Heroes and housewives: The role of gender and gender stereotypes in parenting and child development

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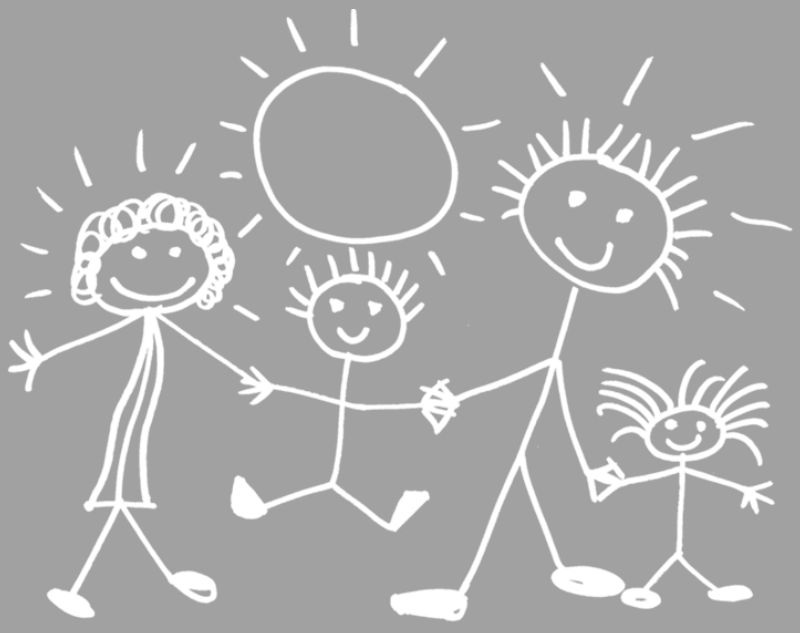

Bad Boy, Good Girl?

A Meta-Analysis of Mothers' and Fathers' Gender-Differentiated use of Positive and Negative Controlling Strategies

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ABSTRACT

Although various theories of parenting describe mechanisms leading to differential treatment of boys and girls, there is no consensus in the literature about the extent to which parents *do* treat their sons and daughters differently. Furthermore, the last meta-analyses on the subject were conducted more than fifteen years ago. In the current set of meta-analyses based on 120 observation studies (14,363 families), we examined mothers' and fathers' differential positive and negative control of boys and girls, and the role of moderators related to the decade in which the study was conducted, the observational context, and sample characteristics. Parents use more negative control with boys than with girls, but the effect was small (k = 151, N = 14,904, d = 0.09, 95% CI [0.04, 0.13], p < .01). The effect was larger in normative groups than in clinical- and at-risk groups. Significant but small differences in negative control of boys and girls were observed in both mothers and fathers, in different settings and situations, with children of various ages, and independent of socioeconomic status and ethnicity. No overall gender-differentiated parenting effect for positive control was found (k = 128, N = 11,511, d = 0.03, 95% CI [-0.01, 0.07], p = .07). A significant effect of time emerged: studies published in the 1970s and 1980s reported more positive control towards boys than toward girls, but from 1990 onwards parents showed more positive control toward girls than toward boys. Although overall parents used similar control strategies with boys and girls, the subtle differentiations that were found may have consequences for the development of gender differences in children's problem behavior, and warrant further investigation.

Keywords: gender-differentiated socialization, mothers and fathers, parental control, observation, meta-analysis

INTRODUCTION

The popular saying 'boys will be boys' refers to the expectation that boys show more disruptive behaviors (including oppositional, aggressive, and hyperactive behaviors, temper loss, noncompliance, low concern for others; Stormshak, Bierman, McMahon, Lengua, 2000; Wakschlag, Tolan, & Leventhal, 2010) than girls. This pattern of gender differences in disruptive behavior has indeed been widely confirmed in scientific research in children of different ages and different ethnicities (see Archer, 2004; Baillargeon et al., 2007; Loeber, Capaldi, & Costello, 2013). One of the mechanisms proposed to explain these gender differences is that parents use different socialization practices with boys than with girls (Zahn-Waxler, Shirtcliff, & Marceau, 2008), and several theoretical models suggest mechanisms that are consistent with the differential treatment of boys and girls, including biosocial theory (Eagly & Wood, 2002; Wood & Eagly, 2012), child-effect models (Pardini, 2008), behavioral genetics (child-based twin designs), or evocative gene-environment correlation frameworks (Plomin, DeFries, & Loehlin, 1977; Scarr & McCartney, 1983). However, to date there is no consensus in the literature about the extent to which parents treat their sons and daughters differently, in which areas of parenting this mostly occurs, and whether fathers and mothers differ in the extent of gender differentiation (Fagot & Hagan, 1991; Leaper, Anderson, & Sanders, 1998; Lytton & Romney, 1991).

Parental control is one area of parenting that might be especially relevant to the study of gender-differentiated parenting practices in relation to gender differences in disruptive behavior. There is meta-analytic evidence that both mothers' and fathers' negative parental control is related to children's disruptive behaviors (e.g., Kawabata, Alink, Tseng, Van IJzendoorn, & Crick, 2011; Rothbaum & Weisz, 1994), but findings regarding gender-differentiated use of negative control have been inconsistent (e.g., Bronstein, 1984; Kochanska, Barry, Stellern, & O'Bleness, 2009; Kuczynski, 1984; Domenech Rodríguez, Donovick, & Crowley, 2009; Mullis & Mullis, 1985). In the current paper we report on a series of meta-analyses to test the hypothesis that parents show more negative control with boys and more positive control with girls. Additionally, we examine the effect of potential moderators related to year of publication, the observational context, and sample characteristics. We focus on *observed* parental control, because differential parenting occurs mostly at an unconscious level and is therefore more likely to be captured using observation methods than with self-report measures (Culp, Cook, & Housley, 1983).

Gender-Differentiated Parenting: Theoretical Perspectives

Biosocial theory. Biosocial theory of sex differences provides rationales for differential parenting of boys and girls (Eagly & Wood, 2002; Wood & Eagly, 2012). According to this theory, gender differences in social behavior arise from societies'

division in gender roles, and particularly on the female role of homemaker and the male role of economic provider. In present-day societies, mothers are more likely to be the primary caregivers of young children (Huerta et al., 2013; The Fatherhood Report, 2010). Moreover, even though men and women take on the role of economic provider, females are overrepresented in educational, caretaking, and nurturing occupations, whereas males are overrepresented in occupations that are associated with power, physical strength, status, and agentic personality characteristics (i.e., management, engineering) (U.S. Department of Labor, 2009). So even though some aspects of traditional gender roles have become less salient over time, gender role theory is still very relevant to present-day societies.

It is proposed that gender roles and the characteristics associated with these roles lead to beliefs and expectancies about the different nature and behavior of men and women, which will lead to differential treatment of men and women, and boys and girls. This differential treatment may start in early childhood within the family context. There is indeed some empirical evidence that parents respond differently to sons and daughters based on their beliefs about the different nature and behavior of boys and girls. For example, in one study, mothers and fathers believed that risky misbehavior of boys could be attributed predominantly to child characteristics or bad luck, whereas risky misbehavior of girls was believed to be related to factors within the immediate context that mothers could influence (Morrongiello & Hogg, 2004; Morrongiello, Zdzieborski, & Normand, 2010). Consistent with these beliefs, mothers tried to actively prevent injury recurrence to daughters by setting rules or by making environmental changes, but did not did not do much to prevent injury recurrence to sons.

Although the original biosocial model does not specifically focus on parental socialization, the recent version of the model includes a strong emphasis on gender-role socialization through parents (Wood & Eagly, 2012). It is stated that due to socialization processes by parents, school or other adults, children learn to behave in accordance with the gender roles defined in their society. One way parents can socialize their children into societies' gender roles is through gender-differentiated parenting. Mothers and fathers are expected to use different parenting strategies with boys than with girls in accordance with boys' and girls' different gender roles. Parenting behavior toward girls would then be more likely to focus on affiliation and interpersonal closeness whereas parenting behavior toward boys would be more likely to focus on assertiveness and dominance. The link between gender roles and the differential treatment of boys and girls by parents is reflected, for example, in findings that submissiveness is encouraged in girls in societies in which women do not hold much power (Low, 1989) and aggressiveness is promoted in boys through harsh parenting practices in societies at war (Ember & Ember, 1994).

Eagly and Wood's biosocial theory of sex differences (Eagly & Wood, 2002; Wood & Eagly, 2012) does not say anything specific about differences between mothers and fathers in gender-differentiated parenting practices. However, since women are less accepting than men of social hierarchies that subordinate women (Lee, Pratto, & Johnson, 2011), mothers may be less likely than fathers to socialize their children into societies' gender roles using gender-differentiated parenting practices.

Social learning theories. According to social cognitive theory of gender development and differentiation, children's learning about gender roles and the behaviors appropriate for each gender is influenced by modeling, enactive experience, and direct tuition (Bussey & Bandura, 1999). The concept of enactive experience is most closely linked to parents' differential treatment of boys and girls, because it concerns the child's experience with social consequences (e.g., parental reactions) for gender-related behaviors. Social cognitive theory also states that people differ in how they respond to the same gender-related behaviors in children. Fathers, for example, react more negatively than mothers to boys' feminine toy play (Idle, Wood, & Desmarais, 1993). Parents provide their children with positive and negative sanctions for their behavior by giving affective reactions and evaluative comments. Affective reactions through intonation patterns, smiles, and frowns are particularly salient events that control and direct the child's behavior.

Patterson's coercion model, or coercion theory (1982), which represents a specification of social learning theory, also offers rationales for parents' differential treatment of boys and girls. It predicts that the use of negative control by parents in response to disruptive behavior will ultimately lead to a downward spiral of increasingly negative behavior by both child and parent, because repeated attempts by the parent to control the child in a negative way will lead to increasingly difficult behavior on the part of the child (Patterson, 1982). A coercive cycle might start with an (intrusive) request from the parent to which the child should comply. This request can be made either in response to misbehavior or because the parent wants to impose his or her agenda on the child. In response to this request, the child will start acting coercively (e.g., whining, tantrums) to terminate the undesired request. When the parent responds to this 'bad' behavior in the child with scolding or harsh discipline, this will lead to increasingly difficult behavior by the child. If this process ultimately leads to the parent giving in, the child learns that disruptive behavior is effective in terminating undesired requests from parents. Thus, coercion theory predicts that difficult child behavior is more likely to occur in the future when a child is reinforced for responding with negative behavior to parental pressures for compliance.

Parents might be more likely to end up in a coercive cycle with boys than with girls (Bezirganian & Cohen, 1992; Chaplin, Cole & Zahn-Waxler, 2005; Eron, 1992; McFadyen-Ketchum, Bates, Dodge, & Pettit, 1996; Radke-Yarrow &

Kochanska, 1990). There is some evidence from large US population-based longitudinal studies that boys are more likely than girls to react with aggression and negative behavior to parental demands, whereas girls are more likely to comply (Bezirganian & Cohen, 1992; Eron, 1992). Moreover, in a longitudinal US study with an ethnically and socioeconomic diverse sample (children aged 6-8 years) mothers were more likely to react with increasingly harsh discipline to boys' than to girls' disruptive or noncompliant behavior (McFadyen-Ketchum et al., 1996). In two other longitudinal US studies with ethnically and socioeconomic diverse samples (children aged 1-7 years), both mothers and fathers gave in to angry boys more often than to angry girls (Chaplin et al., 2005; Radke-Yarrow & Kochanska, 1990).

Child-effect- versus parent-effect models. Differential treatment of boys and girls may not, or not only, result from parental attitudes about how to treat boys versus girls, but as a reaction to pre-existing gender differences in child behavior. The child-effects model was proposed by Bell (1968) who argued that children are not only passive recipients of parenting behaviors, but also influence the parent through their own behaviors. Since its introduction, the notion of child effects has been incorporated in several major theories of socialization and child development (e.g., Belsky, 1984; Mischel, 1973; Patterson, 1982; Rimm-Kaufman & Pianta, 2000; Scarr & McCartney, 1983). Longitudinal studies examining both parent and child effects remain relatively rare, especially for fathers (Pardini, 2008), but several US studies with ethnically and socioeconomically diverse samples examining both parent and child effects in early childhood provide evidence for the bidirectional association between mother and child behavior (see Maccoby, Snow, & Jacklin, 1984; Smith, Calkins, Keane, Anastopoulos, & Shelton, 2004; Pardini, 2008). In a large UK population-based longitudinal study, bidirectional effects have been reported for maternal negativity and child antisocial behavior for children aged between 4 and 7 years old (Larsson, Viding, Rijsdijk, & Plomin, 2008), and maternal controlling behavior and child disruptive problem behaviors (Smith et al., 2004). Given this evidence and the fact that boys have been found to show more disruptive behavior problems than girls during childhood and adolescence (Archer, 2004; Baillargeon et al., 2007; Hyde, 1984; Loeber et al., 2013), it seems likely that boys and girls evoke different reactions from their parents.

Studies of gene-environment correlation (rGE, Plomin et al., 1977; Scarr & McCartney, 1983) have shown child-driven effects on parenting (see for meta-analytic evidence Klahr & Burt, 2013). Large population-based longitudinal twin studies from the US and UK have shown that cooperative and/or prosocial children (aged 2-12 years old) are more likely to elicit positive reactions from their mothers and fathers, whereas children with tendencies toward disruptive behavior elicit negative reactions from their mothers and fathers (evocative rGE, Boeldt et al., 2012; Jaffee et al., 2004; Larsson et al., 2008). Both retrospective and longitudinal US adoption studies found

that adopted children (aged 12-18 years) with a genetic predisposition toward antisocial behavior (from their biological parents) evoke more harsh and inconsistent discipline from their adoptive mothers and fathers (Ge et al., 1996; Riggins-Caspers, Cadoret, Knutson, & Langbehn, 2003). Children with a genetic predisposition toward oppositional behavior might also actively seek conflict with their parents (active rGE), although empirical evidence for this mechanism is lacking. For most aspects of behavior, evidence for an association with differential gene expression in males and females is absent (Vink et al., 2012), except for gender-specific genotype effects for the X-chromosomal monoamine oxidase A (MAOA) gene on antisocial behavior that are more pronounced in males (see Buckholtz et al., 2008; Kim-Cohen et al., 2006; Meyer-Lindenberg et al., 2006). Because boys have shown more genetic vulnerability for disruptive behavior problems than girls (Buckholtz et al., 2008; Kim-Cohen et al., 2006; Meyer-Lindenberg et al., 2006), they may also be more likely to elicit negative behaviors from their parents or actively seek conflict with their parents.

Genetic models tend to explain associations between genes and environment (i.e., parenting) as mostly child-driven, which minimizes the role of parental behavior. However, associations between differences in boys' and girls' genetic predispositions and parenting can also be explained from an interactive or "goodness of fit" perspective (Chess & Thomas, 1999). "Goodness of fit results when the properties of the environment and its expectations and demands are in accord with the organism's own capacities, characteristics, and style of behaving" (Chess & Thomas, 1999, p. 3). According to this perspective, children with a genetic predisposition toward disruptive behavior may require a special kind of parenting style (Bates, Petit, Dodge, & Ridge, 1998; Rothbart & Bates, 1998). When this perspective is extended to differential control of boys and girls, one might argue that parents adapt their control strategies to the differential proneness of boys and girls to disruptive behavior. In this way boys' and girls' genetic predispositions are matched by the environment, which fosters optimal development.

Gender-Differentiated Parenting: Previous Findings

Consistent with the main tenets of the theoretical frameworks discussed above, there is some meta-analytic evidence that parents indeed use different parenting strategies with boys and girls, and that the extent to which this happens differs for fathers and mothers. For example, Lytton and Romney (1991) demonstrated in their meta-analysis that in Western countries other than North America, parents use more physical punishment with boys than with girls, and that North-American parents encourage sex-typed behaviors more in boys than in girls, though less so with increasing child age. Leaper and colleagues (1998) found in their meta-analysis that mothers used more supportive speech with daughters than with sons, with greater effects for older than younger children. They also found a negligible effect for

mothers' use of directive speech (i.e., slightly more with girls than with boys). These findings indicate a tendency for negative parenting strategies (i.e., focused on dominance and power) to be used preferably with boys, and positive parenting strategies (i.e., focused on affiliation and interpersonal closeness) to be used more with girls. Lytton and Romney (1991) also found some evidence for fathers to differentiate more between boys and girls than mothers. Leaper and colleagues (1998) were not able to examine any difference between fathers and mothers due to a lack of studies on fathers' talk to their children. The two meta-analyses did not disentangle child gender effects on parenting from effects of temperament or gender-specific behavioral differences, probably because too few studies included pertinent data. There is some evidence from a 10-year longitudinal population-based study of approximately 1000 US children between the ages of 1 and 20 years that mothers and fathers were harsher with boys than with girls (Bezirganian & Cohen, 1992). Boys and girls in this study did not differ in terms of temperament, so the harsher treatment of boys was not because they were more difficult to begin with. As a response to this harsh treatment, especially by mothers, boys appeared to become more difficult and noncompliant. However, it should be noted that this is a single study, relying on questionnaire and interview data, without observational data. Thus, potential effects of child temperament on gender-differentiated parenting cannot be ruled out conclusively.

Both meta-analyses are cited broadly, but they were not without limitations (Keenan & Shaw, 1997, Leaper et al., 1998). The Lytton and Romney meta-analysis (1991) has been criticized for using categories of socialization behaviors that were too broad (Keenan & Shaw, 1997), and combining constructs that were too divergent (Lipsey &Wilson, 2001). However, choosing a construct that is too specific harbors the risk of ending up with only a few studies on fathers, as was the problem in the Leaper, Anderson, and Sanders meta-analysis (1998). Additionally, the Lytton and Romney meta-analysis did not distinguish between verbal and nonverbal behavior, whereas gender-specific parenting may be less obvious in nonverbal behaviors (Leaper et al., 1998). Leaper and colleagues addressed this problem by focusing on verbal behavior, but did not compare pure verbal behaviors with other behavior. Perhaps most importantly, both meta-analyses were conducted more than fifteen years ago. In the meantime, gender equality has increased substantially in most Western societies (Inglehart & Norris, 2003), which may have had an important influence on gender-differentiated parenting practices. It is thus essential to extend previous meta-analyses with studies conducted in the last fifteen to twenty years and to examine the effect of time on gender-differentiated parenting.

Parental Control

One of the parenting aspects that is especially relevant to gender-differentiated parenting practices in relation to gender differences in disruptive behavior is parental control. The first reason why control is relevant is that both the Lytton and Romney meta-analysis (1991) and the meta-analysis of Leaper and colleagues (1998) point in the direction of parents using controlling behaviors (harsh punishment, support) in a gender-differentiated fashion. However, neither covered the entire parental control construct. The second reason is that negative control might partly explain gender differences in child disruptive behavior, because there is evidence that the two are related (e.g., Kawabata et al., 2011; Rothbaum & Weisz, 1994).

Parental control strategies can be defined as any strategy that a parent uses to alter, change, or influence their child's behavior (Grolnick, 2013). Examples of control strategies are comments, praise, prohibitions, physical redirections, negative or positive facial expressions, spanking, or physical obstruction (Grolnick, 2013). A problem in the literature on parental control is the lack of consensus about the direction of the impact of parental control (Rothbaum & Weisz, 1994). Some argue that high parental control is necessary for optimal development (Baumrind, 1975, 1983; Barber, 1996), whereas others suggest it influences development negatively (Lewis, 1981; Grolnick, 2013). These divergent perspectives might be due to the fact that parental control is a multidimensional construct, with numerous definitions (Grolnick, 2013).

Self-determination theory (Deci & Ryan, 2000) provides a framework for different types of parental control that promote optimal or less optimal child development. Central to this theory is the distinction between behaviors that a person willingly endorses (i.e., autonomously regulated behavior) and behaviors that are enacted because of pressure from, for example, the social environment (i.e., controlled behavior). Autonomous regulation is proposed to be associated with optimal behavioral development, whereas controlled regulation would be associated with behavioral maladjustment (Deci & Ryan, 2000). Self-determination theory assumes that parents' rearing style plays an important role in children's development of autonomous or controlled regulation of behavior (Deci, Eghrari, Patrick, & Leone, 1994; Grolnick et al., 1997). Within this theory, a distinction is made between autonomy-supportive- and controlling socialization (hereafter defined as positive and negative controlling strategies, respectively).

Parents using positive controlling strategies provide the child with a desired amount of choice, acknowledge the child's perspectives, and provide the child with meaningful rationales when choice is constrained (Deci et al., 1994). Strategies that are generally seen as positive are authoritative in nature, and include induction (i.e., providing explanations for commands and prohibitions), empathy for the child ("I know this is difficult for you"), approval, support, encouragement, and positive

feedback (e.g., praise) (see Braungart-Rieker, Garwood, & Stifter, 1997; Grolnick, 2013). Meta-analytically maternal and paternal positive control strategies tend to be associated with lower levels of disruptive behaviors in children, because parents provide a model for positive behaviors (Kawabata et al., 2011; Rothbaum & Weisz, 1994). Children may observe and imitate them, because they learn that these strategies are effective in altering others' behavior and in gaining parental approval. Moreover, positive strategies are thought to foster the internalization of parental rules, and the willingness to comply with parental requests and rules in the future (Grusec & Kuczynski, 1997). Furthermore, a previous study has also shown that an intervention to promote mothers' use of positive control strategies (i.e., sensitive discipline) was effective not only in increasing positive control, but also in decreasing children's disruptive (i.e., overactive) behavior (Van Zeijl et al., 2006).

Parents' negative controlling strategies undermine the child's ability for autonomous regulation, and pressure the child to think, behave, or feel in particular ways (Deci et al., 1994; Soenens & Vansteenkiste, 2010). Strategies labeled as negative in the literature are more authoritarian in nature in that they rely on power assertion ("you have to do this because I say so"), negative feedback ("no, you're not doing it right"), bribing ("if you're nice you'll get a treat"), threatening ("if you do not clean up, you will not get dessert"), negative commands ("you pick that up NOW"), physical punishment, or other physical controlling behaviors (see Braungart-Rieker et al., 1997; Grolnick, 2013). Social learning theories state that parents using negative strategies provide a model for negative behaviors to their children (Bandura, 1977; Bussey & Bandura, 1999). Children may imitate these behaviors and use negative behaviors in conflict situations or to alter others' behavior, because they have learned that strategies such as commanding and threatening are effective in getting one's own way. There is ample empirical evidence that negative maternal and paternal controlling strategies are indeed related to an increase in disruptive behavior in children of different ages (see meta-analyses by Karreman, Van Tuijl, Van Aken, & Dekovic, 2006; Kawabata et al., 2011).

On the basis of self-determination theory, Soenens and Vansteenkiste (2010) made a further distinction between two different ways in which parents can exert negative control, that is, via internal and external pressure. External pressure refers to harsh, explicit, or tangible controlling strategies, such as spanking, hitting, grabbing with force, or forcefully taking the child out of the situation (i.e., harsh discipline; Whipple & Richey, 1997). Internal pressure refers to parental behaviors that intrude upon the child's psychological world (i.e., thoughts and feelings) as a pressure to comply, and includes manipulative parenting techniques, such as guilt induction, shaming, criticism, invalidation of the child's feelings, and love withdrawal (i.e., psychological control; Barber, 1996).

Psychological control is often assessed through parental self-report questionnaires (Parental Psychological Control measure; Nelson et al., 2013) or through child reports (Child Report of Parental Behavior Inventory; Schaefer, 1965; Psychological Control Scale; Barber, 1996, Parental Regulation Scale; Barber, 2002). The same is true for harsh physical discipline (Gershoff, 2002; Whipple & Richey, 1997). There are also instruments to directly observe parental psychological controlling behaviors toward their children (Psychological Control Scale-Observer Rating; Barber, 1996), or harsh physical discipline (Bender et al., 2012; Joosen, Mesman, Bakermans-Kranenburg, & Van IJzendoorn, 2012), but they are not used that often, probably because of the low frequency of these behaviors in relatively short observation periods.

The distinction between psychological control and harsh physical discipline is particularly relevant for the study of gender-differentiated parenting as a mechanism underlying gender-specific behavior. Both psychological control and harsh physical discipline are highly detrimental for child development. Several studies with ethnically and socioeconomic diverse samples have demonstrated that both mothers' and fathers' excessive use of psychological control is associated with internalizing problems in children and adolescents (Barber, 1996; Barber et al., 1996; Mills & Rubin, 1998; Nelson, Yang, Coyne, Olsen, & Hart, 2013; Soenens & Vansteenkiste, 2010), whereas mothers' and fathers' harsh physical discipline is more often associated with externalizing problems in children (Mulvaney & Mebert, 2007) and adolescents (Bender et al., 2012). If parents use more harsh physical control with their sons than with their daughters, this might be associated with the higher prevalence of externalizing problems in boys. And if they use more psychological control with their daughters than with their sons, this might explain the higher prevalence of internalizing problems in girls. In contrast with this idea, there is some empirical evidence from US studies with both children and adolescents (mostly questionnaire data) that parental psychological control might be higher among boys than girls (Barber et al., 2002) or that there are no gender differences in the use of psychological control (Nelson & Crick, 2002; Pettit, Laird, Dodge, Bates, & Criss, 2001). To our knowledge the literature on psychological control to date has not been systematically reviewed with regard to the differential use of psychological control with boys and girls.

An important issue in distinguishing between negative and positive control strategies is the situation in which the parent tries to control the child. A certain level of parental control or monitoring is considered necessary for optimal development (Barber, 1996; Baumrind, 1975, 1983; Steinberg, 2001). Parental control is necessary to protect the child from harm in risky situations. However, when used unnecessarily and excessively, parental control undermines the child's autonomy (Grolnick, 2013). This nuance can be extended to the situations in which parental control is observed in

behavioral research. Using commands (e.g., "Give me that car") in a setting in which the child is allowed to play freely with a set of toys might be considered negative, because it is not necessary or appropriate to control the child in this situation. However, the use of commands (e.g., "Don't touch the toys") might be considered appropriate in a setting in which the child is not allowed to touch a set of attractive toys. Thus, when labeling control strategies as positive or negative, the observation context needs to be taken into account.

Factors Related to Gender-Differentiated Parenting

Observational context. An important question with regard to the magnitude of gender differences in socialization is whether this difference is context-specific. In the meta-analysis by Leaper et al., (1998) less structured and more naturalistic situations and activities yielded the greatest gender differences. Leaper and colleagues suggest that this might be due to the fact that in highly structured situations the demand characteristics of the task will lead to a smaller range of possible behaviors, which minimizes naturally occurring differences in parenting and child behavior.

The observational context can be categorized based on the setting and on the task the parent and the child have to perform. We expected gender differences in socialization to be stronger in the home setting than in the lab setting, because home settings generally provide less structure and are more naturalistic than lab settings (Gardner, 2000). With regard to the task, we expected the naturalistic context – in which parent and child are allowed to behave as they would normally do – to yield the greatest gender differences because it is the least structured situation, followed by free play, followed by more structured tasks such as problem-solving tasks, and discipline tasks (e.g., "Clean up", "Don't touch", delay of gratification) (Gardner, 2000). The distinction between these four types of activities is quite common in studies on observed parenting practices (Gardner, 2000). In fact, they reflect a continuum of structured to non-structured activities.

In a related vein, the duration of the observation session, which is often longer in more naturalistic settings than in laboratory settings, may play a role. Longer observation likely leads to a bigger range of possible behaviors, which in addition to task setting, leads to an increased possibility to detect gender differences (Leaper et al., 1998). Therefore, we expected gender differences in parental control to increase with observation length.

Other procedural characteristics. Another potential moderator of gender-differentiated parental control is the differentiation between verbal and nonverbal behavior. There is some evidence that language is a particularly important factor in the socialization of gender. A meta-analysis on parental talk to their children (Leaper et al., 1998) showed more systematic differences in the way mothers act toward their

sons versus daughters than those found in the Lytton and Romney meta-analysis (1991), which did not distinguish between verbal and nonverbal parenting behaviors. Therefore, we expected gender differences to be more pronounced in studies that specifically observed parental verbal control as opposed to parental controlling behavior.

In addition, the frequency of parental controlling behaviors is highly dependent on the child's behavior. The parent might, for example, feel a greater need to exert control when the child violates the task's requirements. So it is important to take the child's behavior during the task into account (e.g., using proportion scores, or including child behavior as a covariate in the analyses), to disentangle differences in parental control toward boys and girls from differences in oppositional behavior of boys and girls. We therefore expected effect sizes to be greater in studies that did not control for child behavior.

Other potential moderators include the study's focus (examining gender differences or not) and gender of the coders of parenting behavior (all male, all female, or mixed). We hypothesized that the effect sizes would be smaller for papers in which examining gender differences in parental control was not one of the goals, because in these studies the absence of gender differences might be more likely to be reported only in passing (Eagly & Wood, 1991), and studies aimed at testing gender-related differences in parenting behavior may use designs with optimal power to find such differences. With regard to the moderating effect of the coder's gender, we expected that single-gender coding teams (males or females only) would yield the greatest effect sizes, because they are more likely to hold similar gender-related biases, thus strengthening a particular direction in the observation of gender-differentiated parenting (Eagly & Carli, 1981).

Sample characteristics. Variation in effect sizes for gender differences in socialization may also be related to characteristics of the sample such as child age. The evidence with regard to child age is, however, inconclusive. Biosocial theory does not explicitly incorporate child age effects (Eagly & Wood, 2002; Wood & Eagly, 2012). However, pressures to conform to gender roles increase with child age, and the pressure to conform might be highest in adolescence (Basow & Rubin, 1999). Gender-specific parenting may increase as children get older in order to prepare children for the greater pressures toward gender role conformity. This is in line with Blocks (1979) argument that parents are likely to distinguish more between boys and girls with older children than with younger children. There is also meta-analytic evidence convergent with these propositions; Leaper and colleagues (1998) found that gender differences in mothers' directive speech were greater with older children than with younger children. They suggest that with older children mothers accommodate their socialization strategies to the emerging ability of the child to understand gender-typed social and personality characteristics. However, Lytton and Romney (1991)

found that gender differences actually decreased with age, specifically for disciplinary strictness. With regard to parental control, one might argue that gender differences in parental control decrease with child age, because parental control generally decreases over time due to increases in children's self-control (Kochanska, Coy, & Murray, 2001). This decrease may make gender differences less pronounced at later ages, leading to smaller effect sizes.

Parents' socioeconomic and cultural backgrounds may also be a moderator of the differential treatment of boys and girls. There is evidence that higher socioeconomic status (SES) is associated with less traditional views on gender roles (Dodson & Borders, 2006; Ex & Janssen, 1998). Women with higher educational levels have been found to have less traditional views about gender than less educated women (Harris & Firestone, 1998). Higher educated men more often chose less traditional occupations and had less traditional attitudes about gender roles (Dodson & Borders, 2006). It is likely that in families with a higher SES, the division of gender roles is less strict, because the mothers in these families more often participate in the work force, have careers, and spend less time in housework and childcare than mothers from lower-SES families (Ex & Janssens, 1998; Harris & Firestone, 1998). Similarly, there is evidence that lower-SES families show more gender-differentiated parenting than middle-class families (Serbin, Zelkowitz, Doyle, Gold, & Wheaton, 1990). This is indeed what would be expected in light of biosocial theory (Eagly & Wood, 2002; Wood & Eagly, 2012), because the more traditional views about gender roles in lower-SES families would lead to a bigger differentiation between boys and girls. In the current meta-analysis, we expected the differential treatment of boys and girls to be greater in lower-SES families compared to middle-class families.

There may also be cultural variation in the way parents treat boys and girls. In most societies men are more likely to hunt, be at war, or work outside the home, whereas women are more often responsible for growing fruits and vegetables, cooking, or caring (Eagly & Wood, 2002; Wood & Eagly, 2012). However, even in these societies differences in the strictness of the division of gender roles can be observed. Data on the gender gap (gender differences in health, life expectancy, access to education, economic participation, salaries, job type, and political engagement) showed that Scandinavian and Western European countries generally have the lowest gender gap in the world (World Gender Gap Index, 2013), and that North-American countries have a somewhat bigger gender gap. Latin-American and Asian societies have intermediate levels of gender inequality. The largest gender inequality can be found in Middle-East and North-African societies.

From the perspective of biosocial theory (Eagly & Wood, 2002; Wood & Eagly, 2012), one might argue that in cultures with big differences in the gender roles of men and women (i.e., big gender gap), parents will differentiate more between their sons and daughters to prepare them for adult life in a culture with big differences in

gender roles. This also fits with the propositions about the influence of culture on parenting and child development put forward by Super and Harkness (2002) in the developmental niche framework. They argue that various operational subsystems in the child's environment, such as the historically constituted customs and practices of child care and child rearing, and the psychology of the caretakers, particularly parental 'ethnotheories' (i.e., values and practices of a culture), play a directive role in parenting and child development. Moreover, the impact of parenting practices on child development might be different across cultures because of the meaning attached to particular parenting practices (Ispa et al., 2004; Lansford, Deater-Deckard, Dodge, Bates, & Pettit, 2004). Thus, with regard to the ethnicity of the sample, we expected gender differences in the treatment of boys and girls to be smaller in cultures where there are small differences in the roles of men and women (e.g., Europe vs. North America).

Further, we expected that at-risk or clinical samples (e.g., child or parent has some disorder, parent is abusive) would yield smaller effect sizes. Because these families often face many problems and challenges in the parent-child relationship, these may override gender-related parenting patterns.

Publication characteristics. Publication characteristics including gender of the first author, percentage of male authors, publication outlet, and year of publication are also potentially significant moderators. With regard to gender of the first author and percentage of male authors we expected that single-gender research teams (males or females only) would yield the biggest effect sizes, because they probably hold the same gender-related biases (Eagly & Carli, 1981). Regarding publication outlet, we expected the magnitude of differences in the socialization of boys and girls to be bigger in published material (i.e., peer-reviewed papers) than in unpublished material (i.e., dissertations), given that significant findings are more likely to be published than non-significant findings (Rosenthal, 1979). We also expected that effect sizes would be smaller in recent studies compared to older studies, because gender equality has increased in most Western societies over the past decades (Inglehart & Norris, 2003). Moreover, in the recent decades the division of gender roles has become less strict in most modern Western societies (Cabrera et al., 2000; Lamb, 2010), which according to biosocial theory would lead to more egalitarian attitudes about gender, and consequently less differentiation between boys and girls (Eagly & Wood, 2002; Wood & Eagly, 2012).

The Current Study

The current meta-analysis was guided by the following framework based on the empirical literature: (a) Meta-analytic evidence shows that there are robust gender differences in children's disruptive behavior (see for example Archer, 2004; Polanczyk, Silva de Lima, Horta, Biederman, & Rohde, 2007); (b) Meta-analytic

evidence shows that parental control is consistently related to children's disruptive behavior (see for example Kawabata et al., 2011; Rothbaum & Weisz, 1994); (c) Parents may use control in a gender-differentiated manner, which may explain gender differences in disruptive behavior. In the literature there is no consensus about the extent to which parents use different controlling strategies with their sons and daughters, and little is known about the consequences of differential treatment for gender differences in children's disruptive behavior. Much is also unknown about the mechanisms underlying gender-differentiated parenting. Parents' gender-differentiated use of control may be child-driven if the effect is not seen when child behavior is controlled, or may have a causal influence (e.g., parents' gender role attitudes) if the effect remains when child behavior is controlled.

We tested the following hypotheses, primarily based on the rationales of biosocial theory (Eagly & Wood, 2002; Wood & Eagly, 2012), social learning theories (Bussey & Bandura, 1999), child-effect frameworks (Bell, 1968), and previous (meta-analytic) evidence on related topics: (a) mothers and fathers use more negative control strategies, including psychological control and harsh physical discipline, with their sons than with their daughters (Barber et al., 2002; Lytton & Romney, 1991); (b) mothers and fathers use more positive control strategies with their daughters than with their sons (Leaper et al., 1998); (c) fathers' control strategies are more gender-differentiated than mothers' control strategies (Lytton & Romney, 1991). Hypotheses (a) and (b) follow from both biosocial theory and child-effects frameworks. From a biosocial perspective, parents are expected to use different parenting strategies with boys and girls in accordance with male and female gender roles. Parenting behavior toward girls would then be more likely to focus more on affiliation and interpersonal closeness whereas parenting behavior toward boys would focus more on assertiveness and dominance. In light of the child-effect models, it can be argued that the higher occurrence of disruptive behavior in boys compared to girls elicits more negative parenting behaviors rather than positive ones from their parents. Regarding hypothesis (c), biosocial theory (Eagly & Wood, 2002; Wood & Eagly, 2012) and social cognitive theory of gender development (Bussey & Bandura, 1999) also propose that fathers are more inclined than mothers to exert control in a gender-differentiated way. A conceptual analysis with expert raters was used to classify parental control variables as positive or negative.

Aspects of the current meta-analyses that extend previous meta-analytic work include: 1) a focus on parental control as a specific construct to examine gender-differentiated parenting, because overly broad categories of behaviors might obscure systematic differences in the socialization of boys and girls. Parental control is also studied extensively in fathers, enabling a comparison between mothers' and fathers' socialization practices; 2) a focus on observed parental control as opposed to self-reported control, because differences in the treatment of boys and girls are most

readily found in observational studies given the generally unconscious nature of gender-differentiated parenting (Culp et al., 1983), which is therefore unlikely to be captured through self-report measures; 3) the distinction between observed parental verbal control and parental control behavior; 4) an examination of the effect of several procedural moderators, because aspects of the setting or context in which the behavior is observed may be important; 5) an attempt to rule out alternative explanations for gender-differentiated socialization by comparing studies that control and do not control for child behavior; 6) the extension of previous meta-analyses on gender-differentiated parenting (i.e., Lytton & Romney, 1991; Leaper et al., 1998) with studies that have been conducted during the past two decades. In this period, gender equality has increased substantially in most Western societies (Inglehart & Norris, 2003), with potentially major consequences for gender-differentiated parenting practices.

METHOD

Literature Search

The PRISMA guidelines were used for conducting and reporting the current meta-analysis (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009). Three search methods were used to identify eligible studies published up until November 11th, 2013. First, the electronic databases of Web of Science (WOS), ERIC, PsychInfo, Online Contents, Picarta, and Proquest Dissertations and Theses were searched for empirical, peer-reviewed articles using the keywords for parental control in observational settings (parent* OR mother* OR maternal OR father* OR paternal) AND (disciplin* OR induct* OR harsh disciplin* OR harsh parent* OR spank* OR authorit* OR obedien* OR disobedien* OR parental control* OR maternal control* OR paternal control* OR complian* OR noncomplian* OR negative interact* OR coerc* OR negative reinforce*, positive reinforce* OR punish* OR prohib* OR forbid* OR critic* OR limit setting OR praise OR guid* OR psychological control* OR behavioral control*) AND (child* OR preschool* OR toddler OR infan* OR adolescen*) AND (observ* OR experiment*). For WOS, additional restrictions were used based on WOS categories.

Studies were included if they: a) examined differences in parental control of boys and girls between the ages of 0 and 18 years; b) used observations of parental control (e.g., free play, problem solving, discipline setting, naturalistic). Control was defined as "strategies parents use to alter the child's behavior". Studies were excluded if parental control was assessed in relation to gender socialization (e.g., parental control of sex-typed play), as this was considered to be a different socialization area. There were no restrictions with regard to the language of the paper, as long as an English abstract was available for screening purposes. During the full-text screening

phase papers that were written in languages other than English (one Turkish, one Chinese, three Spanish, one French, and two German) were translated by native speakers. Of the included publications, one was published in German and one in Spanish.

First, we checked whether the search terms yielded all discipline-related articles included in the Lytton and Romney (1991) meta-analysis. This was indeed the case. Second, we searched the reference lists of relevant reviews and meta-analyses on parental control (Gershoff, 2002; Karreman at al., 2006; Leaper et al., 1998; Rothbaum & Weisz, 1994). Third, the reference lists of the articles and dissertations that met our inclusion criteria were also searched for eligible studies. We applied a very broad strategy with this reference search, including all articles that mentioned any of our search in the title terms, or one of the following more general constructs: parenting, socialization, parent-child interaction/speech, parental behavior/behaviour. The database search and reference list search together yielded 7333 hits. Figure 1 depicts the flow chart of the literature search.

Agreement between the first and second authors on the inclusion of studies was determined on a random subset of 100 studies, oversampling included studies. Studies were first screened only on the basis of their abstracts, followed by a full-text screening of the selected studies. Agreement was satisfactory for both the abstract screening (agreement 92%) and the full-text screening (agreement 100%). Disagreements between the authors were resolved by discussion until consensus was achieved. After the reliability assessment the first author screened the remainder of the articles, but consulted the second author in cases of doubt.

To ascertain the independence of samples in the meta-analysis, several precautions were taken. First, for studies conducted on the same sample, the publication with the maximum or most relevant information was included. Second, when a publication separately reported gender-differentiated control for more than one sample (e.g., different age groups, different ethnicities), these sub-samples were treated as independent samples, but only if the sub-sample was relevant to one of the moderators of the current study (e.g., age, normative sample, observation setting). For other sub-samples (e.g., long divorced vs. recently divorced) a combined effect size was calculated. Third, when a publication reported different outcomes on the same sample, they were averaged if they concerned the same type of parental control (e.g., praise and guidance averaged for positive control). If they reported outcomes on different observation settings (e.g., free play, teaching task, discipline task) they were averaged for the overall meta-analysis, but for the analyses with task setting as moderator one of the settings was randomly selected. This procedure yielded 120 publications with data from 138 independent samples encompassing a total of 14,363 families. The studies that were included in the meta-analyses are presented in Table 1 and marked with an asterisk in the references.

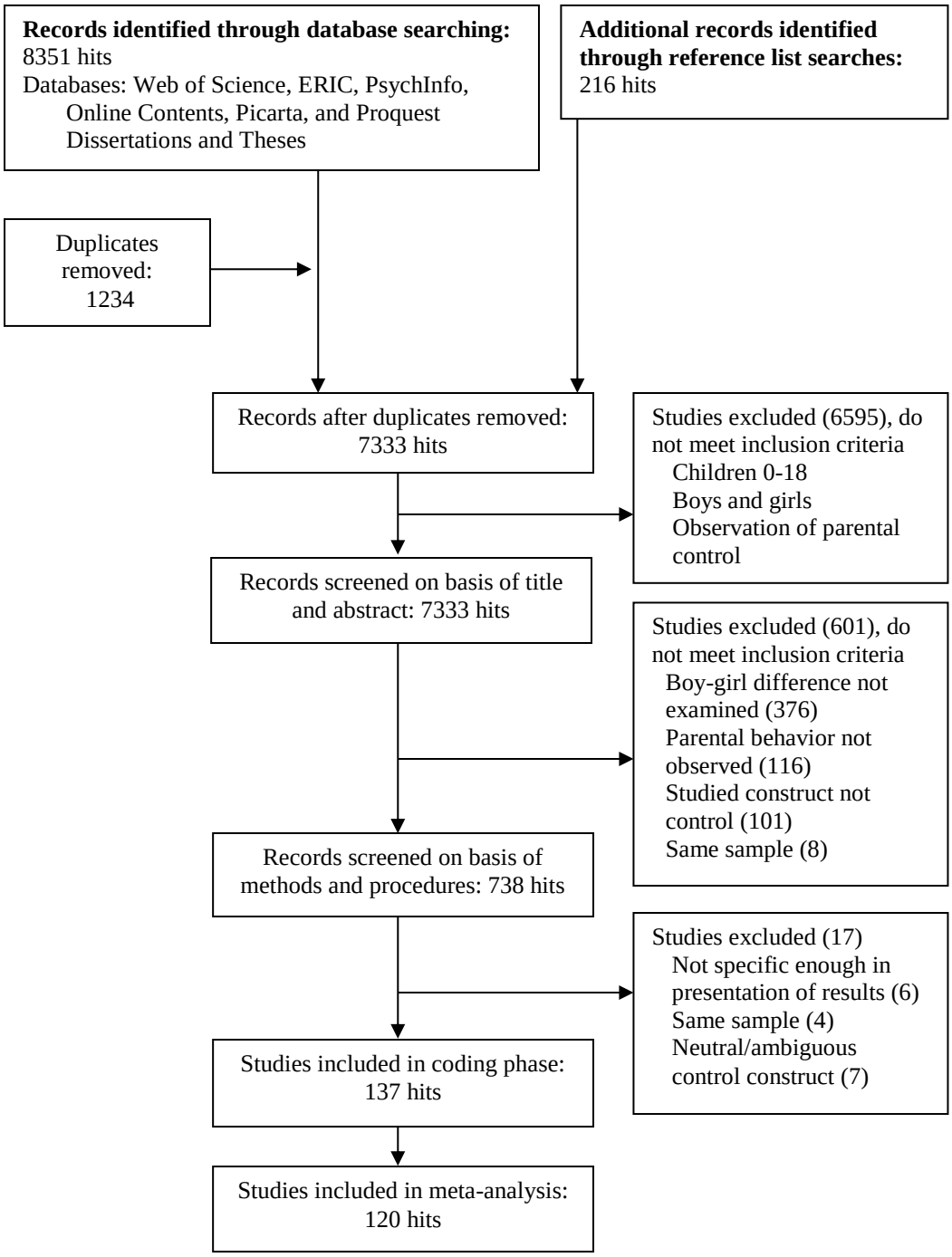

Figure 2.1 Flow-chart of literature search process.

Table 2.1 *Studies included in the meta-analysis*

Study	Parent[a]	Control type[b]	Sample size		% ♀	Age (in years)	Ethnicity[c]	Task[d]	Sample normative	SES[e]	Setting[f]	Only verbal	Other moderators[g]					
													1	2	3	4	5	6
Ahl et al. 2013	M	+	8 ♀	8 ♂	50	1.0	-	F	Yes	4	H	No	28	-	1	1	50	1
Barkley 1989	M	+, -	20 ♀	20 ♂	50	6.0	-	F,T,M	No	4	L	No	20	-	1	1	100	1
Barnett et al. 1998	M	-	38 ♀	31 ♂	55	4.6	AA	F	Yes	1	L	No	7	-	2	1	67	1
Baumrind 1971	M, F	+, -	69 ♀	80 ♂	46	4.2	-	N	Yes	4	H	No	-	-	1	2	0	1
Befera et al. 1985	M	+, -	30♀	30 ♂	50	8.6	-	F,T,M	Yes, No	4	L	No	10	-	1	2	50	1
Belden et al. 2007	M	+, -	133 ♀	144 ♂	48	4.0	-	D	No	3	L	No	8	-	1	1	33	1
Bellinger et al. 1982	M, F	-	5 ♀	5 ♂	50	3.9	-	T	Yes	3	L	Yes	30	-	1	1	50	1
Bernstein et al. 2005	M	+	332 ♀	351 ♂	49	4.0	Mixed	T	Yes	1	L	No	-	-	2	1	20	1
Blackwelder et al. 1986	M	+, -	12 ♀	12 ♂	50	5.9	-	T	Yes	4	L	No	-	-	2	1	100	1
Braungart-Rieker et al. 1997	M	+, -	29 ♀	28 ♂	51	2.5	Mixed	D	Yes	2	L	No	2	-	2	2	0	1
Bright et al. 1984	M, F	+, -	13 ♀	16 ♂	45	4.7	-	F	Yes	2	L	No	10	2	1	2	0	1
Brody et al. 1985	M	+, -	20 ♀	14 ♂	42	5.2	-	N	Yes	2	H	No	40	-	2	1	100	1
Brody et al. 1986	M, F	+, -	23 ♀	37 ♂	38	6.5	NAC	T	Yes	3	L	No	5	-	2	1	100	1
Brody et al. 1992	M, F	+, -	53 ♀	56 ♂	49	7.5	NAC	T	Yes	3	H	No	-	-	2	1	33	1
Bronstein 1984	M, F	+, -	24 ♀	30 ♂	43	9.0	SA	N	Yes	1	H	No	60	-	1	2	0	1
Bronstein et al. 2007	C	+, -	51 ♀	42 ♂	55	10.7	NAC	N	Yes	4	H	No	60	-	1	2	0	1
Caldera et al. 1989	M, F	+	20 ♀	20 ♂	50	1.7	-	D	Yes	-	L	Yes	24	-	1	2	0	1
Calkins et al. 1998	M	+, -	35 ♀	30 ♂	54	2.0	Mixed	T	Yes	2	L	No	11	-	2	2	0	1
Campbell et al. 1986	M	+, -	27 ♀	41 ♂	40	2.9	-	F	No	-	L	No	15	-	2	2	0	1
Campbell 1999	M	+, -, H	66 ♀	73 ♂	47	10	Mixed	T	Yes	2	L	Yes	20	-	1	2	0	2
Celano et al. 2008	M	+	29 ♀	72 ♂	29	8.6	Mixed	T	No	1	L	No	15	-	2	2	33	1
Chen et al. 2000	M	+, -	84 ♀	82 ♂	51	2.0	C	F	Yes	4	L	No	19	-	2	2	100	1
Chen et al. 2001	M, F	+, -	40 ♀	28 ♂	59	4.2	C	T	Yes	4	H	No	30	-	2	1	50	1
Cherry et al. 1976	M	-	6 ♀	6 ♂	50	2.0	-	F	Yes	-	L	Yes	15	-	1	2	50	1
Christopoulou 1988	M	-	36 ♀	32 ♂	53	7.3	Mixed		Yes	2	L	No	10	-	2	2	0	2
Ciarrocchi 1983	M	+, -	31 ♀	27 ♂	53	5.2	-	T	Yes	3	H	No	3	-	2	1	100	2
Cipriano et al. 2010	M	+	63 ♀	63 ♂	50	2.0	Mixed	D	Yes	4	L	No	4	-	2	2	0	1
Copeland 1985	M	+, -	30 ♀	31 ♂	49	8.5	-	T	Yes	-	L	No	50	-	1	2	0	1
Coulson 2002	M, F	P	61 ♀	52 ♂	54	4.0	Mixed		Yes	4	L	No	12	-	2	2	0	2
Crockenberg et al. 1990	M	+, -	39 ♀	56 ♂	41	2.0	Mixed	N,T,M	Yes	4	H,L	No	21	-	2	2	0	1
Deater-Deckard 2000	M	+, -	120 ♀	120 ♂	50	3.6	Mixed	T	Yes	4	H	No	20	-	2	1	100	1
Dekovic et al. 1992	C	+, -	113		-	8.9	WEC	T	Yes	4	H	No	20	-	1	2	50	1

Table 2.1 *(Continued)*

Study	Parent[a]	Control type[b]	Sample size		% ♀	Age (in years)	Ethnicity[c]	Task[d]	Sample normative	SES[e]	Setting[f]	Only verbal	Other moderators[g]					
													1	2	3	4	5	6
Dennis 2006	M	+, P	55 ♀	58 ♂	49	4.0	Mixed	D,F,M	Yes	4	L	No	8	-	2	2	0	1
Domenech et al. 2009	C	+, -	57 ♀	38 ♂	58	6.6	Mixed	T	Yes	1	L	No	18	3	1	2	0	1
Donovan et al. 2000	M	+, -	29 ♀	28 ♂	51	2.0	NAC	D	Yes	3	L	No	15	-	2	2	67	1
Dumas et al. 1995	M	+, -	69 ♀	57 ♂	55	4.2	Mixed	T	No	4	L	No	18	-	2	1	67	1
Eddy et al. 2001	M, F	-	201 ♀	195 ♂	51	5.0	Mixed	N	Yes	4	L	No	60	-	1	1	33	1
Eiden et al. 2001	M, F	+, -	107 ♀	108 ♂	50	1.5	Mixed	F	No	4	L	No	10	2	1	2	67	1
Eley et al. 2010	M	-	296 ♀	234 ♂	56	8.0	Mixed	T	No	4	L	No	8	-	2	2	0	1
Emmons 2001	M, F	+	49 ♀	63 ♂	41	1.6	Mixed	D	Yes	4	L	No	5	-	1	2	0	2
Fagot 1985	M, F	+, -	18 ♀	18 ♂	50	1.9	-	N	Yes	-	H	No	420	3	1	2	0	1
Fagot et al. 1993	M, F	+, -	65 ♀	72 ♂	46	1-1.5	Mixed	N	Yes	4	H	No	60	-	1	2	0	1
Fagot et al. 1996	M	+, -	46 ♀	47 ♂	49	2.5	Mixed	T	Yes	1	L	No	-	-	1	2	0	1
Falender et al. 1975	M	+, -, H	19 ♀	20 ♂	49	5.0	AA	T	Yes	1	L	No	20	-	2	2	50	1
Feldman et al. 1986	M	-	46 ♀	48 ♂	49	2.5	I	D	Yes	-	L	No	13	-	2	2	0	1
Feldman et al. 2003	M, F	+	16 ♀	16 ♂	50	2.2	I	D	Yes	2	H	No	8	-	2	2	0	1
Fisher et al. 1993	M, F	-	90 ♀	102 ♂	47	5.0	-	N	Yes	-	H	No	120	-	1	1	50	1
Frampton 2012	M	+, -	743		-	2.8	Mixed	T	Yes	4	H	No	15	-	2	2	0	2
Frankel et al. 1983	M, F	+, -	9 ♀	9 ♂	50	6.1	-	F,T,M	Yes	-	H	No	8	1	1	1	100	1
Frodi et al. 1985	M	-	17 ♀	24 ♂	41	1.0	NAC	T	Yes	4	L	No	6	-	2	2	0	1
Gaertner et al. 2008	M	+	115 ♀	141 ♂	45	1.5	Mixed	D	Yes	4	L	No	-	-	2	2	0	1
Gjerde et al. 1991	M, F	+, -	46 ♀	42 ♂	53	5.0	Mixed	T	Yes	4	L	No	-	-	1	1	67	1
Gordon 1983	M	+, -	39 ♀	35 ♂	54	3.5	Mixed	T	Yes, No	4	L	No	10	-	1	2	0	1
Gross et al. 2009	C	+, -	112 ♀	141 ♂	44	3.0	-	F,T,M	Yes	1	L	No	10	3	2	2	33	1
Gunnoe et al. 1999	M, F	+, -	217 ♀	240 ♂	49	12.9	Mixed	T	Yes	-	H	No	10	-	2	2	33	1
Gustafsson et al. 2012	M	-	338 ♀	367 ♂	48	1.3	Mixed	F	Yes	-	H	No	30	-	2	2	0	1
Henderson 2007	M	+, -	35 ♀	20 ♂	64	2.0	Mixed	D	Yes	1	H	No	5	-	1	2	0	2
Hess et al. 1984	M	-	33 ♀	34 ♂	43	4.0	NAC	T	Yes	4	L	Yes	-	-	2	1	50	1
Higgins 2008	M, F	+, -	50 ♀	50 ♂	50	2.0	Mixed	M	Yes	4	L	No	35	-	2	2	0	2
Holt 2008	M	-	53 ♀	58 ♂	48	2.0	Mixed	T	Yes	4	L	No	10	-	1	2	0	2
Huber 2012	M	-	39 ♀	41 ♂	49	0.9	SA	F	Yes	1	L	No	4	-	1	2	0	1
Hughes et al. 1999	M	+, -	138 ♀	100 ♂	58	3.6	Mixed	T	Yes	4	H	No	20	-	1	2	33	1
Inoff-Germain et al. 1988	M, F	-	30 ♀	30 ♂	50	12.3	NAC	T	Yes	2	H	No	45	-	1	2	0	1
Janssens et al. 1997	M, F	+	62 ♀	63 ♂	50	4-8	-	T	Yes	4	H	Yes	20	-	2	1	50	1

Table 2.1 *(Continued)*

Study	Parent[a]	Control type[b]	Sample size		% ♀	Age (in years)	Ethnicity[c]	Task[d]	Sample normative	SES[e]	Setting[f]	Only verbal	Other moderators[g]					
													1	2	3	4	5	6
Kagan et al. 1963	M	-, P	20 ♀	30 ♂	40	4.3	-	N	Yes	4	H	No	180	-	2	1	50	1
Kalpidou et al. 1998	M	+, -, P	22 ♀	22 ♂	50	4.0	Mixed	D	Yes	3	L	No	27	2	2	2	33	1
Kapungu et al. 2006	M	+, -	157 ♀	117 ♂	57	11.0	AA	T	Yes	1	L	No	60	-	1	2	33	1
Kauffman 1985	M, F	-	17 ♀	23 ♂	43	5.0	-	T	Yes	4	H	Yes	5	-	1	2	0	2
Kenny-Benson et al. 2005	M	-	52 ♀	52 ♂	50	8.2	Mixed	T	Yes	3	L	No	15	-	2	2	0	1
Kerig et al. 1993	M, F	+, -	19 ♀	19 ♂	50	3.6	Mixed	F	Yes	2	L	Yes	10	2	1	2	33	1
Kochanska 1995	M	+, H	51 ♀	52 ♂	50	2.7	Mixed	D	Yes	4	Mix	No	80	-	2	2	0	1
Kochanska et al. 2003	M	-	53 ♀	55 ♂	49	1.2	Mixed	D	Yes	4	L	No	58	-	2	2	0	1
Kochanska et al. 2009	M, F	-	50 ♀	50 ♂	50	2.0	Mixed	D	Yes	4	L	No	45	-	2	2	25	1
Kok et al. 2012	M	+, -	214 ♀	222 ♂	49	3.1	WEC	D	Yes	4	L	No	2	-	2	2	56	1
Kuczynski 1984	M, F	+, -	32 ♀	32 ♂	50	4.0	-	T	Yes	4	L	No	9	-	1	1	100	1
LaFreniere et al. 1992	M	+, -	66 ♀	60 ♂	52	3.9	NAC	T	Yes	-	L	No	18	-	2	1	100	1
Laosa 1978	M	+, -, H	23 ♀	20 ♂	53	5.8	SA	T	Yes	4	H	No	10	2	2	1	100	1
Lengua et al. 2007	M	+, -	80		-	3.0	Mixed	T	Yes	4	L	No	-	-	2	2	0	1
Li and Lee 2013	C	+, P	150		-	7.4	Mixed	D	No	-	L	No	20	-	2	1	100	1
Lindsey et al. 2005	M	+, -	27 ♀	28 ♂	49	1.2	Mixed	T	Yes	4	H	Yes	-	-	1	1	50	1
Linver et al. 2002	M	+, -	256 ♀	237 ♂	52	2.5	Mixed	F	No	4	L	No	8	-	2	2	0	1
Liu et al. 2010	M	+, -	42 ♀	37 ♂	53	5.2	C, NAC	F	Yes	3	L	No	30	-	2	2	50	1
Lloyd 2010	M	-	13 ♀	13 ♂	50	1.0	Mixed	F	Yes	4	L	No	5	-	1	2	0	1
Loeb 1980	M, F	+, -	51 ♀	47 ♂	52	10.0	NAC	T	Yes	2	H	No	7	-	1	1	33	1
Longeway 1983	M	+, -	20 ♀	20 ♂	50	9.0	-	T	Yes	4	L	No	30	-	1	2	0	2
Maccoby et al. 1984	M	+, -	29 ♀	28 ♂	51	1.3	-	T	Yes	-	Mix	No	17	-	1	2	0	1
Mandara et al. 2012	M	+, -, P	55 ♀	44 ♂	56	11.5	AA	T	Yes	4	L	No	10	-	1	2	40	1
Margolin et al. 1975	M, F	+, -	14 ♀	14 ♂	50	8.4	-	N	Yes	-	H	No	45	2	1	2	50	1
Martinez 1988	M	+, -, H	28 ♀	19 ♂	60	5.3	SA	T	Yes	1	H	No	10	-	1	2	0	1
McFadyen et al. 1996	M	-	69 ♀	74 ♂	45	5.0	Mixed	N	Yes, No	4	H	No	120	-	1	1	100	1
McLaughlin et al. 1980	M, F	-	12 ♀	12 ♂	50	5.0	-	T	Yes	2	L	Yes	23	-	1	1	100	1
McLaughlin 1983	M, F	-	12 ♀	12 ♂	50	2.5	NAC	F	Yes	2	H	Yes	16	-	1	1	100	1
Michnick et al. 1979	M, F	+, -	6 ♀	6 ♂	50	1.6	-	F,T,M	Yes	4	L	Yes	20	-	1	2	0	1
Minton et al. 1971	M	+, -, H	41 ♀	49 ♂	46	2.3	-	N	Yes	4	H	No	300	-	2	2	33	1
Morrell et al. 2003	M	+, -	28 ♀	31 ♂	47	5.0	-	M	Yes	4	Mix	No	-	-	2	1	50	1
Mullis et al. 1985	M, F	-	16 ♀	16 ♂	50	9.4	-	T	Yes	2	H	Yes	17	-	1	1	50	1

Table 2.1 *(Continued)*

Study	Parent[a]	Control type[b]	Sample size		% ♀	Age (in years)	Ethnicity[c]	Task[d]	Sample normative	SES[e]	Setting[f]	Only verbal	Other moderators[g]					
													1	2	3	4	5	6
Neppl et al. 2009	C	+, -	55 ♀	102 ♂	29	2.3	NAC	T	Yes	2	H	No	5	-	1	2	25	1
O'Brien et al. 1987	M, F	+, -	10 ♀	10 ♂	50	1.9	NAC	T	Yes	2	L	Yes	12	-	1	2	50	1
Oldershaw et al. 1986	M	+, -,P,H	20 ♀	20 ♂	50	3.0	-	D	Yes, No	2	L	No	40	-	2	2	33	1
Power 1985	M, F	+, -, H	12 ♀	12 ♂	50	7-13	NAC	F	Yes	3	L	No	5	-	2	1	100	1
Roberts 1983	M, F	-	19 ♀	11 ♂	63	4.3	-	N	Yes	4	H	No	-	-	2	1	100	2
Robinson et al. 1981	M, F	+	16 ♀	26 ♂	38	5.2	-	T	Yes, No	4	L	No	5	3	2	2	0	1
Russell et al. 1996	C	+, -	28 ♀	29 ♂	49	6.8	A	N	Yes	4	H	No	90	-	1	1	100	1
Scaramella et al. 2008	M	+, -	20 ♀	20 ♂	50	1.5	Mixed	D	Yes	-	Mix	No	-	-	2	2	20	1
Shaw et al. 1998	M	-	42 ♀	61 ♂	41	2.0	Mixed	D	Yes	1	L	No	-	-	1	1	50	1
Silverman et al. 1995	M	+, -, P	15 ♀	18 ♂	45	1.5	Mixed	F,T,M	Yes	4	H	No	12	-	2	1	50	1
Smith et al. 1977	C	+, -	16 ♀	16 ♂	50	1.5	WEC	N	Yes	4	H	No	60	3	1	1	50	1
Smith et al. 1997	M	-, H	372 ♀	343 ♂	52	2.0	Mixed	N	No	4	H	No	-	-	1	2	0	1
Smith et al. 2004	M	-	67 ♀	58 ♂	54	4.5	Mixed	T	No	4	L	No	22	-	1	2	20	1
Smith 2010	M	-	68 ♀	72 ♂	49	2.7	Mixed	F	Yes	4	L	No	8	-	2	2	0	1
Tam et al. 2003	M, F	+, -	41 ♀	40 ♂	51	9.8	C	T	Yes	-	L	No	20	-	2	2	0	1
Tamis-LeMonda et al. 2009	M	+, -	53 ♀	66 ♂	45	6.5	AA	D	Yes	4	-	No	20	-	1	2	50	1
Trautmann et al. 2006	F	-	45 ♀	43 ♂	51	2.0	WEC	F	Yes	-	L	No	5	-	1	2	67	1
Tulananda et al. 2001	M, F	+, -, H	31 ♀	22 ♂	58	3.9	Thai	N	Yes	2	H	No	120	2	1	2	50	1
Van Zeijl et al. 2007	M	+, -	107 ♀	127 ♂	46	2.3	WEC	D	No	4	L	No	10	-	2	2	25	1
Webster-Stratton et al. 1999	M, F	P	32 ♀	88 ♂	27	5.7	Mixed	N	No	4	H	No	30	-	2	2	0	1
Wilson 1980	M	+, -	30 ♀	30 ♂	50	3.5-7.5	NAC	T	Yes	3	L	No	10	-	1	2	0	2
Yaman et al. 2010	M	+, -	58 ♀	82 ♂	41	2.0	WEC, T	D	No	-	H	No	4	-	2	2	20	1
Zevalkink et al. 2001	M	+, -	36 ♀	40 ♂	47	3.2	In	T	Yes	1	L	No	15	2	2	2	0	1

[a] M = mother; F = father; C = combined sample.

[b] + = positive control strategy; - = negative control strategy; P = psychological control; H = harsh physical discipline

[c] AA = African-American; C = Chinese; NAC = North-American Caucasian; SA = South-American; WEC = Western-European Caucasian; I = Israeli; In = Indonesian; A = Australian; T = Turkish.

[d] D = discipline task; F = free play; N = naturalistic setting; T = teaching/problem-solving task; M = mixed

[e] SES; 1 = low; 2 = middle; 3 = high; 4 = mixed

[f] Setting: H= Home; L = Lab

[g] Other moderators: 1) observation length in minutes; 2) gender of coders (1 = male, 2 = female, 3 = mixed); 3) study goal (1 = examine gender differences, 2 = not examining gender differences), 4) gender first author (1 = male, 2= female), 5) percentage male authors, 6) publication type (1 = journal, 2 = dissertation).

Conceptual Analysis: the Sorting Task

Because the grouping of dependent variables may have an important effect on the outcome of a meta-analysis, a sorting task with experts was used (see De Wolff & Van IJzendoorn, 1997; Kawabata et al., 2011). Experts were defined as persons who had been actively involved in research on parenting for several years and who were at least participating in a relevant graduate program. A total of 10 experts were asked. All of these coders had had extensive training in observing parent-child interactions. Five of the coders had a doctoral degree; the others were advanced graduate students.

Overall, 313 parental control constructs were identified from the selected publications. Each construct, including the definition that was given in the paper and examples for the specific parenting construct, was printed on a separate card. Any information about the source of the construct was left out. Separate sets of cards were made for the four settings in which parental control was observed (e.g., free play, problem solving, discipline setting, naturalistic). This was done because certain aspects of parental control may be evaluated differently depending on the setting. Because some of the 313 constructs were almost identical, the first, second, and third authors together grouped the constructs that were obviously (near-)identical. Any differences were resolved through discussion and consensus. The grouping resulted in a set of 147 different constructs. Experts were asked to sort the constructs into three groups of parental controlling behaviors (positive, negative, and neutral), separate for the four different observation settings. A neutral category was included only for the sorting task, because we wanted to examine only the most pure forms of negative and positive control in the actual meta-analysis.

Overall, agreement between the experts was satisfactory (kappas .66 - .82, average .75). For 117 of the constructs, at least 8 out of 10 experts agreed on sorting the construct in the positive, neutral, or negative control category. The 30 remaining constructs with 70% agreement or less were discussed by the first and third authors. For 12 of these 30 constructs the two authors reviewing the experts' sorts agreed on one of the existing categories. The remaining 18 constructs were ambiguous or contained both positive and negative elements in one composite score, and therefore could not be grouped under positive or negative control strategies.

Overall, negative strategies were characterized by authoritarian practices relying on, for example, power assertion, negative feedback, commands, threatening, physical punishment or physical controlling behaviors. Positive strategies were more authoritative and include support (all parental strategies that help the child to comply or solve the problem), praise, reasoning, approval, and induction (providing explanations for commands and prohibitions). Because the parental negative control strategies could contain aspects of psychological control or harsh physical discipline, the first and second authors analyzed each of the negative control constructs to identify incidences of psychological control and harsh physical discipline. This search was guided by the content of questionnaires and observation scales that are widely

used to assess psychological control (i.e., Child Report of Parental Behavior Inventory; Schaefer, 1965, Parental Psychological Control measure; Nelson et al., 2013, Psychological Control Scale; Barber, 1996, Parental Regulation Scale; Barber, 2002). The psychological control concepts that are assessed with these instruments are: love withdrawal (i.e., parental attention, love, and care is contingent upon children's compliance with parental requests), erratic emotional behavior (i.e., inconsistent emotional behavior directed at the child), invalidation of the child's feelings (i.e., tell the child how to feel or think), constraining verbal expressions (i.e., speaking for the child), negative criticism (i.e., shame, disappointment, personal attack), guilt induction (i.e., continually reminding the child of all the sacrifices parents have made to pressure the child to comply with parents' requests).

With regard to the included publications in the current meta-analysis, 44 of the 60 negative control strategies that were examined contained a mix of physical, psychological and verbal control (e.g., Belden, Sullivan, & Luby, 2007; Kochanska, 1995; Kochanska, Aksan, & Nichols, 2003; Scaramella et al., 2008). Moreover, six control strategies were not defined specifically enough to evaluate whether they considered either psychological control or harsh physical discipline or both (e.g., Gustafsson, Cox, & Blair, 2012; harsh-intrusive parenting), so they were not included in the meta-analyses on psychological control and physical discipline. Only five negative control strategies could be considered indices of psychological control: contingent emotional support (i.e., withdrawal of emotional support after child failure), critiquing/humiliating (i.e., expressing disappointment or criticizing when the child fails to meet expectations), parental negativity (i.e., critical or hostile comments, negative commands, sarcastic and condescending remarks), negatives/negativity (i.e., cold, neglect, reprimands, criticism, corrections), and criticism/critical statements. Five constructs were considered indices of harsh physical discipline: harsh physical discipline, physical power, negative physical control, physical punishment, physical force.

Data Extraction

A data-extraction sheet was developed and refined based on a pilot with 10 randomly selected studies. Three types of moderators were coded: sample characteristics, procedural moderators, and publication moderators.

Sample characteristics included the child's age at the time of the assessment (continuous and categorical; 0-2 years, 2-4 years, 4-18 years), the percentage of girls in the sample (continuous), the socioeconomic background (high, middle, low, mixed), the ethnicity of the sample (African-American, Chinese, North-American Caucasian, West-European Caucasian, South-American, mixed), and the clinical/at-risk status of the sample. Regarding the ethnicity of the sample, samples that were heterogeneous in terms of ethnicity were coded as mixed. Ethnicities other than the ones mentioned above were too uncommon to form a separate category for moderator

analyses (i.e., one Australian sample, one Turkish sample, one Indonesian sample, two Israeli samples, one Thai sample). The sample was considered clinical/at risk if the child's score on a clinical instrument was in the clinical range, or if a clinical diagnosis was established, including abused children, parents with an addiction or other forms of psychopathology, or when a subsample of a normal sample with highest/lowest scores on a clinical screening instrument was distinguished. Sample size was also coded, in order to assign weight to the effect sizes. Outcomes were included in the form of, in hierarchical order: (a) mean and standard deviation for parental use of control in boys and girls; (b) correlations between child gender and parental control; (c) *p*-values; (d) statements that there were no differences.

Procedural moderators regarding the measurement of parental control were the setting of the observation (home or laboratory), the observation context (free play, problem solving, discipline task, or naturalistic), the observation length (continuous and categorical; 0-10 minutes, 10-60 minutes, more than 60 minutes), whether the behavior observed was mainly verbal or a mix of verbal and nonverbal behaviors (verbal, mixed), the coders' gender (100% male, 100% female, mixed), the study's goal (examine gender differences in parental behavior versus other), and whether the frequency of parental controlling behaviors was controlled for the frequency of child behaviors (e.g., proportion scores, analysis with child behavior as covariate) or not. Publication moderators were gender of the first author, percentage of male authors (continuous and categorical; 0-30%, 31-70%, more than 70%), publication outlet (journal, dissertation), and year of publication (continuous and categorical; before 1980, 1981-1990, 1991-2000, after 2000).

To assess intercoder reliability, 30 publications were coded by the first and the second author. Agreement between the coders was satisfactory for both the moderators and outcome variables (kappas for categorical variables between .63 and 1.00, average .86, and agreement between 85% and 100%, average 96%; intraclass correlations for continuous variables between .98 and 1.00, average .996). Coders reached complete agreement in the reliability set on whether or not test statistics were present. Disagreements between the authors were resolved by discussion. After the reliability assessment, the first author coded the remainder of the articles, but consulted one or more of the other authors in cases of doubt.

Meta-Analytic Procedures

The meta-analyses were performed using the Comprehensive Meta-Analysis (CMA) program (Borenstein, Rothstein, & Cohen, 2005). For each study, an effect size (standardized mean difference, *d*) was calculated. In general, when studies reported analyses with and without covariates, statistics from the analysis without covariates were used. Effect sizes indicating a difference between parental control of boys and girls that was in line with our hypotheses (e.g., more negative control with boys than with girls, more positive control with girls than with boys) were given a positive sign,

differences that were not in line with our hypotheses were given a negative sign. According to Cohen (1977), effect sizes of $d = 0.20$ are considered small, $d = 0.50$ is a medium-sized effect, and $d = 0.80$ is a large effect.

Statistical analyses. Combined effect sizes were computed in CMA. Significance tests and moderator analyses were performed through random-effect models, which are more conservative than fixed-effect models. In the random-effect model, the true effect could vary between studies, depending on characteristics of the specific sample. Because of these different characteristics, there may be different effect sizes underlying different studies (Borenstein, Hedges, Higgins, & Rothstein, 2009). To test the homogeneity of the overall and specific sets of effect sizes, we computed Q-statistics (Borenstein et al., 2009). In addition, we computed 95% confidence intervals (CIs) around the point estimate of each set of effect sizes. Q-statistics and *p*-values were also computed to assess differences between combined effect sizes for specific subsets of study effect sizes grouped by moderators. Contrasts were only tested when at least two of the subsets consisted of at least four studies each (Bakermans-Kranenburg, Van IJzendoorn, & Juffer, 2003). Different meta-analyses were conducted for positive and negative control, and for mothers and fathers. Differences in (absolute values of) combined effect sizes between mothers and fathers for specific subsets of study effect sizes grouped by moderators were examined by comparing the 85% CIs. Non-overlapping Cis indicate a significant difference (Goldstein & Healy, 1995; Julious, 2004; Payton, Greenstone, & Schenker, 2003; Van IJzendoorn, Juffer, & Klein Poelhuis, 2005).

Funnel plots for each subset were examined in order to detect possible publication bias. A funnel plot is a plot of each study's effect size against its standard error (usually plotted as 1/SE, or precision). It is expected that this plot has the shape of a funnel, because studies with smaller sample sizes (larger standard errors) have increasingly big variation in estimates of their effect size as random variation becomes increasingly influential, representing the broad side of the funnel, whereas studies with larger sample sizes have smaller variation in effect sizes, which represents the narrow end of the funnel (Duval & Tweedie, 2000b; Sutton, Duval, Tweedie, Abrams, & Jones, 2000). However, smaller studies with non-significant results or with effect sizes in the non-hypothesized direction are less likely to be published, whereas for large studies, publication of small or non-significant effect sizes or effect sizes in the non-hypothesized direction is more likely because large studies are generally deemed more trustworthy. Therefore, a funnel plot may be asymmetrical around its base (i.e., for small studies no effect sizes for non-significant results or results in the non-hypothesized direction). The degree of asymmetry in the funnel plot was examined by estimating the number of studies which have no symmetric counterpart on the other side of the funnel (Duval & Tweedie, 2000a, 2000b).

We checked for outlying effect sizes and sample sizes separately for the different subsets of studies. *Z*-values below 3.29 or greater than 3.29 were considered outliers (Tabachnick & Fidell, 2001). Five outlying effect sizes were detected (Feldman & Klein, 2003, fathers' positive control; Kerig et al., 1993, both mothers' and fathers' positive and negative control) and seven studies had outlying sample sizes (Bernstein et al., 2005; Frampton, 2012; Gunnoe et al., 1999; Gustafsson et al., 2012; Kok et al., 2012; Linver et al., 2002; Smith & Brooks-Gunn, 1997). Analyses were conducted with and without studies with outlying effect sizes. The outliers with regard to sample size were winsorized (highest non-outlying number + difference between highest non-outlying number and before highest non-outlying number).

RESULTS

Parental Negative Control

The combined effect size for the difference in parental negative control toward boys and girls was non-significant (d = 0.04, 95% CI [-0.02, 0.10], p = .15). The set of studies was highly heterogeneous (Q = 496.17, p < .01). Excluding outlying effect sizes (k = 2), the combined effect size was significant but small (d = 0.09, 95% CI [0.04, 0.13], p < .01; Table 2.2) in a heterogeneous set of studies (Q = 222.52, p < .01). The effect size was positive, indicating that parents used more negative control strategies with boys than with girls. Moderator analyses were conducted without outliers.

The combined effect size for the normative group (d = 0.10, 95% CI [0.06, 0.15], p < .01, k = 130, n = 11,368) was larger than the combined effect size for the group with clinical or at-risk samples (d = -0.01, 95% CI [-0.16, 0.13], p = .85, k = 21, n = 3,498; $Q_{contrast}$ = 4.75, p < .05), indicating that the differential negative control toward boys and girls was larger in normative groups than in clinical and at-risk groups, where the gender difference was absent. None of the other moderators were significant. Continuous moderators were tested using meta-regression analyses, but none of them were significant.

To test whether mothers' and fathers' differential negative control toward boys and girls was dependent on different moderators, two meta-analyses were conducted, separately for mothers and fathers. The combined effect size for mothers' differential negative control of boys and girls was small but significant (d = 0.07, 95% CI [0.02, 0.11], p < .01) in a heterogeneous set of studies (Q = 173.08, p < .01). The combined effect size for fathers was also significant (d = 0.12, 95% CI [0.06, 0.19], p < .01) in a heterogeneous set of studies (Q = 30.33, p < .01). Although the effect size for fathers was slightly higher than that for mothers, the 85% confidence intervals of mothers (85% CI [0.03, 0.10]) and fathers (85% CI [0.08, 0.17]) overlapped, indicating that mothers and fathers did not differ in the extent of their

differential treatment of boys and girls; both controlled their boys more negatively than their girls. For fathers, none of the moderators were significant. For mothers, observation time was a significant moderator ($Q_{contrast}$ (1) = 5.70, $p < .05$). Mothers used more negative control strategies with boys than with girls but this effect could only be detected with observation longer than 10 minutes (0-10 minutes: d = -0.01, 95% CI [-0.10, 0.08], p = .80; > 10 minutes: d = 0.12, 95% CI [0.06, 0.18], $p < .01$). All 85% CIs for moderators tested in mothers and fathers were overlapping, indicating no differences between mothers and fathers for the effects of the moderators.

We tested the interaction between different moderators whenever the subsets consisted of at least four studies. No significant interactions were found between child age and task ($Q_{contrast}$ = 0.74, p = .48), child age and observation setting ($Q_{contrast}$ = 0.94, p = .40), child age and parent gender ($Q_{contrast}$ = 1.71, p = .19), parent gender and task ($Q_{contrast}$ = 0.21, p = .81), or parent gender and observation setting ($Q_{contrast}$ = 0.12, p = .74).

Separate meta-analyses were conducted for two types of negative control: studies specifically examining psychological control (k = 12, n = 950), and studies examining harsh physical discipline (k = 17, n = 1,145). The gender difference for psychological control was not significant (d = 0.07, 95% CI [-0.06, 0.21], p = .28) in a homogeneous set of studies (Q = 5.65, p = .90). The combined effect size for the difference in harsh physical discipline with boys and girls was not significant either (d = 0.11, 95% CI [-0.02, 0.10], p = .06) in a homogeneous set of studies (Q = 10.75, p = .83). With regard to the differences between mothers and fathers in the gender-differentiated use of harsh physical discipline, mothers used more harsh discipline with boys than with girls (d = 0.13, 95% CI [0.01, 0.25], $p < .05$). Parent gender was however not a significant moderator of the gender-differentiated use of harsh physical discipline ($Q_{contrast}$ = 1.33, p = .25). The subsets of studies on psychological control and harsh physical discipline were too small to conduct further moderator analyses.

Table 2.2 *Negative parental control.*

Characteristics	*k*	*N*	*d*	95% CI	*Q*	
Total set	151	14,904	0.085**	[0.036, 0.134]	222.52**	
Sample						
Parent gender						1.41
Father	35	2,633	0.123**	[0.036, 0.210]	30.33	
Mother	108	11,425	0.066**	[0.019, 0.112]	173.08**	
Mixed	8	808	0.116	[-0.126, 0.358]	17.02*	
Child age						2.72
0-2 years	40	3,365	0.131**	[0.048, 0.214]	35.18	
2-4 years	37	4,719	0.037	[-0.039, 0.112]	97.03**	
> 4 years	74	6,782	0.082**	[0.027, 0.136]	81.49	
Normative sample						4.75*
Yes	130	11,368	0.102**	[0.058, 0.145]	143.02	
No	21	3,498	-0.012	[-0.158, 0.134]	69.99**	
SES						2.01
Low	14	1,202	0.064	[-0.136, 0.264]	20.40	
Middle	27	2,841	0.102*	[0.001, 0.203]	27.02	
High	22	1,085	-0.032	[-0.227, 0.164]	7.31	
Mixed	69	8,751	0.083**	[0.027, 0.139]	152.65**	
Ethnicity						5.61
African-American	4	529	0.265**	[0.090, 0.439]	4.49	
N-A Caucasian	28	1,461	0.077	[-0.022, 0.176]	14.57	
Chinese	5	422	0.105	[-0.060, 0.269]	0.67	
W-E Caucasian	6	973	0.217**	[0.093, 0.340]	14.27*	
South-American	5	224	0.062	[-0.164, 0.289]	9.28	
Procedure						
Verbal						1.00
Only	18	597	-0.003	[-0.172, 0.166]	18.52	
Mixed	130	13,675	0.086**	[0.044, 0.128]	200.80**	
Setting						0.04
Home	63	7,487	0.077**	[0.019, 0.134]	55.62	
Lab	83	7,016	0.069*	[0.013, 0.125]	154.98**	
Task						3.80
Free play	30	2,887	0.054	[-0.044, 0.153]	84.61**	
Naturalistic	33	3,164	0.103*	[0.022, 0.183]	23.29	
Teaching	66	6,762	0.045	[-0.016, 0.105]	74.04	
Discipline	20	2,247	0.157**	[0.049, 0.265]	30.56*	
Observation length						3.16
0-10 minutes	49	5,410	0.026	[-0.047, 0.098]	108.10**	
11-60 minutes	73	7,009	0.104**	[0.047, 0.161]	80.61	
> 60 minutes	14	819	0.118	[-0.009, 0.246]	7.28	
Coders gender						0.70
Female	13	981	0.025	[-0.097, 0.147]	9.05	
Mixed	4	199	-0.115	[-0.416, 0.118]	8.93*	
Study goal gender						0.49
Yes	83	6,705	0.094**	[0.039, 0.150]	104.13	
No	68	8,161	0.066*	[0.009, 0.123]	117.37**	
Control child behavior						2.51
Yes	13	897	0.177**	[0.067, 0.287]	17.03	
No	90	7,084	0.082**	[0.039, 0.125]	82.96	

Table 2.2*(Continued)*

Characteristics	*k*	*N*	*d*	95% CI	*Q*	
Publication						
Gender first author						0.39
Male	53	3,797	0.057	[-0.048, 0.162]	58.22	
Female	98	11,069	0.089**	[0.041, 0.136]	163.22	
% male authors						0.48
0-30	68	7,544	0.066	[-0.021, 0.153]	125.24**	
31-70	55	5,933	0.096**	[0.032, 0.159]	65.33	
> 70	30	1,465	0.083	[-0.067, 0.233]	30.75	
Publication outlet						0.09
Journal	132	13,225	0.083	[0.040, 0.125]	211.96**	
Dissertation	19	1,641	0.064	[-0.050, 0.179]	10.35	
Publication year						1.41
< 1980	17	718	0.140*	[0.006, 0.267]	17.65	
1981-1990	54	2,083	0.081	[-0.006, 0.169]	50.10	
1991-2000	32	4,237	0.048	[-0.003, 0.126]	24.34	
> 2000	48	7,828	0.087**	[0.026, 0.148]	129.03**	

Note. Statistics displayed are from analyses without outliers. Abbreviations stand for North-American (N-A) and Western-European (W-E).

Parental Positive Control

The results of the meta-analysis on differential positive control with boys and girls indicated that the gender difference was not significant (d = 0.03, 95% CI [-0.00, 0.07], p = .07) in a homogeneous set of studies (Q = 131.91, p = .44). Excluding the outlying effect sizes (k = 3) did not change the results (d = 0.03, 95% CI [0.00, 0.07], p = .08; Table 2.3), again, the set of studies was homogeneous (Q = 100.91, p = .96). Further analyses were conducted without outliers. Although the set of studies was not significantly heterogeneous, the value of the Q statistic indicated a moderate to large degree of heterogeneity (Hedges & Pigott, 2001). We therefore conducted moderator analyses to examine this heterogeneity.

The difference between effect sizes from papers that had gender-differentiated parenting as focus (d = -0.01, 95% CI [-0.06. 0.04], p = .73, k = 61, n = 4,530) versus those that did not (d = 0.06, 95% CI [0.02, 0.11], p < .01, k = 67, n = 6,981) was significant ($Q_{contrast}$ = 3.92, p < .05), indicating that the higher parental positive control toward girls than toward boys could only be detected in studies that did *not* have gender-differentiated parenting as focus. Furthermore, publication year was a significant moderator ($Q_{contrast}$ = 8.99, p < .05), which was confirmed in a meta-regression (B = 0.01, 95% CI [0.00, 0.01], p < .05). Test of time-related trends showed a significant positive correlation between year of publication (1971-2013) and Cohen's d (r = 0.22, p = 0.01). Figure 2.2 displays the relation between year of publication and standardized Cohen's d. In the 70s and 80s, effect sizes are negative, indicating that boys received more positive control than girls. From 1990 onwards the positive effect sizes indicate that girls received more positive control than boys. Since the scatterplot suggested possible non-linearity in the association between year of

publication and Cohen's *d*, a quadratic function was also tested but this did not fit the data better than the linear function (both models $z = 2.56$). Since publication year was significantly associated with the moderator observation time ($r = -.18$, $p < .05$) and percentage male authors ($r = -.17$, $p < .05$) a multivariate regression analysis was also conducted, but publication year was the only significant moderator ($B = 0.01$, 95% *CI*: 0.00 – 0.01, $p < .01$). The other categorical or continuous moderators were not significant.

To test whether mothers' and fathers' differential positive control toward boys and girls was dependent on different moderators, two meta-analyses were conducted separately for mothers and fathers. The combined effect size for mothers' differential positive control of boys and girls was not significant ($d = 0.03$, 95% CI [-0.01, 0.08], $p = .11$) in a homogeneous set of studies ($Q = 81.05$, $p = .71$). The combined effect size for fathers was also not significant ($d = 0.00$, 95% CI [-0.08, 0.08], $p = .99$) in a homogeneous set of studies ($Q = 15.75$, $p = .97$). For fathers none of the moderators were significant, but for mothers the same moderators were significant as in the overall meta-analysis. Mothers' differential positive control toward boys and girls could only be detected in studies that did *not* have gender-differentiated parenting as focus ($d = 0.08$, 95% CI [0.02, 0.14], $p < .01$, $k = 51$, $n = 5{,}512$), whereas it was lower in studies that did have gender-differentiated parenting as focus ($d = -0.05$, 95% CI [-0.07, 0.02], $p = .24$, $k = 39$, $n = 2{,}911$, $Q_{contrast} = 9.32$, $p < .01$). In addition, publication year was a significant moderator of mothers' differential positive control toward boys and girls ($Q_{contrast} = 7.86$, $p < .05$), also in a meta-regression ($B = 0.01$, 95% CI [0.00, 0.01], $p < .05$), indicating that in the 1970s and 1980s boys received more positive control than girls from their mothers, whereas from 1990 onwards girls received more positive control than boys. The 85% confidence intervals of fathers and mothers were non-overlapping only for studies that did not have gender-differentiated control as study focus (Mothers 85% CI [0.04, 0.12], Fathers 85% CI [-0.15, 0.04]). Mothers used more slightly positive control with girls than with boys, whereas fathers used somewhat more positive control with boys than with girls in studies that did *not* have gender-differentiated control as focus.

Publication Bias

There was no evidence for publication bias in the funnel plots. Using the trim and fill method (Duval & Tweedie, 2000a, 2000b), asymmetries (missing studies in the non-hypothesized direction) were not found in the meta-analyses on negative and positive control.

Table 2.3 *Positive parental control.*

Characteristics	*k*	*N*	*d*	95% CI	*Q*	
Total set	128	11,511	0.031	[-0.004, 0.065]	100.91	
Sample						
Parent gender						1.31
Father	29	2,027	0.001	[-0.075, 0.076]	15.75	
Mother	90	8,423	0.034	[-0.007, 0.075]	81.05	
Mixed	9	1,061	0.087	[-0.040, 0.203]	2.80	
Child age						1.64
0-2 years	38	2,515	0.016	[-0.054, 0.087]	9.61	
2-4 years	32	4,480	0.061*	[0.003, 0.119]	38.14	
> 4 years	58	4,516	0.013	[-0.043, 0.067]	51.52	
Normative sample						0.00
Yes	110	9,305	0.031	[-0.008, 0.069]	63.37	
No	18	2,206	0.031	[-0.052, 0.114]	37.54**	
SES						1.49
Low	12	1,770	-0.011	[-0.104, 0.081]	5.93	
Middle	18	1,804	-0.011	[-0.104, 0.081]	7.28	
High	19	961	0.012	[-0.122, 0.146]	0.52	
Mixed	62	6,037	0.058*	[0.010, 0.106]	74.43	
Ethnicity						1.56
N-A Caucasian	22	1,185	0.073	[-0.042, 0.187]	4.00	
Chinese	5	422	0.040	[-0.122, 0.203]	0.18	
W-E Caucasian	5	729	0.099	[-0.048, 0.246]	4.52	
South-American	4	144	0.115	[-0.215, 0.446]	1.07	
Procedure						
Verbal						0.67
Only	14	588	0.099	[-0.064, 0.261]	3.11	
Mixed	123	10,859	0.029	[-0.006, 0.065]	95.48	
Setting						1.24
Home	50	4,407	0.004	[-0.052, 0.059]	31.55	
Lab	71	5,816	0.049*	[0.001, 0.098]	67.73	
Mixed	4	255	0.032	[-0.213, 0.278]	0.25	
Task						2.50
Free play	21	1,693	0.092*	[0.002, 0.183]	15.49	
Naturalistic	20	1,218	0.009	[-0.097, 0.115]	11.44	
Teaching	60	5,918	0.014	[-0.036, 0.065]	43.71	
Discipline	24	2,401	0.065	[-0.009, 0.139]	14.47	
Observation length						0.77
0-10 minutes	46	4,503	0.049	[-0.007, 0.105]	46.31	
11-60 minutes	61	4,607	0.012	[-0.041, 0.065]	48.96	
> 60 minutes	10	701	0.032	[-0.107, 0.172]	0.70	
Coders gender						0.33
Female	13	981	-0.057	[-0.174, 0.059]	5.79	
Mixed	9	536	0.038	[-0.134, 0.210]	0.89	
Study goal gender						3.92*
Yes	61	4,530	-0.009	[-0.062, 0.043]	61.37	
No	67	6,981	0.062**	[0.015, 0.108]	35.62	
Control child behavior						1.67
Yes	12	708	-0.067	[-0.189, 0.055]	24.57*	
No	85	5,295	0.020	[-0.030, 0.070]	37.96	

Table 2.3 *(Continued)*

Characteristics	*k*	*N*	*d*	95% CI	*Q*	
Publication						
Gender first author						0.01
Male	42	3,283	0.033	[-0.030, 0.097]	18.77	
Female	86	8,228	0.029	[-0.012, 0.071]	82.12	
% male authors						0.07
0-30	58	5,385	0.035	[-0.016, 0.087]	43.57	
31-70	48	4,960	0.028	[-0.026, 0.082]	47.78	
> 70	22	1,166	0.024	[-0.073, 0.120]	9.49	
Publication outlet						0.04
Journal	116	10,440	0.029	[-0.008, 0.066]	96.10	
Dissertation	12	1,071	0.040	[-0.060, 0.140]	4.77	
Publication year						8.99*
< 1980	13	609	-0.004	[-0.145, 0.137]	4.88	
1981-1990	44	1,585	-0.076	[-0.162, 0.009]	31.66	
1991-2000	30	3,406	0.032	[-0.034, 0.097]	22.22*	
> 2000	41	5,911	0.072**	[0.025, 0.123]	33.17	

Note. Statistics displayed are from analyses without outliers. Abbreviations stand for North-American (N-A) and Western-European (W-E).

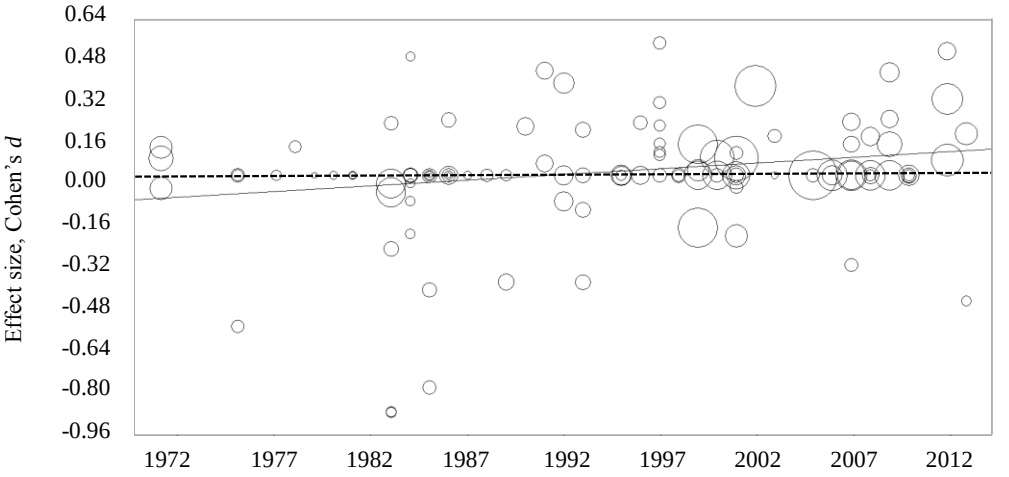

Figure 2.2 Scatterplot showing the relation between year of publication and Cohen's *d*.

Note. Solid line represents regression line, dashed line represents Cohen's $d = 0.00$.

DISCUSSION

Contrary to our expectations, parents were very similar in the use of control towards boys and girls. In the current set of meta-analyses, only small differences were found in parents' use of negative controlling strategies with boys and girls. Parents used slightly more negative control with boys than with girls. The combined effect size was larger in normative groups than in clinical and at-risk groups, but even then it remained small in the perspective of Cohen's (Cohen, 1977) criteria. Regarding positive control, no gender-differentiated positive control was found in the total set of studies. However, in earlier studies parents showed more positive control toward boys than toward girls, whereas in studies from 1990 onwards parents showed more positive control toward girls than toward boys. Contrary to our expectations, mothers and fathers did not differ in the extent to which they used differential positive or negative control toward boys and girls. All significant effects were small in magnitude.

Overall the results indicate that there is strong overlap between the distributions of parental control with boys and with girls. Previous meta-analyses on parents' differential treatment of boys and girls also found small effects (Leaper et al., 1998; Lytton & Romney, 1991), but these meta-analyses were not without limitations. The results of the current meta-analysis fit well with the growing awareness of gender similarities in the psychology and child development literature (i.e., gender similarities hypothesis; Hyde, 2005, 2014).

In general, three possible explanations for small or non-significant combined effect sizes in meta-analysis can be proposed. A first explanation is a lack of power, due to insufficient studies in the field. This does not seem to apply to the current meta-analysis because the numbers of studies and participants are substantial for the overall analyses as well as for most subsets of studies in the moderator analyses. A second possible explanation is that null findings may emerge when the construct examined is too broadly defined, which harbors the risk of combining heterogeneous constructs and thus obscuring any systematic results. By using expert sorts to define the constructs of negative and positive control, excluding constructs that were judged ambiguous by the experts, we hope to have countered the risk of combining too heterogeneous control strategies. That leaves us with the third explanation that the relevant research *does* show mixed or small effects. Apparently there are big similarities in parents' use of control with boys and girls. These results may suggest that gender-differentiated parenting is part of gender socialization only in a small subset of parents, for example for parents with strong gender stereotypes. Gender-differentiated control might also only be visible in specific situations or in response to specific child behaviors. Another explanation for the small effects is that parents may use gender-differentiated parenting in a very subtle way. There is evidence that gender

differentiation and discrimination has been becoming less blatant and increasingly subtle in many contemporary societies (Swim, Aikin, Hall, & Hunter, 1995).

The few differences in the treatment of boys and girls that were found were in the expected direction. The finding that parents use more negative control with boys than with girls is in line with the result that boys receive more physical punishment than girls as reported by Lytton and Romney (1991), which also refers to a form of negative control. This finding also fits with biosocial theory (Eagly & Wood, 2002; Wood & Eagly, 2012). As proposed by these theories, the roles associated with males and females, and the characteristics associated with these roles, lead to the differential treatment of boys and girls. The results of our meta-analysis show that such differential treatment is already present in childhood, and this link between gender roles and differential treatment of boys and girls may be explained by parental gender stereotypes or gender schemas. Gender schema theory (Bem 1981, 1983) suggests that the way parents behave toward their children is guided by gender schemas that consist of gender-typed experiences. If the gender schemas of parents consist of stereotypical associations about gender roles, parents are more likely to show gender-differentiated parenting.

Parents may also treat boys and girls differently in reaction to pre-existing gender differences in children's behavior or temperament (rGE), especially because genes or temperamental dispositions influencing child behavior might have a gender-specific effect on parenting (Moberg et al., 2011). However, the current findings show that differential negative control of boys and girls was detected both in studies that controlled for the child's behavior and in studies that did not. It should be noted that the number of studies controlling for child behavior was small and heterogeneous in terms of design and analysis (i.e., longitudinal, cross-sectional, overall control for the child's disruptive problem behavior across the observation, or probability of a specific parental response given a specific child behavior). Only a few studies had a cross-lagged design (i.e., parent and child behavior assessed at multiple time points) in which the complex issue of child-to-parent and parent-to-child reciprocal effects could be examined appropriately. One of these studies (a US sample with Caucasian and African-American mothers) showed that child behavior and temperament in early childhood did not influence later parenting behavior while controlling for earlier parent behavior, thereby ruling out the child-to-parent effect (Scaramella, Sohr-Preston, Mirabile, Robison, & Callahan, 2008). Two other US studies with representative community-based samples with symmetrical longitudinal designs provided evidence for bidirectional effects in early childhood, showing that parenting was related to subsequent child behavior while controlling for earlier child behavior, and that child behavior was related to subsequent parenting while controlling for earlier parenting (Maccoby et al., 1984; Smith et al., 2004). Thus the evidence with regard to parent versus child effects is mixed. The few available studies do not provide clear support for either a coercive feedback loop with reciprocal effects

between disruptive child behavior and parental negative control (Patterson, 1982) or a completely parent- or child-driven effect resulting in differential treatment of boys and girls.

Other studies on child-to-parent and parent-to-child reciprocal effects might provide clues about the direction of effects in the differential treatment of boys and girls. For example, in a large Swedish population-based twin study examining parenting in relation to behavior problems of adolescent boys and girls, mothers and fathers responded differently to the same behavior in boys and girls (Moberg et al., 2011). This implies that parents' attitudes about the appropriateness of certain behaviors for boys and girls caused the differential responses, as the differential response was not due to gender differences in behavior. Another large population-based longitudinal twin study (UK children aged 4-7 years) found that the association between maternal parenting and child antisocial behavior was best explained by both parent-driven and child-driven effects (Larsson et al., 2008). A similar result was found in another large UK population-based study with 5-year-old twins, indicating that mothers' use of corporal punishment was partly driven by genetic child factors (Jaffee et al., 2004). Moreover, a 10-year longitudinal study showed that mothers and fathers reported that they were harsher with boys than with girls (Bezirganian & Cohen, 1992). Boys and girls in this study did not differ in terms of temperament, so the more harsh treatment of boys was not because they were more difficult to begin with. As a response to the harsh treatment, especially by mothers, boys appeared to become more difficult and noncompliant than girls. These studies are convergent with the idea that it is not only gender-specific disruptive behavior that elicits parents' use of more negative control with boys than with girls, but also parental attitudes about how to treat boys versus girls, and/or about the perceived appropriateness of certain behaviors for boys and girls that caused the differences in use of negative control. Taken together, the findings from the current meta-analysis, evidence from previous longitudinal studies with a cross-lagged design included in the meta-analysis, and studies on child-to-parent and parent-to-child reciprocal effects point in the direction of genetically influenced gender differences in behavior that evoke different reactions in parents, and gender-differentiated parenting (induced by parental attitudes about how to treat boys and girls) influencing, and perhaps enhancing, these gender differences in child behavior.

Psychological control and harsh physical discipline were examined as dimensions of (extreme) negative control. Overall, parents did not differ in their use of psychological control and harsh physical discipline with boys and girls. The effect of child gender on parents' use of harsh discipline was marginally significant in the whole group and significant for the subgroup of mothers, indicating that mothers were harsher with boys than with girls. These results are of interest given that parents would use both harsh physical discipline and psychological control more with boys than with girls (Barber et al., 2002; Lytton & Romney, 1991). Unfortunately, only few

observation studies included a focus on psychological control or harsh physical discipline. In most studies the negative control strategies included a mix of physical, psychological, or negative verbal strategies. More studies with a focus on observed psychological control or harsh physical discipline are needed to disentangle the gender-differentiated use of these extreme negative control strategies from milder negative parenting strategies. This is especially important because psychological control and harsh physical discipline might be prone to social desirability in self-report studies (Morsbach & Prinz, 2006), and because of their detrimental effects on child development (Barber, 1996; Barber et al., 1996; Bender et al., 2012; Mills & Rubin, 1998; Mulvaney & Mebert, 2007; Nelson, Yang, Coyne, Olsen, & Hart, 2013; Soenens & Vansteenkiste, 2010). Although psychological control and harsh discipline are difficult to observe in short observation periods, previous research has shown that it can be done reliably and with meaningful results (see Barber, 1996; Joosen et al., 2012).

Differential negative control toward boys and girls was detected in studies that used normative samples rather than clinical or at-risk samples. This finding might imply that parent and/or child problems serve as gender equalizers, in that problem behaviors prevail in the shaping of parent-child interactions irrespective of child gender. Alternatively, the diversity in the set of studies with clinical or at-risk families (e.g., ADHD, externalizing behaviors, anxiety, abusive parents) may have obscured any systematic differences in the differential negative control of boys and girls. Indeed, the effect sizes within the non-normative subset were strongly heterogeneous.

An explanation for the small effects of child gender on parents' use of negative control might be that child gender effects can only be found in a small subset of parents. Patterson's coercion model (1982) provides rationales for why differential negative control with boys and girls is only visible in a small subset of children. There is some empirical evidence that parents might end up in a coercive cycle with boys more often than with girls, because boys are more likely than girls to react with aggression and negative behavior to parental demands (i.e., child effect; Bezirganian & Cohen, 1992; Eron, 1992) and mothers are more likely to react with increasing harsh discipline to boys' than to girls' disruptive or noncompliant behavior (parent effect; McFadyen-Ketchum et al., 1996). It is likely that parent and child dynamics necessary for a coercive cycle (e.g., child's predisposition toward disruptive behavior in combination with parents' negative control in response to difficult child behavior) will be present only in a subset of families with boys. The difference in parental negative control with boys and girls may be accounted for by those parents who have ended up in interactions characterized by coercive cycles (i.e., a pattern of high levels of negative parental control) with their sons.

For positive control, the picture was less straightforward than for negative control. Overall, parents did not differ in the amount of positive control of boys and girls, but we did find a moderating effect of publication year on parental use of

positive control, indicating that in earlier studies parents showed more positive control toward boys than toward girls, whereas from 1990 onwards parents showed more positive control towards girls than towards boys. In the decades before 1990, parents generally gave more attention to boys' behavior than to girls' behavior, because gender-role pressures were higher for boys than for girls. It was therefore thought that boys needed more explicit guidance, both positive and negative, than girls (Hartley, 1959; Martin, 2005). In addition, in the 1970s and 1980s there was a strong preference for male children in most societies (Arnold & Kuo, 1984; Williamson, 1976), leading to greater parental involvement with boys than with girls (Lundberg, 2005). This greater parental involvement with boys might be reflected in the higher use of both negative and positive control with boys than with girls in studies before 1990. After 1990 the son preference diminished in most Western countries and in some countries even changed to a daughter preference (Andersson, Hank, Rønsen, & Vikat, 2006; Hank & Kohler, 2000), possibly leading to an increase in parental involvement and positive attention toward girls.

The finding that parents used more positive discipline with boys than with girls might also be related to the "gender-neutral wave" in that time period (Martin, 2005). Gender stereotypes were vigorously being attacked, gender-neutral parenting was valued highly, and the view that boys had to be brought up as boys and girls as girls was losing ground (Martin, 2005). Coinciding with this development there was an increased interest in positive parenting strategies (Forehand & McKinney, 1993), and an emergence of the view that positive, warm, and supportive parenting was not detrimental for boys in terms of causing homosexuality, a fear that existed prior to this period (Martin, 2005). By using more positive control with boys than with girls, parents may have tried to socialize their boys into a less masculine role (characterized by power and assertiveness) and into a more feminine role (characterized by kindness, helping, caring), in an attempt to bring the gender roles of boys and girls closer together. The finding that more recently girls are controlled more positively than boys, combined with the current findings that negative control is used more with boys than with girls, implies that parents reverted to socializing their children into the traditional gender roles (i.e., assertive/powerful males, kind/helpful/caring females).

The findings with regard to publication time also indicate that regardless of an increase in gender equality in the past two decades in most Western societies (Inglehart & Norris, 2003), parents still use gender-differentiated negative and positive control strategies. In addition, contrary to our expectations, effect sizes for both positive and negative control were not absent in studies from the past two decades; they were small but they remained significant over time. This finding was not expected because according to biosocial theory the changes in the division of gender roles in recent decades would have led to more egalitarian attitudes about gender, and consequently no more differentiation between boys and girls (Eagly & Wood, 2002; Wood & Eagly, 2012). This implies that although explicit attitudes

about gender might have changed (Hill & Augoustinos, 2001), the corresponding parenting behavior change may take longer to evolve (White & White, 2006) or may not happen at all. Several explanations for this pattern of results may be given. First, gender stereotypes may still be present implicitly and unconsciously exert their influence regardless of explicit gender attitudes (Endendijk et al., 2012; White & White, 2006). Second, stereotypes might still fulfill explanatory social functions related to gender roles, in a way that they contain functional information about differences between men and women, e.g., describe and explain still existing social arrangements in society (Hill & Augoustinos, 2001).

In the current meta-analysis, we also found a moderating effect of study goal on parental use of positive control toward boys and girls, indicating that gender-differentiated positive control could be detected in studies that did *not* have gender-differentiated parenting as focus. The effect sizes were in the expected direction, but again very small. In this subset of studies, mothers used more positive control with girls than with boys, whereas fathers used more positive control with boys than with girls. Thus, more favorable control strategies were used in the same-gender parent-child dyads than in the mixed-gender dyads. This is in line with the proposition that the interactive synchrony between parent and child is higher in same-gender parent-child dyads (Feldman, 2003). Moreover, there is some evidence that parents have a preference for their same-gender offspring (Lawson & Mace, 2009; Zick & Bryant, 1996) which can result in a greater use of positive control strategies, such as praise and approval, as opposed to negative strategies. The finding that mothers use more positive control with their daughters than with their sons is also in line with previous meta-analytic findings of mothers using more supportive speech with daughters than with sons (Leaper et al., 1998).

Why this gender-differentiated parenting effect for positive control is only found in studies that did *not* have gender-differentiated parenting as an explicit focus seems puzzling, but might have something to do with research bias. Eagly and Wood (1991) noted that research on gender differences is vulnerable to a number of potential biases. Researchers can hold an 'alpha bias' or 'beta bias' with regard to gender differences. Alpha bias refers to a tendency to acknowledge that there are gender differences, with a possibility of exaggerating true differences. Beta bias refers to a tendency to ignore or minimize gender differences. Studies that have gender-differentiated parenting as focus are more vulnerable to alpha bias, whereas studies that do *not* have gender-differentiated parenting as focus are more vulnerable to beta bias. Researchers who are devoted to studying gender differences may be overly aware of their own alpha bias, which might cause them to be overly cautious with, for example, coding the behavior of their subjects, because coding parenting behavior is never blind to the gender of the child. Anxious not to find alpha-biased results with regard to gender differences, they might attribute subtle differences in the treatment of boys and girls to their own gender bias and thereby diminish true differences between

boys and girls. Our finding contrasts with the view that gender differences only exist in studies that a priori assume differences between men and women (Eagly & Wood, 1991), and it rules out a possible confounding effect of alpha bias in the current meta-analysis.

The majority of the moderators failed to reach significance. Most importantly, mothers and fathers did not differ in the extent of their differential control of boys and girls, which was unexpected based on biosocial theory (Eagly & Wood, 2002; Wood & Eagly, 2012), social cognitive theory (Bussey & Bandura, 1999), and the findings from the Lytton and Romney meta-analysis (1991) that fathers differentiated more between boys and girls than mothers with regard to directiveness. However, it should be mentioned that for the other socialization areas in the Lytton and Romney meta-analysis there were no significant differences between mothers and fathers, in line with the current findings. In theory, it is possible that mothers and fathers differ in their gender-differentiated parenting practices only with regard to very specific socialization areas, which were unable to be detected with our more general measure of parental control. However, the data show that both mothers and fathers engage in gender-differentiated parenting practices.

We expected the magnitude of the child-gender effect to be dependent on the particular situation in which parents' behavior was observed (Leaper et al., 1998), because parental control might be necessary regardless of child gender in certain situations. This would lead to a smaller range of possible behaviors, which minimizes naturally occurring differences in parenting and child behavior. However, we did not find any moderating effect for the observed task or the observational setting. Apparently, the demand characteristics of a highly structured setting or task (i.e., lab setting, discipline task) do not necessarily lead to smaller effect sizes, given that differences in the treatment of boys and girls were detected equally well across settings and tasks. We did find that mothers' differential negative control was more pronounced in longer (> 10 minutes) observation periods, implying that longer duration of the task rather than the type of task may lead to a bigger range of possible behaviors, leading to an increased possibility to detect gender differences (Leaper et al., 1998).

With regard to the other moderators, differential control towards boys and girls was not dependent on the child's age, the socioeconomic status of the family, verbal or nonverbal control, the ethnicity of the sample, the gender of the first author, the percentage of male authors, or the publication outlet. It appears that differential control of boys and girls can be observed in both mothers and fathers, in many different settings and situations, in samples of different ages, ethnicity or socioeconomic status. Of course, this conclusion must be drawn with caution for moderators with few studies in certain subgroups (i.e., adolescents, verbal control, ethnicity). Especially the null findings with regard to ethnicity and socioeconomic status of the sample were unexpected in light of biosocial theory (Eagly & Wood,

2002; Wood & Eagly, 2012). The more traditional views about gender roles in lower-SES families were expected to be associated with a larger differentiation between boys and girls. Similarly, gender differences in the treatment of boys and girls were expected to be smaller in societies where gender equality is high. It may be that the relatively small number of studies with homogeneous ethnicities or low-SES parents decreased the power to detect effects of ethnicity and SES on gender-differentiated parenting. However, we also did not find significant decreases in gender-differentiated parenting over time, even though gender roles have become more equal in the past decades in most Western societies (Cabrera et al., 2000; Lamb, 2010). So, the strictness of the gender roles in a society might not necessarily be related to the level of gender-differentiated discipline. It should be noted that many studies included samples with mixed ethnicities or did not provide enough information about the samples' ethnicity, leading to a small number of studies in which the moderating effect of ethnicity on gender-differentiated control could be examined.

Implications of Gender-Differentiated Parenting

Although there appear to be only small differences in the treatment of boys and girls, these subtle differences might still have important consequences for the development of gender differences in behavior and for the gender socialization of boys and girls. There is for example evidence that even subtle gender-discriminatory events (e.g., differential treatment of the genders), when frequently occurring, can have severe consequences in terms of the extent to which they advantage or disadvantage one gender over the other (Schmitt, Branscombe, & Postmes, 2003), and that subtle discrimination has more detrimental effects on behavior (i.e., negative affect and low self-esteem) than blatant discrimination (Barreto & Ellemers, 2005; Barreto, Ellemers, Scholten, & Smith, 2010).

Gender-differentiated parenting may convey the message that boys and girls are different and that different behaviors are appropriate for boys and girls, especially when it happens in families with both boys and girls. Children will internalize these early gender-typed experiences in gender schemas (Gelman, Taylor, Nguyen, Leaper, & Bigler, 2004; Witt, 1997) and these gender schemas will influence the processing of subsequent gender-related information and thereby bias future actions (Bem, 1983). Second, there is evidence from a US study that mothers and fathers do actually reinforce gender-typed behavior in children by their differential treatment of their 2-year-old girls and boys (Fagot, 1978). Third, differential treatment of boys and girls may predict increased gender differences in future behavior. For example, in a longitudinal study in the US with a representative community-based sample, fathers have been found to attend more to 4-year-old girls' submissive emotions than to boys' submissive emotions, and this attention was found to predict increases in children's expressions of submissive emotion over time, resulting in larger gender differences (Chaplin et al., 2005). Unfortunately, very few studies have actually examined the

link between gender-differentiated parenting and gender differences in child behavior (Chaplin et al., 2005; Mandara et al., 2012; Tamis-LeMonda et al., 2009).

More specifically, using more negative control strategies with boys than with girls may have important consequences for the development of disruptive behaviors, and this differential control may be one of the mechanisms behind the gender differences in disruptive behavior that have been consistently found in the literature for both children and adolescents (see Archer, 2004; Baillargeon et al., 2007; Hyde, 1984; Loeber et al., 2013). According to social learning theories, parents who use negative control strategies provide a model for negative behaviors for their children, which children may start imitating to control others' behavior themselves (Bandura, 1977; Bussey & Bandura, 1999). Within the parent-child relationship this in turn can lead to a downward spiral of increasingly negative behavior by the child and the parent (Patterson, 1982). Moreover, according to self-determination theory, parents use of negative control with boys would foster externally controlled behavioral regulation and hamper the development of self-regulatory skills in boys, which in turn is associated with behavioral maladjustment (Deci & Ryan, 2000). Thus, using negative control more with boys than with girls may put boys at risk for developing or exacerbating disruptive behavior problems.

The use of positive control strategies is associated with more positive outcomes and fewer negative outcomes for children, because parents using positive strategies provide their children with positive models, leading to a more favorable development in terms of positive behaviors (Kawabata et al., 2011; Rothbaum & Weisz, 1994). To our knowledge there is no literature on the presumed effects of positive control over time in relation to gender differences in positive behaviors such as prosocial behavior. However, one study that tested this association concurrently found that mothers used more positive control strategies (e.g., encouragement, acceptance, empathy) with girls than with boys, which was related to higher levels of engaged and relaxed behaviors and happiness in girls compared to boys (Mandara et al., 2012).

Limitations and Future Directions

Despite the strengths of the present meta-analytic study, some limitations need to be addressed. First, although we identified several significant moderators of differential control toward boys and girls, there was still considerable variation in effect sizes in some sets of studies. This points to other factors, such as the strength of parents' gender stereotypes, that may account for variations in gender-differentiated parenting. Second, the sorting of the parental control constructs into positive and negative categories was necessary because of conceptual problems with the control construct (i.e., very dependent on the situation), but it has the disadvantage of losing information with regard to behaviors that are appropriate to the situation, due to the fact that in the expert sorting these behaviors were grouped under the neutral control

category. It is important to note that almost all studies in this meta-analysis adopted a between-family design to examine differences in parenting boys and girls. This is an approach where parental control in families with boys is compared with the control practices in families with girls. An important limitation of this approach is that differences between boys and girls in parenting practices do not necessarily reflect a gender difference, but can also be caused by other underlying differences in family characteristics, such as family-interaction patterns (Hallers-Haalboom et al., 2014). It is of vital importance to examine gender-differentiated parenting within families to account for such factors. The crucial question in the within-family design is whether socialization differences between boys and girls are also found when they grow up in the same family (i.e., when the same parents socialize both a boy and a girl). Only then can we be more sure that systematic variations in parenting boys and girls cannot be ascribed to other family variables. In the current meta-analysis it was not possible to compare studies that used a between-family design with studies that employed a within-family design, simply because there were too few studies with within-family comparisons. More within-family studies are needed to disentangle the effect of child gender on parenting practices from between-family effects.

More research is also necessary to examine whether parents with traditional gender stereotypes or gender roles show more gender-differentiated parenting practices than parents with less traditional stereotypes or gender roles. In such studies, the theoretical link between gender roles, parental gender stereotypes or gender schemas on the one hand, and the actual differential treatment of boys and girls on the other hand can be tested. Additionally, it is important to examine the consequences of specific gender-differentiated parenting practices for gender differences in behavior and the possible bi-directionality of this association. This should preferably be done in longitudinal studies with multiple time points to identify the processes that lead to changes in gender-differentiated parenting and the behavior of boys and girls over time. It is of great importance that these studies do not focus solely on parental negative control, but also include positive control. Small gender differences in behavior and roles (with a possible biological origin) may lead to stereotypes about males and females, which may in turn lead to differences in the treatment of men and women, or boys and girls, which may then result in gender-related differences in adult and child behavior, causing a vicious cycle of gender effects (Blakemore, Berenbaum, Liben, 2009).

Last, the current meta-analysis focused on the differential treatment of boys and girls by parents, but there are many other sources of differential treatment of boys and girls, such as peers (Fagot & Hagan, 1985; Rose & Rudolph, 2006), teachers (Dobbs, Arnold, & Doctoroff, 2004; Fagot & Hagan, 1985), and media (Birnbaum & Croll, 1984; Gooden & Gooden, 2001; McHale, Crouter, & Whiteman, 2003). For example, it has been shown that boys get more attention from teachers overall and specifically for aggressive or assertive behavior (Dobbs et al., 2004; Fagot & Hagan,

1985). In addition, teachers appear to address boys and girls differently (i.e., 'cutie' for girls, 'buddy' for boys), provide them with different toys and activities, and comment on girls' appearance more than on boys' appearance (Chick, Heilman-Houser, & Hunter, 2002). Regarding the influence of peers, school-aged children disapprove behaviors in their peers that are not typical of their gender (Blakemore, 2003). Moreover, boys and girls are consistently portrayed as different in children's books, television programs, and movies (Birnbaum & Croll, 1984; Gooden & Gooden, 2001; McHale et al., 2003). These factors are often examined separately (McHale et al., 2003), but examination of the interplay between the various gender-socializing agents would provide a more complete picture of gender development in childhood and adolescence.

Conclusion

The current meta-analytic study extends previous meta-analytic work from the 1990s on parents' differential behavior toward boys and girls by focusing on observations of verbal and physical parental control in a variety of settings and contexts, and by providing a contemporary update. Contrary to our expectations, the effects of child gender on parents' use of control were small, indicating large similarities in parents' control strategies with boys and girls. Some boys are faced with more negative control by their mothers and fathers than girls are, and this effect is visible across different settings and situations, different ages, ethnic and socioeconomic backgrounds. Parents also use gender-differentiated positive control, although the direction of this effect was dependent on the decade in which the study was conducted and on the gender of the parent.

We conclude that there is a need for studies that control for child behavior in symmetrical longitudinal designs, or employ a within-family design to rule out alternative explanations for the gender-differentiated-parenting effect. These studies will not only increase our knowledge of the mechanisms behind gender-differentiated socialization, but they will also increase our understanding of basic theoretical issues in child development and parenting research, such as the directionality of effects and the influence of parental attitudes. The proposed cycle from gender stereotypes to differential treatment to gender differences in behavior should be tested empirically. The current meta-analysis highlights the subtle nature of gender-differentiated parenting. However, even subtle differentiation between boys and girls may have consequences for the development of gender differences in child disruptive behavior, and such processes deserve future research attention.