachers) and at age 4.5 (loadings were .93 for mothers,

.90 for fathers, and .72 for teachers). The mean scores on externalizing problems reported by mothers, fathers and teachers were therefore used as measures of externalizing problems at ages 3 and 4.5.

Observed effortful control at 3 years

Eleven tasks of the Effortful Control Battery (Kochanska et al., 2000) were translated and adapted into Dutch and pilot tested for the observation of effortful control at 3 years. On the basis of the one-factor solution of a principal components analysis of the total sample of this study, five tasks with factor loadings lower than .30 were deleted.

Tasks included were Snack delay, Wrapped Gift, Gift-in-Bag, Tongue task, Dinky Toys, and Shapes. The task *Snack Delay* measures the ability of a child to keep his or her hands on a mat on the table in front of a piece of candy under a transparent cup until the researcher lifts and eventually rings a bell as permission to pick up the candy. *Wrapped Gift* assesses the child's ability not to peek when the gift is wrapped behind his or her back and, secondly, not to touch the gift until the researcher returns from getting a bow for the gift. *Gift-in-Bag* is a similar task in which the child has to wait while the researcher leaves the room for 3 minutes to get a bow for the gift. The *Tongue task* measures whether the child can keep candy in his or her mouth without chewing it. *Dinky Toys* refers to a task which captures the child's ability to keep his or her hands on his or her knees while telling the researcher what toy he or she finds most attractive to play with from a box filled with toys. The *Shapes task* assesses the ability to focus on a subdominant rather than dominant picture. After practicing names of fruit and the meaning of 'big' versus 'little', the child is asked to point to the image of a small fruit that is embedded in a dominant picture of a large fruit.

Five coders coded the tasks from videotapes according to Kochanska et al. (2000). Reliability, based on approximately 15% of all cases and capturing all tasks, was computed for all pairs of coders. Following Kochanska et al. (2000), Cohen's Kappa was calculated for all aspects of each task using categorical scores (Wouters, 1988) and percentage agreement was calculated for aspects of the tasks using latency scores. The mean Kappa was .79 with mean Kappa per task ranging from .63 (*Gift-in-Bag*) to .85 (*Wrapped Gift*). The mean percentage agreement was 92% (scores coded within 1 s), ranging per task from 88% (*Wrapped Gift*) to 99% (*Tongue task*). A composite score for *Effortful Control* was calculated by averaging standardized task scores.

Observed parenting and coparenting at 3 years

Parenting and coparenting interactions were measured when children were 3-years-old, using the videotaped records, with the Coparenting and Family Rating System (CFRS; McHale, 1995). Rating scales were translated into Dutch and pilot tested. Parenting scales measure behaviors during dyadic mother-child and father-child interactions. Coparenting scales capture behaviors that can only be perceived within the context of the family group, as well as differences in parental behavior in the family-group context, i.e., parental discrepancies (McHale et al., 2000).

Six dimensions of parenting behavior were measured using a 7-point Likert-type scale and seven dimensions of coparenting behavior were measured using a 5-point scale. For all three tasks, we rated behavior in 3 minutes of family interaction: the first, middle, and last minute of each task. Thus, for each dyadic and triadic session, nine ratings per dimension were created. This way of combining a micro and macro system of coding allowed us to benefit from both methods, limiting overlap between scales and observing interactions in more detail. The six parenting scales were Warmth, Investment, Limit-Setting, Sensitivity, Provision of Structure, and Negativity (McHale, 1995; McHale et al., 2000). *Warmth* measures the frequency and intensity of affect shown toward the child by a parent, such as encouragement, smiles, laughter, and physical affection. *Investment* assesses the extent to which a parent is involved and concerned that the child behaves or performs tasks correctly. *Limit-Setting* measures the extent to which a parent prevents the child from wandering away from assigned tasks. *Sensitivity* refers to the timing and quality of a parent's interventions with the child. *Provision of Structure* refers to the extent to which a parent structures the task and provides information about it, and *Negativity* measures the degree to which a parent criticizes, ignores the child, and is overtly annoyed during the session.

Principal components analysis with varimax rotation yielded three parenting factors: Positive Control, Negative Control, and Warmth. For both mothers and fathers, the three-factor solution accounted for 74% of the variance in parenting scores. Factors were created by averaging the scale scores. *Positive Control* consisted of the scales Provision of Structure, Limit-Setting, and Sensitivity. *Negative Control* contained Negativity and Investment. The positive loading of Investment on Negative Control can be explained by the aspect of over-involvement: when a parent is continually interacting with the child, which was rated in most mothers and fathers, it may be intrusive for the child. The factor *Warmth* consisted of the scale Warmth. All factor loadings were above .51 for mothers and .64 for fathers.

Coparenting scales were Competition, Cooperation, Verbal Sparring, Coparental Warmth, Child-Centeredness, Parent-Child Warmth, and Parent-Child

Investment (McHale, 1995; McHale et al., 2000). *Competition* refers to the frequency with which parents actively interfere with or sabotage one another's initiatives and interventions with the child. *Cooperation* reflects the extent to which parents collaborate, actively support one another's interventions with the child, and respect each other as parents. *Verbal Sparring* refers to the frequency and degree of parents' sarcastic-to-hostile remarks to one another. *Child-Centeredness* indicates which family member's ideas and initiations predominantly shape the direction of family play, those of the parents (low scores) or those of the child (high scores). *Coparental Warmth* assesses the level of positive affect parents show to one another, such as joking, warm glances, and verbal and physical affection. *Parent-Child Warmth* and *Investment* reflect the same behaviors as parenting Warmth but measured in triadic context. A total *Family Warmth* score was created by summing standardized values for Coparental Warmth, Mother-Child Warmth, and Father-Child Warmth during triadic interactions. *Parenting discrepancy* scores were constructed by calculating the absolute value of the difference in Warmth and Investment shown by the parents to the child in triadic context. The discrepancy scores were used as an indication of differences in behavior between the two parents in a family-group context. Following McHale (1995), three standardized coparenting scores were created: *Family Harmony* (Family Warmth and Cooperation), *Hostility-Competitiveness* (Verbal Sparring, Competition and Child-Centeredness (reversed)), and *Parenting Discrepancies* (discrepancies Warmth and discrepancies Investment).

All parenting and coparenting scales were coded by two coders. Interrater reliability for each pair of coders was based on approximately 15% of all cases. Gamma was used as a measure of reliability, because it is a statistic that controls for chance agreement, but is more appropriate for ordinal data than Kappa (Liebetrau, 1983; Schoppe et al., 2001). Mean Gamma for maternal parenting was .88, ranging from .81 (Sensitivity) to .96 (Limit-Setting) and mean Gamma for paternal parenting was .88, ranging from .79 (Sensitivity) to .92 (Limit-Setting). The mean Gamma for coparenting was .87, ranging from .78 (Warmth father-child) to .97 (Child-Centeredness).

5.3 Results

5.3.1 Descriptive analyses

Means and standard deviations of all variables for girls and boys are presented in Table 5.1. Boys had more externalizing problems than girls at age 3,

$t(84) = 2.34, p < .05$. No child sex differences were found for externalizing problems at age 4.5, child effortful control, and the coparenting variables. For the parenting variables, a two-way MANOVA was conducted with sex of parent and sex of child as between-subjects factors. Fathers exerted more positive control in interaction with their child than mothers, $F(1, 172) = 9.99, p < .01$. Mothers and fathers exerted more positive control, $F(1, 172) = 7.07, p < .01$, and displayed more warmth, $F(1, 172) = 5.32, p < .05$, towards girls than towards boys. No significant interaction effects were found between sex of parent and sex of child.

Externalizing problems at age 3 correlated strongly with externalizing problems at 4.5, with $r = .71$ for the total sample, $r = .65$ for girls, and $r = .74$ for boys ($p < .001$), suggesting fairly strong stability at preschool age.

Table 5.1

Means and Standard Deviations of All Variables for Girls and Boys

Variable	Girls		Boys	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Externalizing problems 3 yrs	2.20	1.28	3.01	1.90
Externalizing problems 4.5 yrs	2.19	1.66	2.62	1.78
Child Effortful Control	.07	.49	-.11	.58
Parenting mothers				
Positive control	5.59	.47	5.43	.54
Negative control	2.97	.40	2.92	.31
Warmth	4.44	.46	4.17	.75
Parenting fathers				
Positive control	5.38	.61	5.07	.74
Negative control	3.12	.47	2.99	.32
Warmth	4.49	.53	4.35	.61
Coparenting				
Family harmony	-.06	.74	.06	.94
Hostility-competitiveness	-.05	.66	.05	.69
Parenting discrepancy	-.07	.70	.07	.96

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Table 5.2

Correlations Among All Variables for the Total Sample

	1	2	3	4	5	6	7	8	9	10	11	12
1. Externalizing problems 3 years	-											
2. Externalizing problems 4.5 years	.71***	-										
3. Effortful control	-.34**	-.31**	-									
4. Positive control M	-.16	-.11	.31**	-								
5. Negative control M	.19	.22	-.21	-.01	-							
6. Warmth M	-.02	-.23	.02	.05	.04	-						
7. Positive control F	-.14	-.12	.19	.59***	.03	-.02	-					
8. Negative control F	.23*	.30*	-.35**	.04	.37***	-.02	.11	-				
9. Warmth F	-.13	-.07	.04	-.13	-.24*	.32**	.04	-.14	-			
10. Family harmony	.07	-.08	-.07	-.10	-.13	.31**	.15	-.02	.36**	-		
11. Hostility-competitiveness	.18	.09	-.34**	.12	.30**	-.02	.19	.30**	.09	.26*	-	
12. Parenting discrepancy	-.14	.00	-.11	.02	-.04	-.20	-.25*	-.13	-.27*	-.31**	.13	-

* $p < .05$; ** $p < .01$; *** $p < .001$; M = Mothers, F = Fathers

5.3.2 Correlational analysis

Table 5.2 shows the correlations among all of the measured variables for the total sample. Maternal parenting variables correlated significantly with corresponding paternal parenting variables. Child effortful control, measured at age 3, was negatively associated with externalizing problems at 3 and 4.5 years. Observed negative control by fathers was related to more externalizing problems at 3 and 4.5 years. No significant correlations were found between coparenting and externalizing problems.

Several correlations with externalizing problems were significantly different for girls and boys. Effortful control was significantly negatively related to concurrent externalizing problems in boys ($r = -.47, p < .01$), whereas it was not related to concurrent externalizing problems in girls ($r = .03, ns; z = -2.34, p < .05$). Observed positive control by mothers was differently related to concurrent externalizing problems in girls ($r = .24, ns$) compared to boys ($r = -.25, ns; z = -2.22, p < .05$). More observed positive control by fathers was associated with more concurrent externalizing problems in girls ($r = .35, p < .05$), but with fewer concurrent externalizing problems in boys ($r = -.30, p < .05; z = -3, p < .01$). Furthermore, more positive control by fathers was differently related to externalizing problems at 4.5 years in girls ($r = .22, ns$) compared to boys ($r = -.30, ns; z = -2.19, p < .05$).

5.3.3 Predicting externalizing problems from child sex, effortful control, parenting, and coparenting

Hierarchical multiple regression analyses were conducted to examine the main and interacting contributions of child sex, effortful control, parenting, and coparenting in the prediction of externalizing problems at 3 years. Similar analyses were performed to predict the residualized change in externalizing problems from 3 to 4.5 years, indicating effects on change in externalizing problems. Separate analyses were performed for maternal and paternal parenting to avoid multicollinearity and to reduce the number of predictors. To predict externalizing problems at 3 years, child sex was entered at step 1, child effortful control at step 2, maternal or paternal parenting variables at step 3, and coparenting variables at step 4. Two and three-way interactions with child sex and effortful control were separately entered at step 5 to reduce the number of predictors. To predict the residualized change in externalizing problems from 3 to 4.5 years, the same analyses were conducted after controlling for externalizing problems at 3 years (entered at step 1).

Interaction terms were created by multiplying standardized scores of the parenting and coparenting behaviors, sex, and effortful control. Significant interactions were interpreted by plotting regression lines for high (more than one standard deviation above the mean) and low (more than one standard deviation below the mean) standardized values of effortful control and parenting and coparenting behaviors, and for girls and boys (Holmbeck, 1997). To graph interactions in the prediction of the residualized change in externalizing problems from 3 to 4.5 years, a residualized change score was created, denoting the difference between the score on externalizing problems at 4.5 years and the score which would be predicted based on externalizing problems at 3 years (Mason et al., 1996). Positive residualized scores indicate that children have more-than-expected externalizing problems at 4.5 years based on their level of externalizing problems at 3 years. Negative residualized scores indicate that children have less-than-expected externalizing problems at 4.5 years.

Table 5.3 shows the betas of the step before the interaction terms were entered and the changes in proportion of explained variance of the regression analyses. In the prediction of externalizing problems at 3 years, main effects were found for child sex, effortful control and parenting discrepancy. Girls, as well as children with a higher level of effortful control, were less likely to display concurrent externalizing problems. Although the betas did not reach significance in the analyses with paternal parenting, child sex and effortful control contributed a significant proportion of explained variance of concurrent externalizing problems (it should be borne in mind that the reported betas were betas of step 5 in Table 5.3). More discrepancies between maternal and paternal parenting, observed in triadic interactions, significantly contributed to fewer concurrent externalizing problems. Externalizing problems at 3 years explained 49% of the variance of externalizing problems at 4.5 years. One main effect appeared in the prediction of residualized change of externalizing problems from 3 to 4.5 years: more observed warmth of mothers at 3 years contributed to fewer externalizing problems at 4.5 years than would be predicted from externalizing problems at 3 years.

There were several significant interactions with child effortful control and sex in the prediction of externalizing problems (Figure 5.1). When mothers or fathers exerted a considerable degree of positive control in interaction with their child, children showed a mean level of externalizing problems independent of their level of effortful control. When mothers or fathers employed a low level of positive control, children with a high level of effortful control had low or average scores respectively on externalizing problems. Children with a low level of effortful control on the other hand were likely to score high on externalizing problems. Furthermore, girls and boys differed in level of externalizing problems only when

mothers and fathers exhibited a low level of positive control. Where positive control was low, girls had fewer externalizing problems than boys, whereas when positive control was high, girls and boys showed a similar (mean) level of externalizing problems. Children who had a high level of effortful control displayed few externalizing problems, independent of their sex. Where effortful control was low, boys had more externalizing problems than girls. However, girls who had a low level of effortful control had more externalizing problems at 4.5 years than would be expected based on their externalizing problems at 3 years, than boys with a low level of effortful control. Where there was a high level of effortful control, girls and boys did not differ much in their residualized change in externalizing problems from 3 to 4.5 years. No significant three-way interaction effects of parenting and coparenting, child sex, and effortful control were found in the prediction of externalizing problems at 3 years and the residualized change in externalizing problems from 3 to 4.5 years.

Table 5.3
The Prediction of Externalizing Problems at 3 Years and Residualized Change in Externalizing Problems from 3 to 4.5 Years

Step		Externalizing problems 3 years				Externalizing problems 4.5 years			
		Maternal parenting		Paternal parenting		Maternal parenting		Paternal parenting	
		β	ΔR^2	β	ΔR^2	β	ΔR^2	B	ΔR^2
1.	Externalizing problems 3 years	-	-	-	-	.69***	.49***	.69***	.49***
2.	Sex of Child	-.27*	.07*	-.20	.07*	.06	.00	-.01	.00
3.	Child Effortful Control	-.25*	.09**	-.22	.09**	-.05	.00	.00	.00
4.	Parenting		.03		.04		.05		.01
	Positive control	-.05		-.20		.01		-.07	
	Negative control	.12		.07		.08		.04	
	Warmth	.02		-.15		-.25*		.06	
5.	Coparenting		.05		.07		.01		.01
	Family harmony	-.11		-.05		.03		-.05	
	Hostility-competitiveness	.10		.17		-.08		-.04	
	Parenting discrepancy	-.24*		-.31*		.04		.06	
6.	Interactions ^a								
	Positive control x EC	.23*	.05*	.23*	.05*	.01	.00	-.17	.03
	Positive control x Sex	.25*	.06*	.33**	.10**	.10	.01	.15	.02
	Effortful control x Sex	.24*	.05*	.23*	.05*	-.22*	.04*	-.22*	.04*

^a Only significant interactions are shown; EC = Effortful control; * $p < .05$; ** $p < .01$; *** $p < .001$

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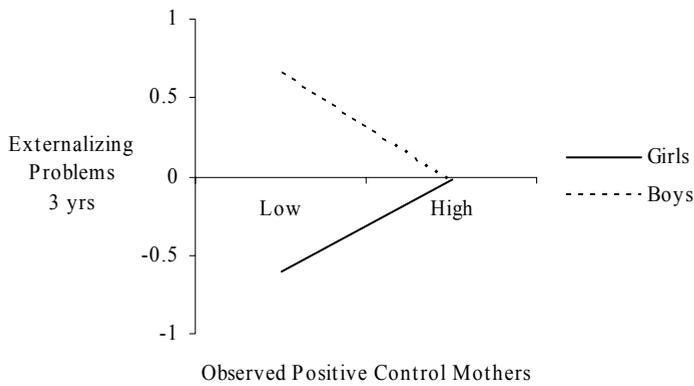
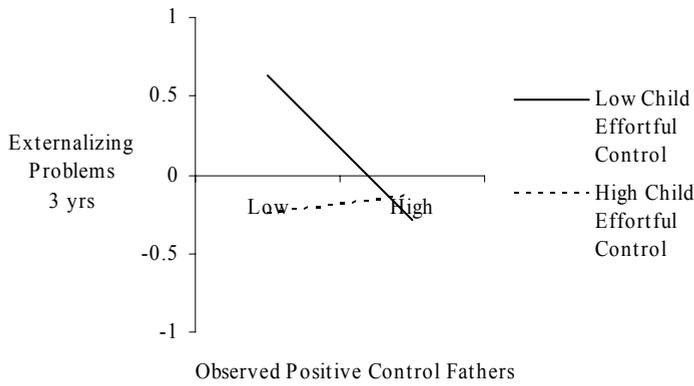
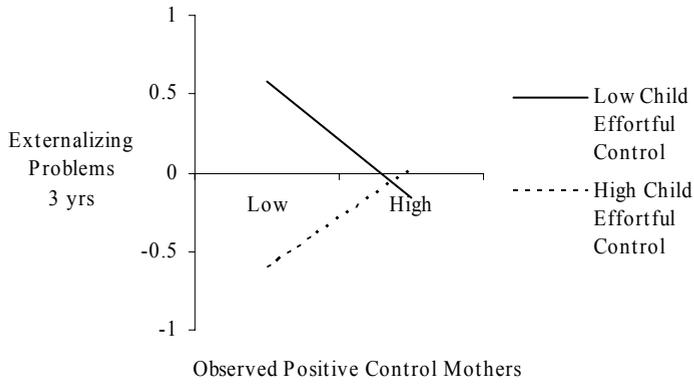


Figure 5.1 (to be continued)

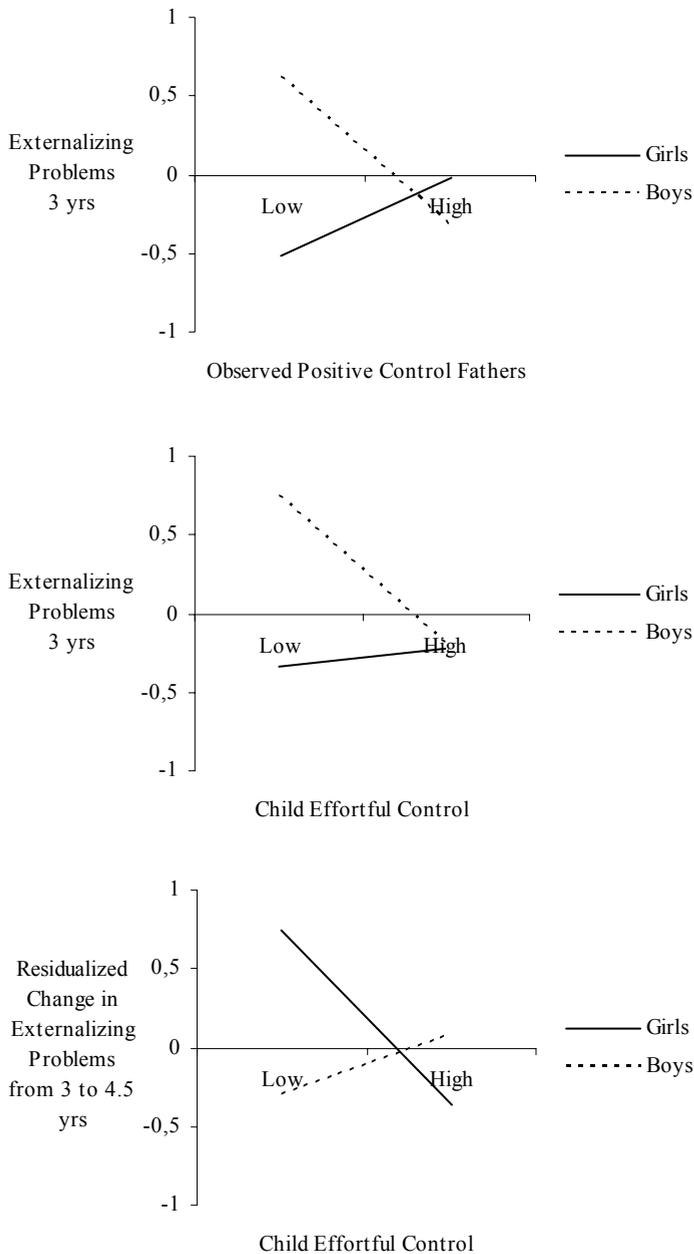


Figure 5.1. Interactions with child effortful control and sex in the prediction of externalizing problems at 3 years and residualized change in externalizing problems from 3 to 4.5 years.

5.4 Discussion

The current study endeavored to shed light on interactions between child characteristics (effortful control and sex) and observed parenting and coparenting in the prediction of externalizing problems in preschool-aged children. The first aim of the study was to examine the independent contributions of effortful control, parenting and coparenting to externalizing problems at 3 years and residualized change in externalizing problems from 3 to 4.5 years. After controlling for child sex, effortful control independently contributed to externalizing problems at 3 years. Children with a higher level of effortful control were less likely to display externalizing problems, which has also been found in other studies (Eisenberg et al., 1996; Gartstein & Fagot, 2003; Kochanska & Knaack, 2003; Murray & Kochanska, 2002; Olson et al., 2005; Rothbart et al., 2001; Rubin et al., 2003).

In general, parenting and coparenting did not contribute as main effects to externalizing problems. These results are in line with our expectations, based on prior studies that found effortful control to be more strongly associated with externalizing problems than parenting behaviors (Gartstein & Fagot, 2003; Morris et al., 2002; Rubin et al., 1998, 2003). However, although some studies did not find parenting to be associated with externalizing problems (Belsky et al., 1998; Rubin et al., 2003), other studies did (Belsky et al., 1998; Gardner, 1994; Gartstein & Fagot, 2003; Olson et al., 2005; Shaw et al., 1998). Furthermore, a direct relation has been found between coparenting and externalizing problems (Lee et al., 2005; McHale & Rasmussen, 1998; Schoppe et al., 2001). The coparenting variable parenting discrepancy was the only socialization practice variable that significantly predicted fewer concurrent externalizing problems. Parenting discrepancies are likely to provide the child with inconsistency or mixed messages, which were actually expected to lead to externalizing problems. However, other researchers did not find an association with externalizing problems (McConnell & Kerig, 2002; McHale & Rasmussen, 1998). Parenting discrepancy describes the degree of difference in parents' propensity to engage with their child at the level of family group process. Bigger discrepancies signify either that one parent is over-involved or that one is disengaged, or both. Parents may complement each other when one of them is less warm, disengaged, or over-involved with the child, thereby protecting the child from externalizing problems. Further research is needed which takes into account the combination of mothers' and fathers' scores on warmth and investment.

Externalizing problems appeared to be fairly stable between 3 and 4.5 years. The predictors of externalizing problems at 3 years did not contribute to the residualized change in externalizing problems from 3 to 4.5 years. Observed

maternal warmth contributed to less-than-expected externalizing problems at 4.5 years. Warmth of mothers may provide a safe, supportive background for the internalization of social morals (Kochanska, 1997), which may have a long-term protective effect against externalizing problems.

The second aim of this study was to examine interactions between family processes and effortful control in the prediction of externalizing problems at 3 years and residualized change in externalizing problems from 3 to 4.5 years. When mothers or fathers employed a high level of positive control, children showed a mean level of externalizing problems, independent of their level of effortful control. When mothers or fathers exerted a low level of positive control, children with a high level of effortful control scored low or average respectively on externalizing problems, whereas children with a low level of effortful control were likely to score high on externalizing problems. Because the literature on interactions between positive parenting and child temperament has been found to be scarce and ambiguous, we did not formulate hypotheses. However, these results suggest that positive control buffers the negative effect of a low level of effortful control on externalizing problems, which is a plausible finding (Belsky, 1997; Kochanska, 1997). Children with a low level of effortful control, who have difficulty in managing impulses and emotions, probably benefit from more constructive limit-setting, structure, guidance and sensitivity in accomplishing internalization of social morals and regulating their behavior. Children with a high level of effortful control, who can manage their impulses and emotions on their own, apparently do not benefit from positive control in the internalization of social morals. When their mothers employ more positive control, this may be intrusive and children may even become bold and display more socially unacceptable behavior. However, their level of externalizing problems did not cross the mean level of externalizing problems of a normative sample of children. The findings are consistent with Kochanska's (1997) line of thought that children with different temperaments differ in their parenting needs.

The third aim was to investigate sex effects in the prediction of externalizing problems at 3 years and residualized change in externalizing problems from 3 to 4.5 years. Girls generally displayed fewer externalizing problems than boys, which corresponds with previous research (Keenan & Shaw, 1993). When mothers and fathers displayed a low level of positive control, girls showed few externalizing problems, whereas boys showed many externalizing problems. When mothers and fathers employed a high level of positive control, there were no differences between girls and boys in externalizing problems. The different relation between low positive control and externalizing problems in girls and boys may be caused by differential treatment by their parents. Parents may respond more quickly to

externalizing behaviors in girls than in boys, because these behaviors are considered as more atypical for girls (Keenan & Shaw, 1997; Zahn-Waxler, 1993). Furthermore, as with high-risk children with a low level of effortful control, boys may benefit more from positive control than girls, because they are more likely to show externalizing problems. Boys' effortful control was more strongly related to externalizing problems than girls' effortful control. However, girls' effortful control had a greater long-term effect on externalizing problems: a lower level of effortful control in girls at 3 years was related to a residualized increase in externalizing problems from 3 to 4.5 years. Thus, although some studies did not find the relation between effortful control and externalizing problems to differ between girls and boys (Olson et al., 2005; Rubin et al., 2003), this study found that child sex does play a role. Contrary to Rubin et al. (1998), we did not find support for three-way interactions, indicating that the association between family processes and externalizing problems did not differ among girls and boys with a high or low level of effortful control.

The present study was one of the few studies examining paternal parenting besides maternal parenting (Belsky et al., 1998; Cowan et al., 1996; Gartstein & Fagot, 2003). We found paternal parenting in interaction with child sex and effortful control to be associated with externalizing problems, indicating the importance of involving fathers in research on externalizing problems.

We expected that negative control would be more strongly related to externalizing problems for children with a low level of effortful control than for children with a high level of effortful control because of accumulation of effects of negative socialization and difficult temperament (Belsky et al., 1997; Morris et al., 2002; Rubin et al., 1998, 2003). In addition, we expected different effects of negative control for girls and boys. However, negative control of mothers and fathers was not related at all to externalizing problems. This has also been found in other studies (Gartstein & Fagot, 2003; Olson et al., 2005). Negative control perhaps negatively affects all groups of children. However, observed negative control was also not directly related to externalizing problems. The non-significant effects of negative control could be due to the content of the observed behaviors. Negative control was observed by rating critical comments, annoying and ignoring behavior, and intrusiveness of the parent in interaction with his or her child, which are mild forms of negative control. More severe forms of negative control, such as harsh and punitive parenting, may be more strongly related to externalizing problems. However, these behaviors have seldom been observed in a community sample.

Neither supportive nor undermining coparenting behaviors showed interaction effects with effortful control or child sex in the prediction of

externalizing problems. Although we did not find other studies that have examined interaction effects between coparenting and self-regulation, we expected to find interactions, corresponding to the effects of parenting behaviors in combination with child effortful control. On the basis of related studies, boys were expected to have more difficulty than girls in coping with coparenting difficulties (Gordis et al., 1997; McConnel and Kerig, 2002). Coparenting behaviors may create a family climate that has already affected child effortful control: the level of (dys)regulation in the family may have exerted an impact on the level of (dys)regulation in the child. Studies have found a relation between coparenting and child self-regulation (Belsky, Putnam, & Crnic, 1996; McHale, Kuersten, & Lauretti, 1996). In this study, more coparental hostility-competitiveness was significantly associated with a lower level of effortful control. However, previous studies have found a direct association between coparenting behaviors and externalizing problems (Lee et al., 2005; McHale & Rasmussen, 1998; Schoppe et al., 2001). The results of this study need to be replicated before we can draw any conclusions.

The study had several limitations. First, the participating families were primarily white, middle to upper-middle class, dual-income, and well-functioning, and the children did not show a large range in externalizing problems. Stronger results could have been found in other family samples, such as ethnically diverse, low-class and clinically distressed families. However, the focus of our study was to examine predictors of externalizing problems in a normative sample of preschoolers. Second, although we tried to create different situations for the observation of parenting and coparenting behaviors by administering structured and unstructured, playful and stressful tasks, the situations may not have elicited enough variance in negative parenting and coparenting behaviors. Third, although we studied externalizing problems longitudinally, we used only two measurement moments. Future research should start at a younger age and should measure both the child variables and family processes several times in order to create a more complete picture of the predictors of externalizing problems and change in externalizing problems in early childhood.

In conclusion, the results of the present study address the importance of integrating a child's individual characteristics and the family processes of both parents in order to improve our understanding of externalizing problems in preschoolers. Children with a low level of effortful control were most at risk of displaying externalizing problems. However, more positive control by mothers and fathers seems to buffer this risk. In addition, boys were at risk of displaying externalizing problems, but again this was buffered by positive control by mothers and fathers. Effortful control was more strongly related to concurrent externalizing problems in boys than in girls. However, girls' effortful control had a greater long-

term effect on externalizing problems: a low level of effortful control in girls at 3 years predicted an increase in externalizing problems from 3 to 4.5 years. These findings suggest that child sex and temperament need to be considered as well as family processes in the prediction of young children's externalizing problems.

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Chapter 6

General Discussion

The aim of the current thesis was to examine the interplay of within-family dynamics and self-regulation in preschoolers. In this chapter we discuss the findings of the four studies investigating this issue. We first discuss the three central research questions that were described in chapter 1, followed by a methodological discussion. Next, we present a general conclusion about person x environment interactions. Finally, we focus on the limitations of the current project and describe future directions.

6.1 Conclusions research questions

6.1.1. The association between family processes and self-regulation in preschoolers

The first question was whether family processes (parenting and coparenting) are associated with self-regulation in preschoolers. Various dimensions of parenting and coparenting were examined in the present thesis in order to compare different aspects of parenting, both positive and negative, with respect to their association with self-regulation in preschoolers. The key concept of self-regulation studied in this thesis is effortful control. According to Kopp's (1982) developmental model, at the age of three, children have the capacity to overcome reactive responses and to modulate their behavior. However, there is still inter-individual variation in the exercise of effortful control, which has been shown to have important implications for children's functioning (e.g., Kochanska, Murray, & Harlan, 2000; Olson, Sameroff, Kerr, Lopez, & Wellman, 2005). Effortful control can therefore be regarded as an important, age-appropriate temperamental concept to study in preschoolers.

Parenting and self-regulation

The meta-analysis that is presented in chapter 2 was conducted to examine whether categories of parenting (positive control, negative control, and responsiveness) are related to preschoolers' self-regulation. In the meta-analysis, positive and negative control were found to be related to self-regulation. More parental use of positive controlling strategies, such as directiveness with low to

moderate power assertion, guidance and instruction, was associated with a higher level of self-regulation. Conversely, the use of more negative controlling strategies, such as power-assertive limit-setting activities and coercive behaviors, was associated with a lower level of self-regulation. Responsiveness was not associated with self-regulation.

The meta-analysis furthermore investigated whether various conceptualizations of self-regulation are differently related to parenting. Because no significant variation in effect sizes was found for responsiveness, moderator analyses were conducted only for the association between positive and negative control respectively and self-regulation. For negative control, different associations were found among categories of self-regulation (compliance, inhibition and emotion regulation). Compliance was negatively related to negative control, whereas no significant correlation was found for inhibition and emotion regulation. Compliance was also found to be positively related to positive control, whereas inhibition and emotion regulation did not appear to be related to positive control. The differences between these correlations, however, did not reach significance.

Remarkably, few studies have been conducted on effortful control and parenting. It was therefore not possible to examine effortful control in the meta-analysis. Most studies focused on compliance, which refers to the modulation of behavior in response to parental requests (Kochanska et al., 2000). Other conceptualizations of self-regulation that have been studied are inhibition and emotion regulation. Although Rothbart (1989) introduced the concept of effortful control some years ago, most empirical research on effortful control has been conducted only recently. Studies published from 1985 through 2004 were included in the meta-analysis. The limited number of studies on effortful control over a period of many years may be due to the absence of widely accepted, reliable assessments of this concept for young children (Kochanska, Murray, Jacques, Koenig, & Vandegest, 1996). Kochanska et al. (1996) noted that effortful control (which they named inhibitory control at the time) is more complex than other temperament traits because of its multiple facets, which makes it a difficult research topic. Recently, reliable instruments have been developed for the assessment of effortful control, for example the Children's Behavior Questionnaire (CBQ; Rothbart, Ahadi, Hershey, & Fisher, 2001) and the multi-task battery of Kochanska et al. (1996, 2000).

We examined the associations between effortful control, measured by means of the CBQ (Rothbart et al., 2001) and Kochanska's observation battery (Kochanska et al., 2000), and parenting in chapter 3. The findings of the observational data correspond with the results of the meta-analysis. Observed maternal positive control and paternal negative control were the parenting

dimensions that were most strongly related to preschoolers' observed effortful control. Observed maternal and paternal warmth were not related to effortful control, which also corresponded with the meta-analysis. Positive and negative control may be important strategies for responding to a child with a low level of effortful control. Parental warmth or responsiveness, on the other hand, might be more related to aspects of individualization, such as well-being and self-concept (Amato & Fowler, 2002; Brophy & Dunn, 2002). In contrast to the observations, mother-reported responsiveness, but not control, was the most important maternal parenting dimension in relation to parent-reported effortful control. Only reported paternal positive control was associated with parent-reported effortful control. It should however be noted that when coparenting was entered in the model, these two parenting behaviors were not significantly related to reported effortful control. Prior studies have found relations between parental responsiveness and effortful control (Eiden, Edwards, & Leonard, 2004; Kochanska et al., 2000; Olson et al., 2005). More research on parenting and effortful control is needed to shed light on this issue. To conclude, although the meta-analysis showed that few studies have focused on effortful control in relation to parenting behaviors, the findings of chapter 3 point to effortful control as an important concept of self-regulation in relation to family processes.

Fathering and self-regulation

The meta-analysis of chapter 2 revealed that the majority of studies included only mothers. However, chapter 3 showed that paternal parenting contributed to effortful control above maternal parenting. Observed negative control and parent-reported positive control were significant contributors. Although it has been found that fathers spend a greater proportion of time in play activities and mothers in child-rearing activities (Parke, 2002), these results suggest that fathers, as well as mothers, do play a role in disciplining the child. Negative control was observed during play activities. The finding may implicate that child play is an important setting for socializing the child, with the child eliciting disciplining strategies from parents. Because fathers tend to be physical in play interaction (Parke, 2002) children may become aroused and show less self-regulated behavior during play interaction. As a result children may exert pressure on the father, which may elicit negative controlling strategies in the parent. Mothers tend to be didactic and toy-mediated when playing with their child (Parke, 2002). Their play with the child may be more relaxed and children may not elicit forceful strategies to control their behavior. This corresponds with the finding that observed maternal positive control was a significant contributor to observed effortful control. However, it does not explain the findings for the parent reports, in which fathers' positive control and

mothers' responsiveness were the most important contributors to effortful control. More research is needed to draw any conclusions, but the results of chapter 3 stressed the importance of considering fathers when investigating young children's socialization.

Coparenting and self-regulation

Coparenting was included in the empirical studies on which this thesis is based to examine a broader family context of parenting. Coparenting dynamics exist as a triadic unit of analysis and reflect a family subsystem that has properties that cannot be understood from the combined characteristics of the dyadic parenting relationships (Minuchin, 1985). Furthermore, few studies have examined coparenting and self-regulation in preschoolers (with the notable exceptions of Belsky, Putnam, & Crnic, 1996; McHale, Kuersten, & Lauretti, 1996). The study in chapter 3 examined parent-reported coparenting (family harmony, hostility-competitiveness, and parenting discrepancy) as well as observed coparenting (family integrity, conflict, and disparagement) in relation to effortful control in 3-year-old children.

Evidence was found that coparenting represents a unique family sphere that may or may not create a stimulating environment for socialization. Chapter 3 showed that coparenting was related to effortful control in preschoolers over and above maternal and paternal parenting. Similar results were found for observation and parent reports. The findings are consistent with previous research that found coparenting to contribute to young children's self-regulation in addition to parenting (Belsky et al., 1996; McHale et al., 1996). However, the importance of coparenting for effortful control has been shown for the first time.

Observed hostility-competitiveness in particular was associated with a lower level of effortful control. Parenting a less self-regulated child is likely to cause discord between parents. On the other hand, through engaging in conflict, parents do not model the regulation of emotions and behaviors, and as a result children may be less likely to learn self-regulatory capacities. Belsky et al. (1996) also found an association between observed undermining coparenting and observed inhibition in toddlers. However, parenting discrepancies, another dimension of observed undermining coparenting, was not related to effortful control. An explanation for this apparent discrepancy is that conflict between parents may be more apparent to children than parental discrepancies and hence more related to their behavior. In research on marital adjustment, conflict was demonstrated to have the strongest association with child adjustment, compared to other aspects of marital adjustment (Davies & Cummings, 1994; Grych & Fincham, 2001). Chapter 3 contributed to the investigation of family processes and self-regulation in

preschoolers by showing that triadic family processes contributed to self-regulation above dyadic parent-child processes.

6.1.2. The moderating role of self-regulation in the relation between parental personality and parenting

The second question was whether preschoolers' self-regulation plays a moderating role in the relation between parental personality and parenting. We studied the Big Five, a widely used taxonomy of personality dimensions, of both parents in order to systematically examine the effects of maternal and paternal personality on parenting behaviors.

In chapter 4, support was found for a moderating effect of observed preschoolers' effortful control in the relation between reported parental personality and observed parenting. More neurotic fathers used more positive control and more extraverted fathers used more negative control to control their child's behavior, but only when children had a low level of effortful control. The findings were consistent with the theory developed by Caspi and Moffitt (1993) that individual differences in personality are most likely to be accentuated during a stressful experience, in this case parenting a less self-regulated child.

In interacting with a difficult child, more neurotic fathers used positive control and more extraverted fathers used negative control as responses that fit their personality and that had proven to be effective in the past. More neurotic fathers, who have the tendency to experience negative affects, are likely to set more limits in order to discipline their child, whereas low neurotic fathers probably wait longer to intervene. Furthermore, more extraverted fathers, who are assertive, talkative and expressive, probably show their negative feelings sooner than more introverted fathers, who are likely to keep their dissatisfaction to themselves. When children had a high level of effortful control, neuroticism in fathers was not related to their positive control, probably because parenting the child was a less stressful parenting experience. More extraverted fathers, however, employed less negative control when children had a high level of effortful control. When children are able to regulate their impulses and emotions, more extraverted fathers probably have the opportunity to show their positive feelings. Clark, Kochanska, and Ready (2000) consistently found that mothers high in extraversion were more power-assertive with children who were high in negative emotionality. They found that with children who were low in negative emotionality, or who had an easy temperament, mothers' extraversion was not associated with power assertion. The different associations found between fathers' extraversion and negative control for preschoolers with a low and high level of effortful control might explain

contradictory associations between extraversion and parenting (Belsky, Crnic, & Woodworth, 1995; Clark et al., 2000; Mangelsdorf, Gunnar, Kestenbaum, Lang, & Andreas, 1990) found previously.

No moderation effects were found in the prediction of warmth, probably because control is a better strategy in stressful interaction to regain control over the child. This result is consistent with the findings of the chapters 2 and 3 that observed controlling strategies had more effects on the socialization of the child than observed warmth.

Few significant direct associations were found between parental personality and parenting behavior in both mothers and fathers. The weak associations between parental personality and family processes are possibly due to the different methods used for the assessment of personality and family processes. In contrast to most studies in this field that used parent reports to assess both personality and parenting (see also Clark et al., 2000), we used observational measures for the assessment of parenting. Questionnaires measure parental attitudes and behaviors that parents value, whereas observations reflect situation-specific behavior and behavior of which the parent is not always aware (Bornstein, Cote, & Venuti, 2001; Goodnow, 1995). Kochanska, Murray and Coy (1997) found that maternal personality predicted their self-reported parenting, but not their observed parenting. Johnson (1997) stated that having a trait does not mean that one's reactions are identical in every situation. Belsky and Barends (2002) also commented that parental personality does not necessarily predict a substantial proportion of the variance in parenting behavior that is measured in a single situation. It is therefore best to use multiple, but similar situations for the measurement of family processes. For the observation of parenting we used different tasks to try to create different circumstances for a wide range of parental behaviors (see McHale, Kuersten-Hogan, Lauretti, & Rasmussen, 2000). The situations may not be similar enough to establish strong associations between parental personality and parenting. However, parent-reported measures of parenting have the disadvantage of having the same informant as for personality measures. Parental personality may influence the parenting reports (Mangelsdorf, Schoppe, & Buur, 2000). Because of the assessment difficulties, it is too soon to conclude that parental personality is not a major determinant of parenting. However, the current thesis found evidence that paternal personality interacted with preschoolers' effortful control in the prediction of parenting.

6.1.3 The interaction between self-regulation and family processes in the prediction of externalizing problems

The third and last research question was whether self-regulation and family processes interact in the prediction of externalizing problems in preschoolers. The study described in chapter 5 examined this question. Interactions between preschoolers' effortful control and family processes (parenting and coparenting) were examined in the prediction of externalizing problems concurrently at 3 years, and longitudinally at 4.5 years. To avoid method and rater bias, observation was used to assess self-regulation and family processes, and a composite measure of mother, father and teacher reports was used to assess externalizing problems at 3 and 4.5 years.

Children with a low level of effortful control were found to be at risk of displaying externalizing problems, which has also been found in other studies (Eisenberg et al., 1996; Gartstein & Fagot, 2003; Kochanska & Knaack, 2003; Murray & Kochanska, 2002; Olson et al., 2005; Rothbart et al., 2001; Rubin, Burgess, Dwyer, & Hastings, 2003). However, positive control by mothers and fathers buffered the negative effect of a low level of effortful control on externalizing problems. When mothers or fathers employed a substantial degree of positive control, children showed a mean level of externalizing problems, independent of their level of effortful control. When mothers or fathers employed little positive control, children with a high level of effortful control scored low or average on externalizing problems, whereas children with a low level of effortful control were likely to score high on externalizing problems. Children with a low level of effortful control, who have difficulties managing impulses and emotions, probably benefit from more constructive limit-setting, structure, guidance and sensitivity to accomplish internalization of social morals and to develop well-adjusted behavior. Children with a high level of effortful control, who can manage their impulses and emotions on their own, apparently do not benefit from positive control in internalizing social morals. When their mothers show more positive control, this may be intrusive and children may even become bold and display more socially unacceptable behavior. However, their level of externalizing problems did not cross the mean level of externalizing problems of a normative sample of children. The findings are consistent with Kochanska's (1997) line of thought that children with different temperamental characteristics differ in their parenting needs. Again, paternal parenting was shown to be associated with children's behavior in addition to maternal parenting.

The interaction effects between effortful control and parental positive control were only found in the prediction of concurrent externalizing problems at 3 years.

No longitudinal interaction effects were found in the prediction of externalizing problems from 3 to 4.5 years. Externalizing problems appeared to show fairly strong rank order stability between 3 and 4.5 years. The interactions between effortful control and parenting at 3 years did not contribute to a change in externalizing problems in the preschool years. High rank order stability of young children's externalizing problems over 1 and 2-year periods have been reported in previous studies (see Campbell, 1995).

Child sex appeared to play a role in the prediction of externalizing problems. Girls generally displayed fewer externalizing problems than boys, a finding that has emerged from other, although not all, studies on preschoolers (see Campbell, 1995; Keenan & Shaw, 1993). Boys were more at risk of displaying externalizing problems, but as with a low level of effortful control, positive control by mothers and fathers could buffer this risk. Effortful control was more strongly related to concurrent externalizing problems in boys than in girls. However, girls' effortful control had a greater long-term effect on externalizing problems: a low level of effortful control in girls at 3 years predicted an increase in externalizing problems from 3 to 4.5 years.

Effortful control contributed to concurrent externalizing problems as a main effect, whereas parenting practices did not. Prior studies also found effortful control to be more strongly associated with externalizing problems than parenting behaviors (Gartstein & Fagot, 2003; Morris, Silk, Steinberg, Sessa, Avenoli, & Essex, 2002; Rubin, Hastings, Chen, Stewart, & McNichol, 1998, Rubin et al., 2003). However, although some studies did not find parenting to be associated with externalizing problems (Belsky, Hsieh, & Crnic, 1998; Rubin et al., 2003), other studies did (Belsky et al., 1998; Gardner, 1994; Gartstein & Fagot, 2003; Olson et al., 2005; Shaw, Winslow, Owens, Vondra, Cohn, & Bell, 1998). Observed maternal warmth contributed to a relative decrease in externalizing problems from 3 to 4.5 years. Warmth of mothers may provide a safe, supportive background for the internalization of social morals (Kochanska, 1997), which may have a long-term protective effect against externalizing problems.

Negative parenting behaviors were not related to externalizing problems. In chapters 2 and 3, observed negative control was found to be associated with children's effortful control. Negative control may have already affected child effortful control and thus may be indirectly, via effortful control, related to externalizing problems. However, the non-significant effects of negative control could also be due to the content of the observed behaviors. Negative control was observed by rating critical comments, annoying and ignoring behavior, and intrusiveness of the parent in interaction with his or her child. These behaviors are mild forms of negative control. More severe forms of negative control, such as

harsh and punitive parenting, may be more strongly related to externalizing problems. However, these behaviors have seldom been observed in a community sample.

The coparenting variable parenting discrepancy was the only socialization practice variable that directly predicted fewer concurrent externalizing problems. Parenting discrepancy describes the degree of difference in parents' propensity to engage with their child at the level of family group process. Parenting discrepancies are likely to provide the child with inconsistency or mixed messages, which were expected to predict externalizing problems. However, other researchers did not find an association with externalizing problems (McConnell & Kerig, 2002; McHale & Rasmussen, 1998). Larger parenting discrepancies signify that one parent is over-involved or that one is disengaged, or both. Parents may complement each other when one of them is less warm, disengaged, or over-involved with the child, thereby protecting the child from externalizing problems. Further research is needed to take into account the combination of mothers' and fathers' scores on warmth and investment. Previous research found more evidence of a direct relation between coparenting and externalizing problems (Lee, Beauregard, & Bax, 2005; McHale & Rasmussen, 1998; Schoppe, Mangelsdorf, & Frosch, 2001).

Coparenting did not show interaction effects with effortful control in the prediction of externalizing problems. Chapter 3 showed that coparenting was directly associated with effortful control. As was suggested before, coparenting may represent a family sphere that is associated with children's temperament, but which may interact less with children's temperament than the dyadic parenting relationship. Although the child is a participant in family interactions, the coparenting measure primarily reflects interactions between the two parents, whereas the parenting measure reflects direct interactions between parent and child.

6.2 Methodological issues

6.2.1 Association between observation and parent reports

Observation and parent reports were used for the assessment of self-regulation, parenting, and coparenting. The correlation between observed and parent-reported effortful control was $r = .35$, $p < .05$ (see chapter 3). This association corresponds with previous studies, which generally found correlations between observation and parent reports of temperament in the .20-.40 range (see Seifer, Sameroff, Barrett, & Krafchuk, 1994; Seifer 2002). Kochanska et al. (2001)

and Olson et al. (2005) found correlations of $r = .45$, $p < .001$ (for both mother and father reports), and $r = .33$, $p < .001$ (mother reports), respectively, between observed and parent-reported effortful control. Thus, in all studies the observational and parent-reported assessments were significantly associated, but the correlations were moderate in size. Because effortful control is a fairly subtle dimension to observe, the correlation between parent-reported and observational effortful control was not expected to be very high. However, we did expect them to correlate significantly, enhancing this by aggregating multiple observations of child behavior to create a robust measure (Kochanska et al., 2000; Mangelsdorf, 1992). The correlation between mother and father reports was $r = .60$, $p < .001$. Prior research also found parent-observer agreement concerning children's temperament to be generally lower than agreement between mothers and fathers (Mangelsdorf et al., 2000). Interparental agreement might be higher than parent-observer agreement because parents know their child well and have a large sample of behaviors to draw from in making their ratings (Mangelsdorf et al., 2000). Agreement between parents could also be inflated by parents' discussions about the child's behavior (Bates, 1980).

In contrast with observed and parent-reported effortful control, observed parenting and coparenting were not significantly associated with parent-reported parenting and coparenting respectively. The concept of effortful control may be more straightforward and delineated than the concepts of parenting and coparenting, which consist of many dimensions. Because the dimensions of observed and reported family processes did not fully correspond to one another in conceptual terms, the different contents may have contributed to the lack of correspondence between the methods (Bornstein, Cote, & Venuti, 2001). For instance, parent-reported responsiveness comprised more behaviors (e.g., support and consideration of the feelings and desires of the child) than observed warmth, which primarily measured displayed affection. Parent-reported coparenting furthermore contained covert behaviors, because of which it measured different aspects of coparenting dynamics than the overt coparenting interactions that were observed.

Chapter 3 showed that parenting and coparenting were also more strongly related to effortful control when the same method (observation or parent report) was used for the assessment of the variables, which is in agreement with previous studies (Gartstein & Fagot, 2003; Olson et al., 2005). The two methods measure different aspects of behavior, which may explain the weaker associations between different measures. Questionnaire data reflect memories of behavior or attitudes of parents generalized over time and contexts, whereas observations tap situation-specific behavior or face-to-face interactions (Kerig, 2001). However, despite the

methodological differences, it was found in chapter 3 that the pattern of associations between parenting, coparenting and effortful control was similar for observed and parent reported behavior: coparenting contributes to effortful control over and above the contribution of parenting.

6.2.2 The assessment of self-regulation

For the observation of effortful control, the multi-task battery developed by Kochanska et al. (1997, 2000) was used (chapters 3, 4, and 5). This battery was used in a laboratory context. Eleven tasks were administered, measuring cognitive, social, emotional, motor, and behavioral performance. Both inhibitory and excitatory behaviors were assessed. However, effortful control is assumed to reflect a highly coherent underlying broad competence. After conducting a principal components analysis, we found that mainly the delay and effortful attention tasks loaded on the one-factor solution. Five tasks measuring slowing down motor activity, suppressing/initiating activity to signal, and lowering voice did not load on the effortful control factor. Based on the coding experience we suspect that these tasks yielded insufficient variance of behavior in the children, because they were either too challenging (tasks measuring slowing down motor activity) or not challenging enough (lowering voice, suppressing/initiating activity to signal). Most of these tasks were not administered by Kochanska et al. (2000) when children were 22 months old. Kochanska et al. (1996, 1997) also dropped tasks because they did not correlate with other tasks. Furthermore, Olson et al. (2005) used six tasks of the battery to assess effortful control.

The CBQ (Rothbart et al., 2000) was used as a parent-report measure of temperament in chapter 3. Different scales of the CBQ are used to measure effortful control in different studies. Like Kochanska, Coy and Murray (2001), we used the Inhibitory Control scale. Olson et al. (2005) summed the scores of the Inhibitory Control and Attentional Focusing scales to create an effortful control score. Rothbart et al. (2000) conducted a factor analysis and found an effortful control factor, consisting of the scales inhibitory control, attentional focusing, low intensity pleasure, perceptual sensitivity, and smiling/laughter scales. Both the observations and questionnaires that were administered in most studies appeared mainly to capture the ability to delay, raising the question of whether it is not primarily the inhibitory component of effortful control that reflects its most important aspect. Excitatory behaviors seem to be under-represented. More research on effortful control is needed, since it remains a complex concept that is difficult to assess.

The content of effortful control is also not yet understood. According to its definition, a high level of effortful control can be considered as the ability to suppress a dominant response in order to perform a subdominant response (Rothbart, 1989). One would therefore assume that the higher the level of effortful control is, the more optimal self-regulatory capacities the child has. However, instead of ‘more is better’, effortful control could also have a nonlinear relation with problem behavior (Murray & Kochanska, 2002). Exploratory analyses by Murray and Kochanska (2002) showed that children with a high level of effortful control exhibited more internalizing problems than children with a moderate level of effortful control, but more research is needed to draw conclusions. If the optimal level of effortful control is not the highest level of effortful control, this could also have implications for its associations with family processes. A nonlinear relation may also exist between effortful control and family processes. Even if this were the case, we would not expect to find a nonlinear relation in the present thesis, because few children had extreme scores on effortful control in the community sample.

A debate has long existed concerning the etiology of the association between temperament and problem behavior in children. Two perspectives on this issue have emerged in the literature (see Lemery, Essex, & Smider, 2002). In the first perspective, which is implicitly used in this thesis, temperament and problem behavior are considered as qualitatively distinct yet related phenomena. Problem behavior will develop regardless of temperament, but temperament may influence the course, severity, and/or duration of the problem behavior (see Lemery et al., 2002). The second perspective implies that temperament and problem behavior are different manifestations of the same underlying process. Thus, problem behaviors are considered as the extremes of temperament. In studies on the relation between temperament and problem behavior, conceptual overlap in the measurement of temperament and problem behavior may inflate the associations that are found (see Lemery et al., 2002; Lengua, West, & Sandler, 1998). However, this measurement confounding plays a particular role when questionnaires are used for the assessment of both temperament and problem behavior. We tried to avoid measurement confounding by using an observational measure of effortful control and a parent-reported measure of externalizing problems in chapter 5.

6.2.3 The assessment of within-family dynamics

We used different methods (observation versus parent report) for the assessment of independent and dependent variables in most studies of this thesis (chapters 4 and 5). We have already noted that this use of different methods could have contributed to weak direct associations found between parental personality

and family processes and between family processes and externalizing problems. The study described in chapter 3, on the other hand, examined differences between the measurement methods in associations between parenting, coparenting, and effortful control. We therefore conducted separate analyses for observations and parent reports. However, if one defines both the independent and dependent variable with a common measure (observation or self-report) the estimated effect coefficient is much higher than when the variables are defined by nonoverlapping indicators (see Bank, Dishion, Skinner, & Patterson, 1990). The associations found could be the product of shared methods across constructs. This problem of biased estimates is called the ‘glop’ problem (Bank et al., 1990; Gottman, 1998). However, it usually occurs when one reporter rates the independent and dependent variables (Gottman, 1998). With respect to the parent reports, we used composite measures of mother and father reports as measures of coparenting and effortful control. With respect to the observations, different teams of trained observers rated family processes and effortful control. These strategies were used in order to reduce the ‘glop’.

Beforehand, we had to make choices about the setting and tasks for the observation of family dynamics. Because observations in a laboratory are more artificial than observations at home (Kerig, 2001), we conducted home observations. Naturalistic family interactions, such as during a family meal, are expected to be most representative of family functioning. However, benefits of assigning tasks at home include the fact that they can be tailored to elicit the kinds of interaction that will best tap the behaviors of interest (Kerig, 2001). Furthermore, the Coparenting and Family Rating System of McHale (1995) has been shown to reliably measure coparenting and parent-child interactions during structured and unstructured play tasks. Following McHale (1995), we tried to elicit different kinds of parenting and coparenting behaviors by administering structured and unstructured, playful and stressful tasks. However, these tasks remain playful interactions of the parents with their child, which means that parents may not exhibit much negative behavior. In addition, parents’ awareness of the camera may have reduced variance in parenting and coparenting behaviors. Few instruments have been developed for the observation of coparenting interactions. More research in different settings and with different tasks should reveal the best conditions for the observation of family dynamics.

6.3 General conclusion

The findings of the four studies of this thesis emphasize the importance of integrating temperament (person characteristics) and family processes (environmental characteristics). To date, few studies have examined the interplay of person and environment (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Van Aken, Van Lieshout, Scholte, & Haselager, 2002; Van Aken, 2004). The current thesis, however, showed that the study of only the main effects of person and environmental characteristics on developmental outcomes reveal only part of the ways these factors affect children's functioning. Preschoolers' temperamental self-regulation appeared to be associated with family processes (parenting and coparenting). Thus, instead of being two separate entities, self-regulation and family processes can be considered as reciprocally influencing each other. Children's self-regulation was furthermore found to play a moderating role in the relation between parental personality and family processes. In addition, self-regulation interacted with family processes in the prediction of externalizing problems. These findings correspond with the holistic interactionist perspective that the individual and his or her environment form a system with continuously ongoing, bidirectional processes of interaction between the person and his or her environment (Magnusson & Stattin, 1998).

6.4 Limitations

Besides some methodological limitations discussed in paragraph 6.2, several other limitations of the present thesis should be noted. First, although preschoolers' effortful control is the key concept of self-regulation, we were not able to study this concept in the meta-analysis because of the lack of studies that have examined effortful control in relation to parenting. We were therefore restricted to comparing the results of the three empirical studies with the meta-analytic results of a combination of various self-regulation conceptualizations. The meta-analysis on the other hand showed us the need to study effortful control in relation to family processes.

Second, although we tried to examine most of the factors for which the meta-analysis showed a lack of study results, this was not possible for all of the factors. We examined paternal parenting besides maternal parenting. We also used home and preschool observations as well as questionnaires and laboratory observations for the measurement of both self-regulation and family processes. However, we were not able to include black or low SES participants in our sample.

Participating families were primarily white, middle to upper-middle class, dual-income, and well-functioning, resembling the participants of the majority of the studies included in the meta-analysis. Nor did we study child sex differences in the relation between self-regulation and family processes, like most meta-analytic studies. Clinical families were included neither in our empirical studies nor in the meta-analysis. Research on clinical samples could yield stronger associations between self-regulation and family processes. However, it is also important to study within-family dynamics and self-regulation in a community sample in order to detect high-risk children and families at an early stage.

Third, we investigated contributions of maternal and paternal personality to parenting, but we did not take into account the combination of both personalities for coparenting. Since coparenting measures the way in which parents work together as a team, it would also be interesting to find out how a combination score of both personalities contributes to coparenting interactions. Belsky, Crnic and Gable (1995) examined whether absolute values of the differences between maternal and paternal personality are related to coparenting. They found that the more mothers and fathers differed along dimensions of extraversion, the more they were likely to engage in unsupportive coparenting that included negative affect by at least one partner. No associations were found between differences in neuroticism and coparenting. Research could be done with other measures of similarity scores of personality (e.g., Van Tuijl, Branje, Dubas, Vermulst, & Van Aken, 2005) in order to extend these findings.

Fourth, although we studied the interaction between self-regulation and family processes in the prediction of externalizing problems longitudinally, we used only two measurement points. Future research should start at a younger age and should measure both the child variables and family processes several times in order to create a more complete picture of the predictors of externalizing problems and change in externalizing problems in early childhood.

6.5 Future directions

Despite the concerns that have existed for many years regarding the use of parent reports and observation for the measurement of temperament, few studies have investigated the differences between these measures. It is still unclear whether parent reports reflect actual child temperament and whether observation can reliably assess fairly stable characteristics in children (Rothbart & Bates, 1998; Seifer, 2002). More research is needed to understand for which purposes and under which circumstances parent reports or observation are eligible methods.

Researchers should continue searching for valid and reliable instruments for the measurement of self-regulation and within-family dynamics.

Most research still focuses on maternal parenting (Park, Belsky, Putnam, & Crnic, 1997). However, this thesis showed that paternal parenting and coparenting were associated with children's self-regulation and externalizing problems above and beyond maternal parenting. These findings indicate that future research should include the whole family in order to obtain a complete understanding of the role of family processes in the development of young children's self-regulation and problem behavior. In modern Dutch society, parenting of young children is increasingly a joint effort by both mothers and fathers. More insight into the way in which parents can support or interfere with each others' parental activities and the implications of that support or interference is needed.

The study of the development of externalizing problems in preschoolers has important societal implications. Research has documented the fact that early disruptive behavior is an important risk factor in the development of antisocial behavior (Campbell, 1995; Campbell, Shaw, & Gilliom, 2000, Moffitt, 1993). It is therefore important to understand the interplay of children's temperamental and within-family dynamics in the prediction of these externalizing problems. This study contributed to that understanding by showing that self-regulation interacts with family processes in the prediction of externalizing problems. However, we did not examine all associations of the conceptual model of this thesis (see figure 1.1 in chapter 1). Future research should replicate and extend these findings by examining interactions between self-regulation, as well as other temperamental factors, and family processes in the prediction of externalizing problems.

The findings of the current thesis also have implications for prevention and intervention program targets. Effective interventions should not focus on the child alone or the parents alone, but should involve the different family subsystems (see also Cox & Paley, 1997). Many intervention programs focus on parents, for example by aiming to increase their levels of responsiveness (Van Aken, 2004). Whereas traditional research has suggested that certain parenting behaviors have favorable outcomes for all children (Van Aken, 2004), one of the major findings of this thesis is that parenting processes do not affect all children in the same way. Children's temperament has an impact on the effectiveness of a parenting behavior. Supportive programs for parents should focus on the individual child as part of the family environment.

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Summary

Interactionist perspectives emphasize that the person and his or her environment form a system with ongoing, bidirectional processes of interaction. This idea of integrating person and environment has a long history. However, few empirical studies have directly addressed the relation between early temperamental self-regulation (personal characteristics) and family processes (environmental characteristics). Even fewer studies have examined how self-regulation and family processes interact in the prediction of developmental outcomes. The aim of the present thesis was to examine the interplay of within-family dynamics and self-regulation in preschoolers.

The interplay of within-family dynamics and self-regulation in preschoolers was examined in four studies. First, a meta-analysis was conducted in order to obtain an overview of the research on parenting and self-regulation. In this meta-analysis, which was described in chapter 2, associations between parenting and self-regulation in preschoolers were examined. A literature search was conducted on all studies published from 1985 through 2004 presenting quantitative data on the association between parenting and self-regulation in preschoolers in English-language peer-reviewed journals. The studies had to relate to concurrent associations between parenting and self-regulation of 2-5-year-old children. Only studies with a nonclinical sample conducted in a Western society were included. The literature search yielded 41 studies. The aim of this meta-analysis was twofold. First, the association between three categories of parenting, namely positive control, negative control and responsiveness on the one hand, and self-regulation in preschoolers on the other hand was studied. Results revealed that the way in which parents discipline their child is related to children's self-regulatory capacities. Positive control, defined as limit-setting activities with mild to moderate power-assertion and the use of clear guidance and instructions while directing the child, was found to be positively associated with self-regulated behaviors. Conversely, more negative types of control (i.e., power-assertive limit-setting activities and coercive behaviors, critical comments or even hostility) were negatively associated with self-regulated behavior. Responsiveness, consisting of behaviors such as positive affect, acceptance, sensitivity, processes of coordination, and warm, synchronous or contingent behavior between parent and child, was not significantly related to self-regulation. Second, we examined whether various categories of self-regulation (compliance, inhibition, and emotion regulation) were differently related to parenting. Because in the first step no significant variation in effect sizes was found for responsiveness, moderator analyses were conducted only for the relation

between positive and negative control respectively and self-regulation. For negative control, different associations were found among categories of self-regulation. Negative control was negatively related to compliance, whereas no significant correlation was found for inhibition and emotion regulation.

In chapters 3, 4 and 5, three empirical studies examining the interplay of within-family dynamics and self-regulation in preschoolers were described. Participants of these studies were 89 two-parent families with their firstborn preschool-aged children (45 boys, 44 girls). Families were recruited through daycare centers and preschool playgroups in various parts of the Netherlands. Data was collected at two measurement points. At T1, the children were 3 years old. Home observations and daycare center and preschool observations were used to measure family processes and children's self-regulation. The family processes under study were parenting (i.e. positive control, negative control, responsiveness / warmth) and coparenting (i.e., the quality of coordination between adults in their roles as parents). The concept of self-regulation that was measured was effortful control (i.e., the ability to suppress a dominant response in order to perform a subdominant response). Mothers and fathers also completed questionnaires on parenting, coparenting, effortful control, personality, and externalizing problems. Furthermore, the daycare provider or playgroup teacher completed a questionnaire on the externalizing problems of the target child. At T2, the children were 4.5 years old. Mothers, fathers, and the kindergarten teacher filled out a questionnaire on the externalizing problems of the child in question. Thus, multiple methods and multiple informants were used for the assessment of the constructs.

Chapter 3 concerned a study on the associations between parenting, coparenting, and effortful control in 3-year-old children. More specifically, this study examined whether coparenting contributes to effortful control, over and above maternal and paternal parenting. The analyses were conducted separately for parent reports and observation of both effortful control and family processes. In general, maternal and paternal parenting behaviors were related to effortful control for both observation and parent reports. Paternal parenting contributed to effortful control above maternal parenting. This result stresses the importance of including fathers when investigating parenting and young children's self-regulation. Observed maternal positive control and paternal negative control were the parenting dimensions that appeared to be most strongly related to preschoolers' effortful control. Furthermore, coparenting was related to effortful control in preschoolers over and above maternal and paternal parenting for observation and parent reports. The coparenting dimension that was most strongly related to effortful control was observed hostility-competitiveness between parents. As expected, the more signs of subtle conflict between parents and undermining

coparenting practices there were between parents, the more problems children had in regulating their emotions and behavior. This finding indicates that future research should not focus on parenting alone but also on coparenting, in order to obtain a complete understanding of family processes related to young children's effortful control. Despite some differences in the results of observation and parent reports, the pattern of findings was similar for both methods: coparenting contributes to effortful control in addition to the contribution of parenting.

Chapter 4 presented a study on the moderating role of observed effortful control of 3-year-old children in the relation between self-reported parental personality and observed parenting. We studied the Big Five, a widely used taxonomy of personality dimensions, of both parents in order to systematically examine the effects of maternal and paternal personality on parenting behaviors. Few significant direct associations were found between reported parental personality and observed parenting behavior for both mothers and fathers. However, a moderating effect was found for observed preschoolers' effortful control in the relation between parental personality and parenting. More neurotic fathers used more positive control and more extraverted fathers used more negative control to control their child's behavior, but only when children had a low level of effortful control. The findings were consistent with the theory developed by Caspi and Moffitt (1993) that individual differences in personality are most likely to be accentuated during a stressful experience, in this case parenting a less self-regulated child. In interaction with a difficult child, more neurotic fathers used positive control and more extraverted fathers used negative control as responses that fit their personality and that had proven effective in the past. More neurotic, emotional instable fathers are likely to set more limits in order to discipline their child, whereas less neurotic fathers probably wait longer to intervene. Furthermore, more extraverted fathers, who are assertive, talkative and expressive, probably show their negative feelings sooner than more introverted fathers, who are likely to keep their dissatisfaction to themselves. When children had a high level of effortful control, neuroticism in fathers was not related to their positive control, probably because parenting the child was a less stressful parenting experience. More extraverted fathers, however, employed less negative control when children had a high level of effortful control. When children were able to regulate their impulses and emotions, more extraverted fathers probably had the opportunity to show their positive feelings. No moderation effects were found in the prediction of warmth, probably because control is a better strategy in stressful interaction to regain control over the child. In sum, the study in chapter 4 showed that reported paternal personality interacted with preschoolers' effortful control in the prediction of observed parenting.

Chapter 5 focused on the interactions between child characteristics (observed effortful control and sex) and observed family processes (parenting and coparenting) in the prediction of parent and teacher-reported externalizing problems. These relations were examined concurrently, when the child was 3 years old, and longitudinally at 4.5 years. Children with a low level of effortful control were found to be at risk of displaying externalizing problems. Family processes did not contribute to concurrent externalizing problems after controlling for children's effortful control. However, more positive control by mothers and fathers in children with a low level of effortful control was related to fewer externalizing problems. Children with a low level of effortful control, who have difficulties managing impulses and emotions, probably benefit from more constructive limit-setting, structure, guidance and sensitivity to accomplish internalization of social morals and to show well-adjusted behavior. Children with a high level of effortful control, who can manage their impulses and emotions on their own, did not benefit from positive control in internalizing social morals. Coparenting showed one main effect (parenting discrepancy), but no interaction effects with effortful control in the prediction of externalizing problems. Externalizing problems appeared to show fairly strong rank order stability between 3 and 4.5 years, leaving not much room for parenting or coparenting to predict any change in problem behavior. Only observed maternal warmth contributed to a relative decrease in externalizing problems from 3 to 4.5 years. Warmth of mothers may provide a safe, supportive background for the internalization of social morals, which may have a long-term protective effect against externalizing problems. The interactions between effortful control and parenting at 3 years, although related to the level of problem behavior at age 3, did not contribute to a change in externalizing problems from age 3 to age 4.5. Child sex appeared to have a role in the prediction of externalizing problems. Boys were more at risk of displaying externalizing problems, but as with a low level of effortful control, positive control by mothers and fathers could buffer this risk. Effortful control was more strongly related to concurrent externalizing problems in boys than in girls. However, girls' effortful control had a greater long-term effect on externalizing problems: a low level of effortful control in girls at 3 years predicted an increase in externalizing problems from 3 to 4.5 years. Evidence was found that child characteristics such as temperament and sex interacted with family processes in the prediction of externalizing problems.

Taken together, the findings of the four studies of this thesis showed the importance of studying both family processes (parenting and coparenting) and self-regulation at the same time. Family processes and various concepts of self-regulation were found to be associated. Children's effortful control played a moderating role in the relation between parental personality and parenting. In

addition, effortful control interacted with family processes in the prediction of externalizing problems. Different methods were used in the last two studies to avoid method and informant bias. The findings correspond with an interactionist perspective that emphasizes the importance of integrating personal characteristics and environmental characteristics in research on the socialization of young children.

A. Karreman - Within-Family Dynamics and Self-Regulation in Preschoolers

Samenvatting (Summary in Dutch)

Interactionistische perspectieven benadrukken dat de persoon en zijn of haar omgeving voortdurend in interactie zijn en samen een systeem vormen. Dit idee van integratie van persoon en omgeving heeft een lange geschiedenis. Weinig empirisch onderzoek heeft zich echter direct gericht op de relatie tussen het temperamentskenmerk zelfregulatie (persoonskenmerk) en gezinsprocessen (omgevingskenmerk). Er is nog minder onderzoek gedaan naar de interactie tussen zelfregulatie en gezinsprocessen in de voorspelling van ontwikkelingsuitkomsten. Het doel van dit proefschrift was het onderzoeken van het samenspel van gezinsdynamiek en zelfregulatie bij peuters.

Het samenspel van gezinsdynamiek en zelfregulatie bij peuters is onderzocht in vier studies. Allereerst is een meta-analyse uitgevoerd om een overzicht te krijgen van het onderzoek op het gebied van opvoeding en zelfregulatie. In deze meta-analyse die beschreven is in hoofdstuk 2, zijn relaties tussen opvoeding en zelfregulatie bij peuters onderzocht. In de literatuur is gezocht naar studies die tussen 1985 en 2004 gepubliceerd zijn in Engelstalige wetenschappelijke tijdschriften en die kwantitatieve gegevens over de relatie tussen opvoeding en zelfregulatie bij peuters bevatten. Alleen studies die cross-sectionele gegevens bevatten over relaties tussen opvoeding en zelfregulatie bij 2- tot 5-jarige kinderen zijn bestudeerd. Bovendien zijn alleen studies met een niet-klinische steekproef die verricht waren in een westerse maatschappij, meegenomen. Deze literatuurselectie leverde 41 studies op. Het doel van de meta-analyse was tweeledig. Ten eerste bestudeerden we de relatie tussen drie opvoedingscategorieën, namelijk positieve controle, negatieve controle en responsiviteit enerzijds, en zelfregulatie anderzijds bij peuters. Resultaten lieten een verband zien tussen de manier waarop ouders hun kind disciplineren en zelfregulatie van kinderen. Positieve controle, gedefinieerd als het stellen van grenzen door middel van milde tot middelmatige machtsuitoefening en het gebruik van duidelijke begeleiding en instructies bij het sturen van het kind, was positief gerelateerd aan zelfregulatie. Aan de andere kant waren meer negatieve vormen van controle (d.w.z. grenzen stellende activiteiten met machtsuitoefening en dwang, kritisch commentaar of zelfs vijandigheid) negatief gerelateerd aan zelfregulatie. Ten tweede onderzochten we of diverse categorieën van zelfregulatie (gehoorzaamheid, inhibitie en emotieregulatie) verschillend gerelateerd waren aan opvoeding. Omdat er geen significante variatie in effect grootte werd gevonden voor de relatie tussen zelfregulatie en responsiviteit, zijn moderator analyses alleen voor positieve en negatieve controle

uitgevoerd. Voor negatieve controle zijn er verschillende relaties gevonden voor de categorieën van zelfregulatie. Negatieve controle was negatief gerelateerd aan gehoorzaamheid, terwijl we geen significante correlatie vonden voor inhibitie en emotieregulatie.

In de hoofdstukken 3, 4 en 5 zijn drie empirische studies naar het samenspel van gezinsdynamiek en zelfregulatie bij peuters beschreven. Participanten van deze studies waren 89 twee-ouder gezinnen met hun eerstgeboren kind in de peuterleeftijd (45 jongens, 44 meisjes). Gezinnen werden geworven via kinderdagverblijven en peuterspeelzalen in diverse delen van Nederland. Gegevens werden verzameld op twee meetmomenten. Op T1 waren de kinderen drie jaar oud. Thuisobservaties en observaties op het kinderdagverblijf of de peuterspeelzaal werden gebruikt om gezinsprocessen en zelfregulatie van kinderen te meten. De gezinsprocessen die bestudeerd werden, waren opvoeding (d.w.z. positieve controle, negatieve controle, responsiviteit) en coparenting (d.w.z. de kwaliteit van coördinatie tussen volwassenen in hun rol van ouders). Het zelfregulatieconcept dat werd gemeten was effortful control (d.w.z. de vaardigheid om een dominante respons te onderdrukken met als doel om een subdominante respons uit te voeren). Moeders en vaders vulden ook vragenlijsten in over opvoeding, coparenting, effortful control, persoonlijkheid en externaliserende problemen. Bovendien vulden de leidster van het kinderdagverblijf of de peuterspeelzaal een vragenlijst in over de externaliserende problemen van het doelkind. Op T2 waren de kinderen 4.5 jaar oud. Moeders, vaders en de leerkracht van de basisschool vulden een vragenlijst in over de externaliserende problemen van het betreffende kind. Meerdere methoden en meerdere informanten zijn dus gebruikt voor de meting van de constructen.

Hoofdstuk 3 bevat een studie naar de relaties tussen opvoeding, coparenting en effortful control bij driejarige kinderen. We onderzochten of coparenting bijdraagt aan effortful control bovenop opvoeding door moeders en vaders. De analyses zijn apart verricht voor ouderrapportage en observatie van zowel effortful control als gezinsprocessen. Over het algemeen hing opvoeding door moeders en vaders samen met effortful control voor zowel observatie als ouderrapportage. Opvoeding door vaders droeg bij aan effortful control bovenop opvoeding door moeders. Dit resultaat bevestigt het belang van het opnemen van vaders in het onderzoek naar opvoeding en zelfregulatie van jonge kinderen. Geobserveerde positieve controle door moeders en negatieve controle door vaders waren de opvoedingsdimensies die het sterkst gerelateerd bleken aan effortful control van peuters. Bovendien was coparenting gerelateerd aan effortful control van peuters bovenop opvoeding door moeders en vaders voor observatie en ouderrapportage. De dimensie van coparenting die het sterkst gerelateerd was aan effortful control was geobserveerde vijandigheid-competitiviteit tussen ouders. Zoals verwacht

hadden kinderen meer problemen met het reguleren van hun emoties en gedrag naarmate er meer tekenen waren van subtiel conflict tussen ouders en ondermijnende coparenting. Deze bevinding geeft aan dat toekomstig onderzoek zich niet alleen op opvoeding zou moeten richten maar ook op coparenting, om gezinsprocessen in relatie tot effortful control volledig te kunnen begrijpen. Ondanks enige verschillen in de resultaten met betrekking tot observatie en ouderrapportage, was het patroon van bevindingen hetzelfde voor beide methoden: coparenting draagt bij aan effortful control bovenop de bijdrage van opvoeding.

In hoofdstuk 4 is een studie naar de modererende rol van geobserveerde effortful control van driejarige kinderen in de relatie tussen zelfgerapporteerde ouderlijke persoonlijkheid en geobserveerde opvoeding beschreven. We bestudeerden de Big Five, een veel gebruikte taxonomie voor persoonlijkheidsdimensies, van beide ouders om systematisch de effecten van persoonlijkheid van moeders en vaders op opvoedingsgedragingen te bestuderen. Er zijn weinig significante directe relaties tussen gerapporteerde ouderlijke persoonlijkheid en geobserveerd opvoedingsgedrag gevonden voor zowel moeders als vaders. Geobserveerde effortful control van peuters speelde een modererende rol in de relatie tussen ouderlijke persoonlijkheid en opvoeding. Meer neurotische vaders gebruikten meer positieve controle en meer extraverte vaders gebruikten meer negatieve controle om het gedrag van hun kind te corrigeren, maar alleen wanneer kinderen een laag niveau van effortful control hadden. De bevindingen zijn consistent met de theorie ontwikkeld door Caspi en Moffitt (1993) dat individuele verschillen in persoonlijkheid het meest geaccentueerd worden tijdens een stressvolle ervaring, in dit geval het opvoeden van een minder zelfgereguleerd kind. In interactie met een moeilijk kind gebruikten meer neurotische vaders meer positieve controle en meer extraverte vaders meer negatieve controle als reacties die passen bij hun persoonlijkheid en die effectief bleken in het verleden. Meer neurotische, emotioneel instabiele vaders zijn geneigd meer grenzen te stellen om hun kind te disciplineren, terwijl weinig neurotische vaders waarschijnlijk langer wachten met interveniëren. Meer extraverte vaders die assertief, spraakzaam en expressief zijn, tonen waarschijnlijk hun negatieve gevoelens sneller dan meer introverte vaders die geneigd zijn om hun ontevredenheid voor zichzelf te houden. Wanneer kinderen een hoog niveau van effortful control hadden, was neuroticisme bij vaders niet gerelateerd aan hun positieve controle, waarschijnlijk omdat het opvoeden van het kind een minder stressvolle opvoedingservaring was. Meer extraverte vaders oefenden echter minder negatieve controle uit wanneer kinderen een hoog niveau van effortful control hadden. Wanneer kinderen hun impulsen en emoties konden reguleren, hadden meer extraverte vaders waarschijnlijk meer gelegenheid om hun positieve gevoelens te tonen. Er zijn geen modererende

effecten gevonden in de voorspelling van warmte, waarschijnlijk omdat controle een betere strategie is om het gedrag van het kind te sturen in stressvolle interacties. Samenvattend laat de studie in hoofdstuk 4 zien dat gerapporteerde persoonlijkheid van vaders interacteert met effortful control van peuters in de voorspelling van geobserveerde opvoeding.

Hoofdstuk 5 richt zich op de interacties tussen kenmerken van het kind (geobserveerde effortful control en sekse) en geobserveerde gezinsprocessen (opvoeding en coparenting) in de voorspelling van door de ouders en leerkracht gerapporteerde externaliserende problemen. Deze verbanden zijn cross-sectioneel onderzocht wanneer het kind drie jaar oud was en longitudinaal wanneer het kind 4.5 jaar oud was. Kinderen met een laag niveau van effortful control liepen het risico om externaliserende problemen te vertonen. Gezinsprocessen waren niet gerelateerd aan gelijktijdige externaliserende problemen na het controleren voor effortful control. Meer positieve controle door moeders en vaders bij kinderen met een laag niveau van effortful control was echter gerelateerd aan minder externaliserende problemen. Kinderen met een laag niveau van effortful control die moeilijkheden hebben om impulsen en emoties te reguleren, hebben waarschijnlijk baat bij meer constructief gestelde grenzen, structuur, begeleiding en sensitiviteit om internalisatie van sociale regels te bereiken en om aangepast gedrag te vertonen. Kinderen met een hoog niveau van effortful control die hun impulsen en emoties zelf kunnen reguleren hadden geen baat bij positieve controle voor het internaliseren van sociale regels. Coparenting toonde één hoofdeffect (parenting discrepantie), maar geen interactie-effecten met effortful control in de voorspelling van externaliserende problemen. Externaliserende problemen lieten een redelijk sterke rangorde stabiliteit zien tussen 3 en 4.5 jaar, waardoor er niet veel ruimte was voor opvoeding en coparenting in het voorspellen van verandering in probleemgedrag. Alleen geobserveerde warmte van moeder droeg bij aan een relatieve afname van externaliserende problemen van 3 tot 4.5 jaar. Warmte van moeders zou een veilige, ondersteunende achtergrond kunnen bieden voor de internalisatie van sociale regels, wat een lange-termijn protectief effect tegen externaliserende problemen kan hebben. De interactie tussen effortful control en opvoeding op 3 jaar, hoewel gerelateerd aan het niveau van externaliserende problemen op driejarige leeftijd, droeg niet bij aan een verandering in externaliserende problemen van 3 naar 4.5 jaar. Sekse van het kind bleek een rol te spelen in de voorspelling van externaliserende problemen. Jongens liepen een groter risico op externaliserende problemen maar wanneer moeders of vaders meer positieve controle uitoefenden, konden externaliserende problemen voorkomen worden, net zoals bij een laag niveau van effortful control. Effortful control was sterker gerelateerd aan gelijktijdige externaliserende problemen bij jongens dan bij

meisjes. Effortful control van meisjes had echter een groter lange termijn effect op externaliserende problemen: een laag niveau van effortful control bij meisjes op driejarige leeftijd voorspelde een toename in externaliserende problemen van 3 tot 4.5 jaar. Er is bewijs gevonden dat kenmerken van het kind zoals temperament en sekse interacteerden met gezinsprocessen in de voorspelling van externaliserende problemen.

Samenvattend laten de bevindingen van de vier studies van dit proefschrift het belang zien van het bestuderen van zowel gezinsprocessen (opvoeding en coparenting) als zelfregulatie. Gezinsprocessen waren gerelateerd aan diverse zelfregulatieconcepten. Effortful control van kinderen speelde een modererende rol in de relatie tussen ouderlijke persoonlijkheid en opvoeding. Bovendien interacteerde effortful control met gezinsprocessen in de voorspelling van externaliserende problemen. In de laatste twee studies is gebruik gemaakt van verschillende methodes om methode- en informantbias te voorkomen. De bevindingen sluiten aan bij een interactionistisch perspectief dat het belang aangeeft van integratie van persoonskenmerken en omgevingskenmerken in het onderzoek naar de socialisatie van jonge kinderen.

A. Karreman - Within-Family Dynamics and Self-Regulation in Preschoolers

Dankwoord (Acknowledgements)

Graag wil ik iedereen bedanken die een bijdrage heeft geleverd aan dit proefschrift.

In de eerste plaats wil ik mijn promotoren Marcel van Aken en Maja Deković, en mijn co-promotor Cathy van Tuijl hartelijk danken voor alles wat ze voor me gedaan hebben de afgelopen vier jaar. Ik heb het echt getroffen met jullie als begeleidingsteam. Ik heb het prettig gevonden dat ik de ruimte had om naar eigen inzicht aan het onderzoek te werken en dat jullie tegelijkertijd heel bereikbaar waren als er belangrijke beslissingen genomen moesten worden. Ik vond jullie kritische, positieve en oplossingsgerichte aanpak zeer motiverend. Marcel, ik wil je in het bijzonder bedanken voor je feedback en zicht op de grote lijnen. Je stimuleerde me om activiteiten naast het onderzoek te ondernemen, zoals mijn werkbezoek aan de Verenigde Staten en het organiseren van symposia. Maja, bedankt voor alle tijd die je vrij maakte voor het beantwoorden van mijn vragen. Ik waardeer het zeer dat ik altijd bij je terecht kon. Ik heb veel geleerd van je inhoudelijke en constructieve suggesties. Cathy, ik wil je bedanken voor je stimulerende woorden, het meelevende bij het verloop van het onderzoek en het meedenken op conceptueel niveau. Je zorgde ervoor dat ik de praktische zin van het onderzoek niet uit het oog verloor.

Joyce, je bent vier jaar lang mijn kamergenootje geweest. Bedankt voor je gezelligheid, betrokkenheid en vriendschap. Ik kon alles met je bespreken, je was altijd geïnteresseerd en je was altijd bereid een helpende hand te bieden. Hanneke, ook jou wil ik bedanken voor je oprechte interesse, hulp, gezellige pauzes en de leuke dingen die we naast het werk in Utrecht doen. Bedankt dat jullie mijn paranimfen willen zijn.

De collega's van onderzoeksgroep Psychosociale problemen wil ik hartelijk danken voor de prettige werksfeer. Veroni, ik vond het leuk dat je het team kwam versterken. Vanaf het begin was je heel belangstellend en gezellig. Ook de collega's van onderzoeksgroep Adolescentie en natuurlijk alle collega-AIO's wil ik bedanken voor de motiverende besprekingen, gezellige lunches, uitjes en gesprekken in de wandelgangen.

Zonder de medewerking van kinderdagverblijven, peuterspeelzalen, basisscholen en gezinnen met hun peuter was dit onderzoek niet mogelijk geweest. Ik wil alle leidsters en leerkrachten, evenals de gezinnen danken voor de tijd die ze

aan de vragenlijsten en observaties van het onderzoek besteed hebben. Ook wil ik de scriptiestudenten en onderzoeksassistenten die hebben bijgedragen aan de dataverzameling, in het bijzonder Aliz, Nicolien, Mariëlle, Suze, Sarah, Jessica, Debby en Hilke, bedanken voor hun hulp.

Prof. Sarah Mangelsdorf, thank you very much for giving me the opportunity to visit the University of Illinois at Urbana-Champaign for three months. I will never forget the warm welcome from you and all the colleagues of the Early Emotion Lab: Kathy, Aya, Maria, Abbey, Geoffrey and Cindy. Thank you all for including me in your video coding sessions, for your help and for the fun we had. I have learned a lot during this period. Sarah Schoppe-Sullivan, I am very grateful to you for taking me round other universities and introducing me to researchers. I had a wonderful time in the United States.

Mijn familie en vrienden dank ik voor hun interesse en afleiding naast het werk. Kathrin en Brechtje, jullie hebben alles gevolgd. Bedankt voor jullie interesse, meedenken en gezelligheid. Mijn broer Martin wil ik bedanken voor zijn betrokkenheid, interesse en adviezen. Mijn ouders dank ik voor alle steun, hulp, vertrouwen en belangstelling door de jaren heen. Bedankt dat jullie er altijd voor me zijn!

Curriculum Vitae

Annemiek Karreman was born in Bergen op Zoom on April 25, 1979. She graduated from high school (Gymnasium, Mollerlyceum in Bergen op Zoom) in 1997. From 1997 to 2001 she studied Psychology at the University of Tilburg, where she obtained her MA degree in Developmental Psychology. In 2002 she entered a PhD- program at the Department of Child and Adolescent Studies of Utrecht University. From 2002 to 2006 she worked on her thesis, studying within-family dynamics and self-regulation in preschoolers. During this period, she spent three months at the University of Illinois at Urbana-Champaign, USA.