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

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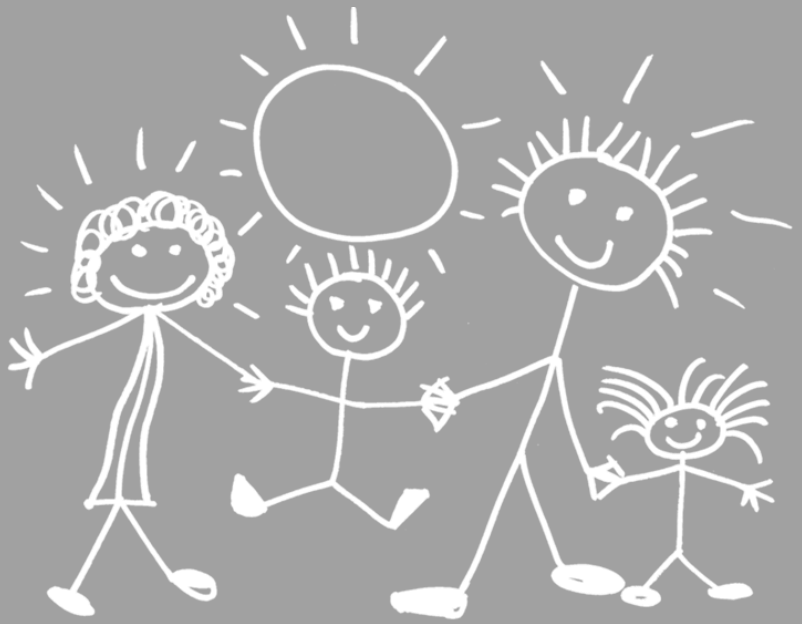
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# 5



## **Gender Differences in Child Aggression: Relations with Gender-Differentiated Parenting and Parents' Gender Stereotypes**

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## ABSTRACT

The aim of the current study was to shed light on the mechanisms underlying the differential parental treatment of boys and girls, and the consequences of differential treatment for children's behavior. A moderated mediation model, in which the association between child gender and child aggression via parents' physical control was moderated by parents' gender stereotypes, was tested longitudinally in 299 two-parent families with a three-year-old child. Parents' physical control strategies were observed in the home and parents' implicit gender stereotypes were assessed with the Implicit Association Test (Wave 1). Child aggression was assessed when the child was three years old and again a year later (Wave 1 and 2). Fathers with strong traditional gender stereotypes used more physical control strategies with boys than with girls, whereas fathers with strong counter-stereotypical attitudes toward gender roles used more physical control with girls than with boys. Moreover, when fathers had strong traditional or counter-stereotypical attitudes toward gender roles, their differential treatment of boys and girls completely accounted for the gender differences in children's aggressive behavior a year later. Mothers used more physical control strategies with boys than with girls, regardless of their gender stereotypes. Mothers' gender-differentiated parenting practices were unrelated to child aggression a year later. Thus, paternal gender stereotypes play an important role in the differential treatment of boys and girls and gender-differentiated parenting appears to be an important mechanism behind gender differences in children's behavior.

*Keywords:* gender stereotypes, gender-differentiated parenting, gender differences, aggression, physical control

## INTRODUCTION

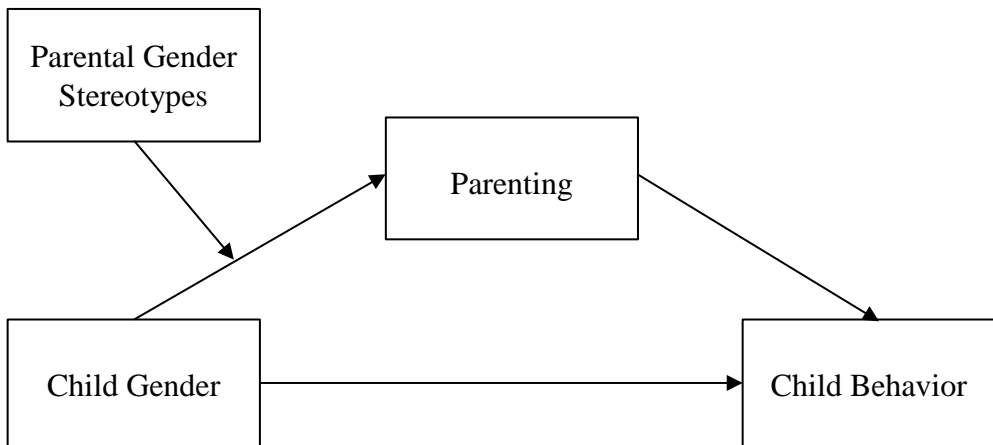
Higher levels of aggressive behavior in boys than in girls represent one of the most pronounced gender differences found in the literature on child development (Archer, 2004; Hyde, 1984; Loeber, Capaldi, & Costello, 2013). It has been suggested that in addition to potential biological influences, these gender differences may arise because of parental differential treatment of boys and girls (Chaplin, Cole, & Zahn-Waxler, 2005; Mandara, Murray, Telesford, Varner, & Richman, 2012). Parents' gender-role attitudes might play a role in the differential treatment of their sons and daughters (Bem, 1981; Eagly, Wood, & Diekmann, 2000), but this mechanism has rarely been studied.

One area of parenting that might be especially relevant to the study of gender-differentiated parenting in relation to differences in aggressive behavior between boys and girls is parental use of physical (rather than verbal) control strategies, such as grabbing, pushing, holding, physically redirecting, or spanking (Kochanska, Barry, Stellern, & O'Bleness, 2009). There is meta-analytic evidence that parental physical control strategies are related to children's aggressive behaviors (e.g., Gershoff, 2002; Kawabata, Alink, Tseng, Van IJzendoorn, & Crick, 2011; Rothbaum & Weisz, 1994), and there is evidence that parents are more likely to use physical control strategies with boys than with girls (e.g., Kochanska et al., 2009; Kuczynski, 1984; Lytton & Romney, 1991). However, the potential mediating role of parental use of physical control in the association between child gender and aggression has not been examined. In the current study we tested whether the relation between child gender and child aggression is mediated by parental use of physical control strategies, using a longitudinal design and observational assessments of mothers' and fathers' parenting behavior. In addition, we examined whether the relation between child gender and parental use of physical control strategies is moderated by parents' attitudes toward gender roles.

Both role theory and social role theory provide rationales for differential parenting of boys and girls, and for the link between gender-differentiated parenting and differences in aggressive behavior of boys and girls (Eagly et al., 2000; Hosley & Montemayor, 1997). Both theories focus on the historical division in gender roles, that is the female role of homemaker and the male role of economic provider. It is proposed that these roles and the characteristics associated with these roles lead to stereotypical ideas and expectations about men and women, which lead to differential treatment of men and women, which in turn leads to gender differences in behavior. When applied to parenting and child aggression, mothers and fathers are expected to use different parenting strategies with boys and girls in accordance with boys' and girls' divergent gender roles. Parenting girls would be more likely to focus on affiliation and interpersonal closeness, whereas parenting boys would be more likely

to focus on assertiveness and dominance. Furthermore, parents will teach their sons but not their daughters that aggressive responding is appropriate as part of a set of instrumental behaviors that fit with the masculine role of economic provider (Archer, 2004).

Additionally, gender schema theory (Bem, 1981) suggests that the way parents behave towards their children is guided by gender schemas that consist of gender-typed experiences. When the gender schemas of parents consist of strong stereotypical representations of gender roles, parents are more likely to show gender-differentiated parenting that reinforces gender-role consistent behavior (e.g., reinforcing aggression in boys but not in girls). When parents' gender schemas consist of counter-stereotypical ideas about the roles of males and females (i.e., female as economic provider, male as caretaker), they might be more likely to show gender-differentiated parenting that reinforces behavior that is inconsistent with gender roles (e.g., reinforcing aggression in girls but not in boys). Thus, the association between child gender and parenting practices is likely to depend on parents' attitudes toward gender roles (see Figure 5.1).



*Figure 5.1* Theoretical framework of associations between gender-differentiated parenting, gender stereotypes, and gender differences in behavior.

Some studies provide indirect evidence for the moderating effect of parents' gender stereotypes on the differential treatment of boys and girls. Studies on gender-related parent-child conversation have found meaningful associations between mothers' gender stereotypes and the way they talk about gender with their children (Endendijk et al., 2014; Gelman, Taylor, Nguyen, Leaper, & Bigler, 2004; Friedman, Leaper, & Bigler, 2007). For example, mothers with stronger gender stereotypes were more likely to make comments confirming gender stereotypes and to evaluate gender-role inconsistent behavior more negatively than mothers with more egalitarian gender-role attitudes (Endendijk et al., 2014; Friedman et al., 2007).

There is also some empirical evidence for a link between gender-differentiated parenting and subsequent differences in child behavior. Chaplin and colleagues (2005) showed that fathers attended more to girls' submissive emotion than to boys', whereas they attended more to boys' disharmonious emotion than to girls'. Moreover, they found that parental attention predicted later submissive emotions, and disharmonious emotions predicted later externalizing problems. However, they did not formally test for mediation. In another study the mediating role of parenting on the association between child gender and child behavior was tested, and it was shown that mothers were more responsive to girls than to boys in a puzzle game, which was related to more happy, engaged, and relaxed behavior in girls than in boys during the puzzle task (Mandara et al., 2012). However, these associations were tested concurrently, and initial differences between boys' and girls' behavior may have confounded the results.

Regarding the relation between child gender and child aggressive behavior, parent's use of physical control strategies is especially relevant as a potential mediator, as there is evidence that parents use more physical control with boys than with girls (e.g., Kochanska et al., 2009; Kuczynski, 1984; Lytton & Romney, 1991), and the differential use of physical control with boys and girls might partly explain gender differences in children's aggressive behavior. That is, social learning theories submit that the use of physical and harsh control provides a model for aggressive behavior, leading to a downward spiral of increasing negative behavior in both the child and the parent (Bandura, 1977; Patterson, 1982), a pattern that has been frequently confirmed in empirical research (e.g., Gershoff, 2002; Kawabata et al., 2011; Rothbaum & Weisz, 1994). Thus, when parents use more physical control strategies with boys than with girls, this might contribute to more aggressive behavior in boys than in girls.

It is important to examine parents' physical control strategies *in response to* challenging child behavior. First, physical control generally only occurs when there is a conflict between the wishes of the parent and those of the child (Kochanska et al., 2009). Second, coercion theory predicts that the use of negative control, such as physical strategies, by parents in response to disobedient behavior will ultimately lead to a downward spiral of increasing negative behavior by the child and the parent,

because repeated attempts by the parent to control the child in a negative way will lead to increasingly difficult behavior of the child (Patterson, 1982). Third, parents' gender-differentiated use of physical control might only be visible if control is assessed in response to boys and girls challenging behavior, as opposed to a more global assessment of parents' use of physical control. There is some evidence that mothers especially differentiate between boys and girls when responding to noncompliant child behavior, indicating that they were more likely to react with increasing harsh discipline to boys' than to girls' difficult or noncompliant behavior (McFadyen-Ketchum, Bates, Dodge, & Pettit, 1996). Moreover, boys are more likely than girls to react with aggression and negative behavior to parental control, whereas girls are more likely to comply (Bezirgianian & Cohen, 1992; Eron, 1992).

### **The Current Study**

To shed light on the mechanisms underlying the differential treatment of boys and girls, and the consequences of this differential treatment for children's problem behavior, the current study examined the links between parents' attitudes toward gender roles, parents' gender-differentiated use of physical control strategies and gender differences in child aggressive behaviors. We tested the hypotheses that (1) the association between child gender and parents' use of physical control strategies is moderated by parents' attitudes toward gender roles, that (2) parents' use of physical control strategies is related to later aggressive behavior and that, following from the first two hypotheses, (3) for parents with strong gender- role attitudes (strongly stereotypical or strongly counter-stereotypical), their use of physical control strategies mediates the relation between child gender and later aggressive behavior in the child. In other words, we expect that parental gender stereotypes moderate the indirect effect of child gender, through physical control, on later child aggression (moderated mediation). We examine these models separately for mothers and fathers.

We aim to extend previous work on gender-differentiated parenting and gender differences in child behavior by (a) incorporating individual differences in parental gender stereotypes into the model, (b) adopting a longitudinal design to control for initial differences in behavior, and (c) using observational methods to assess parents' use of physical control strategies in response to children's disobedience, since differential parenting occurs mostly at an unconscious level and is therefore more likely to be captured with observational methods than with self-report measures (Culp, Cook, & Housley, 1983).



## METHOD

### Sample

This study is part of the longitudinal study *Boys will be Boys?* examining the influence of gender-differentiated socialization on the socio-emotional development of boys and girls in the first 4 years of life. Families with two children in the Western region of the Netherlands were eligible for participation. Families were included if the youngest child was around 12 months of age and the oldest child was between 2.5 and 3.5 years old. Exclusion criteria were single-parenthood, severe physical or intellectual handicaps of parent or child, and being born outside the Netherlands and/or not speaking the Dutch language. Between April 2010 and May 2011, eligible families were invited by mail to participate in a study with two home-visits each year over a period of 3 years. They received a letter, a brochure with the details of the study, and an answering card to respond to the invitation. The current paper reports on data from the first two waves (Wave 1: home visits around first birthday of youngest child, Wave 2: home visits around second birthday).

Of the 1,249 eligible families 31% were willing to participate ( $n = 390$ ). The participating families did not differ from the non-participating families on age of fathers ( $p = .13$ ) or mothers ( $p = .83$ ), educational level of fathers ( $p = .10$ ) or mothers ( $p = .27$ ), and the degree of urbanization of residence ( $p = .77$ ). The current paper focuses on the oldest child. Families were excluded if (1) the oldest child did not show noncompliant behavior during the discipline task with mother or father, thus precluding the observation of parental physical control ( $n = 76$ ), (2) neither parent had completed the Child Behavior Checklist (see Instruments) at both waves ( $n = 11$ ), and (3) when families had a missing value on the gender stereotype task due to computer failure or data logging problems ( $n = 4$ ). These exclusion criteria resulted in a final sample of 299 families (156 boys, 143 girls). The included families did not differ from the excluded families in any of the background variables (all  $ps > .23$ ). The children that did not show noncompliant behavior during our observation procedure were not different from the children that did show noncompliant behavior on our dependent variable, aggressive behavior ( $p = .37$ ).

At the time of the first visit at Wave 1 children were on average 3.01 years old ( $SD = 0.30$ ). At Wave 2, children were on average 4.01 years of age ( $SD = 0.30$ ). At Wave 1 mothers were aged between 25 and 46 years ( $M = 33.95$ ,  $SD = 3.90$ ) and fathers were between 26 and 63 years of age ( $M = 36.73$ ,  $SD = 5.09$ ). At Wave 1 most participating parents were married or had a cohabitation agreement or registered partnership (93%), and the remaining 7% lived together without any kind of registered agreement. With regard to educational level, most mothers (80%) and fathers (75%) had a high educational level (academic or higher vocational schooling). At the time of Wave 2 a third child had been born in 26 (9%) of the families and

parents of two families were divorced. Analyses with and without these families yielded similar results, so these families were retained in the current data set.

### **Procedure**

Each family was visited twice each wave; once with the mother and the two children and once with the father and the two children, with an intervening period of about two weeks. The order in which fathers and mothers were visited was counterbalanced. Families received a payment of 30 Euros after two visits and small presents for the children. Before the first home-visit both parents were asked to individually complete a set of questionnaires. During the home visits parent-child interactions and sibling interactions were filmed, and both children and parents completed computer tasks. All visits were conducted by pairs of trained graduate or undergraduate students. Informed consent was obtained from all participating families. Ethical approval for this study was provided by the Committee Research Ethics Code of the Leiden Institute of Education and Child Studies.

### **Instruments**

**Implicit Association Task.** At Wave 1 implicit gender stereotypes of fathers and mothers were assessed by a computerized version of the Implicit Association Task (IAT); the family-career IAT (Nosek, Benaji, & Greenwald, 2002). This version measures the association of female and male attributes with the concepts of career and family. The computer task was built with E-prime 2.0 (Schneider, Eschman, & Zuccolotto, 2002) based on the task on the Harvard Project Implicit demonstration website (<https://implicit.harvard.edu/implicit/>) and the Nosek et al. (2002) paper. The task consists of congruent blocks in which participants are requested to sort career attributes (e.g., the word ‘salary’) to the male category and family attributes (e.g., the word ‘children’) to the female category, and incongruent blocks in which participants have to sort career attributes to females and family attributes to males. They sort the stimuli (i.e., words) by pressing a blue button that corresponds to the male category or a red button for the female category.

To reduce possible order effects of the presentation of congruent and incongruent blocks, two precautionary measures were taken (Nosek, Greenwald, & Benaji, 2005): the number of practice trials on the fifth of the seven blocks of the standard IAT procedure was increased, and two versions of the IAT were constructed, one in which the congruent block was first administered and one in which the incongruent block was first administered. As expected, difference scores between the congruent and incongruent blocks were significantly higher on the version that started with the congruent block for both fathers ( $p < .01$ ) and mothers ( $p < .01$ ). The participating families were randomly assigned to one of the two versions so that the mother and father within one family always completed the same version of the IAT. The inclusion of task version as covariate in the current analyses did not change the

results. Participants conducted the IAT on a laptop computer. Reaction time and accuracy were automatically recorded for every trial.

The improved scoring algorithm by Greenwald, Nosek, and Benaji (2003) was used to determine each participant's level of implicit stereotypes. A high positive score represented more difficulties to pair male attributes to the family concept and female attributes to the career concept than to pair female attributes to the family concept and male attributes to the career concept. In other words, higher positive scores represent stronger stereotypical ideas about the roles of men and women. Negative scores represent counter-stereotypical ideas about gender roles.

**Parental physical control strategies.** At Wave 1 parental physical control strategies were measured during a *don't-touch-task*. During this task the parent was asked to put a set of attractive toys on the floor in front of both children, and to make sure the children did not play with or touch the toys for a period of two minutes. After 2 minutes, both children were allowed to play with only an unattractive stuffed animal for another 2 minutes, after which the task was finished and the children were allowed to play with all the toys.

Parental use of physical strategies to prevent or stop child non-compliance were event-coded separately for each child in the 10 seconds after the onset of the occurrence of child-noncompliant behavior (the child reaching for or touching the toys). Physical strategies include holding or pushing the child back, moving the toys out of reach, taking the toys from the child's hand, or blocking the way towards the toys (see Kochanska et al., 2009). More harsh strategies such as spanking or yanking the child's arm away from the toys were also included, but these hardly ever occurred in our sample. The total number of times physical strategies occurred was divided by the total number of non-compliance events to create a relative score for physical control.

Twelve coders rated the videotapes for parental physical control strategies. All dyads within the same family were coded by different coders to guarantee independency among ratings. A reliability set of 60 videotapes was used to determine inter-coder reliability. The mean intraclass correlation coefficient (absolute agreement) for number of non-compliant events was .97 (range .92 to 1.00), for physical control .93 (range .83 to .99). During the coding process regular meetings with coders were organized to prevent coder drift.

**Child aggression.** At Wave 1 and 2 the Child Behavior Checklist for preschoolers (CBCL/1½-5; Achenbach & Rescorla, 2000) was used to measure aggressive behavior. Both fathers and mothers indicated whether they had observed any of the described 55 problem behaviors in the last two months on a 3-point scale (0 = *not true*, 1 = *somewhat or sometimes true*, 2 = *very true or often true*). The internal consistencies of the aggression scale were .84 at Wave 1 and .85 at Wave 2 (Cronbach's alpha) for fathers and mothers. The CBCL scores of fathers and mothers on aggression were significantly correlated (Wave 1:  $r(297) = .59, p < .01$ ; Wave 2:

$r(297) = .47, p < .01$ ) and did not differ significantly (Wave 1:  $p = .64$ ; Wave 2:  $p = .20$ ). To obtain a composite measure for aggressive behavior, father and mother scores were averaged per wave. In the current study, 24 children had missing data on the CBCL aggression scale in the second wave of the study. These missing values were predicted from the CBCL aggression scores in the first wave using linear regression. Analyses with and without imputed values yielded similar results, so the imputed values were retained in the current data set.

### **Data Analysis**

All variables were inspected for possible outliers that were defined as values more than 3.29 *SD* below or above the mean (Tabachnick & Fidell, 2012). Outliers ( $n = 3$ ) were winsorized by giving them a marginally higher value than the most extreme not outlying value (Tabachnick & Fidell, 2012). The aggression variables were not normally distributed and therefore square-root transformed to approximate normal distribution (Tabachnick & Fidell, 2012). A scatter matrix was used to detect possible bivariate outliers, but none were detected.

Pearson correlation coefficients were computed to examine the associations between all study variables. Independent-sample *t*-tests were conducted to examine gender differences among key variables and paired-sample *t*-tests were used to examine change in aggressive behavior from Wave 1 to Wave 2 and differences between mothers and fathers.

To examine the first hypothesis that the association between child gender and parental physical control was moderated by parental gender stereotypes, separate hierarchical regression analyses were conducted for mothers and fathers, with the inclusion of the dichotomous variable child gender (0 = boy, 1 = girl) and the centered variable parental gender stereotypes in the first step, and the interaction between the two variables added in the second step.

A moderated mediation analysis (Preacher, Rucker, & Hayes, 2007) was performed to examine the second hypothesis that parental gender stereotypes moderated the indirect effect of child gender, through parental physical control, on aggression at Wave 2, while controlling for aggression at Wave 1. This analysis was completed using the MODMED macro (Model 2) provided by Preacher et al. (2007) to obtain bootstrapped confidence intervals (CIs) for moderated indirect effects. Moderated mediation pertains to the interaction between gender stereotypes and child gender (moderator\*independent variable) affecting the mediator (parental physical control) that is expected to predict child aggression. We applied an extension of the Johnson-Neyman (J-N) technique to moderated mediation (Preacher et al., 2007). This technique tests the significance of the indirect effect within the observed range of values of the moderator and identifies the value of the moderator for which the conditional indirect effect is statistically significant at a set level ( $\alpha = .05$ ). Values of the moderator for which the mediation effect is significant constitute the region of

significance. Bootstrapped confidence intervals were used to avoid power problems introduced by the often asymmetric and non-normal sampling distributions of the indirect effect (Preacher & Hayes, 2004).

## RESULTS

### Preliminary Analyses

Table 5.1 displays the descriptive statistics and correlations for all study variables. Mothers' and fathers' gender stereotypes were significantly associated, as were their use of physical control strategies. Parental gender stereotypes were not associated with use of physical control or child aggression. More use of physical control by fathers (during Wave 1) was associated with more child aggression a year later (Wave 2), whereas mothers' use of physical control (during Wave 1) was related to child aggression at both Wave 1 and at Wave 2. Wave 1 and Wave 2 child aggression were highly correlated, and no mean-level changes between waves were found,  $t(298) = 1.68$ ,  $p = .09$ . Regarding parent and child gender differences, mothers had significantly stronger gender stereotypes than fathers,  $t(298) = -2.44$ ,  $p < .05$ ,  $d = 0.17$ . Mothers and fathers did not differ in their mean levels of physical control,  $t(298) = -1.38$ ,  $p = .17$ . In addition, mothers used significantly more physical control with boys than with girls,  $t(297) = 2.67$ ,  $p < .01$ ,  $d = 0.31$ . Fathers did not differ in their treatment of boys and girls,  $t(297) = 0.83$ ,  $p = .41$ . Boys were more aggressive than girls both at Time 1,  $t(297) = 2.82$ ,  $p < .01$ ,  $d = 0.33$ , and at Time 2,  $t(297) = 2.80$ ,  $p < .01$ ,  $d = 0.33$ . Child gender was not associated with parental gender stereotypes (mothers:  $t(297) = 0.92$ ,  $p = .36$ ; fathers:  $t(297) = -1.14$ ,  $p = .25$ ). None of the study variables were significantly related to background variables like educational level or working hours ( $ps = .06 - .92$ ). Analyses with and without the background variables as covariates yielded the same results.

Table 5.1 *Descriptive statistics and correlations for all study variables*

	1	2	3	4	5	6
1.Stereotypes father						
2.Stereotypes mother	.26**					
3.Physical discipline father	.04	.06				
4.Physical discipline mother	.05	.05	.18**			
5.Child aggression Wave 1	.02	.02	.08	.12*		
6.Child aggression Wave 2	-.06	-.07	.13*	.12*	.64**	
Overall <i>M (SD)</i>	0.28 (0.38) <sup>c</sup>	0.35 (0.43) <sup>d</sup>	0.42 (0.34)	0.46 (0.33)	4.27 (2.95)	4.52 (3.01)
Boys <i>M (SD)</i>	0.26 (0.37)	0.37 (0.43)	0.44 (0.34)	0.50 (0.32) <sup>a</sup>	4.73 (3.10) <sup>a</sup>	4.99 (2.97) <sup>a</sup>
Girls <i>M (SD)</i>	0.31 (0.39)	0.33 (0.42)	0.40 (0.34)	0.40 (0.33) <sup>b</sup>	3.78 (2.72) <sup>b</sup>	4.02 (2.99) <sup>b</sup>

*Note.* Child gender effect: <sup>a</sup> and <sup>b</sup> differ significantly,  $p < .01$ . Parent gender effect: <sup>c</sup> and <sup>d</sup> differ significantly,  $p < .05$ .

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

### Moderation Model

A hierarchical linear regression analyses was performed to test whether parental gender stereotypes moderated the association between child gender and parents' use of physical control. Child gender ( $\beta = -.05, p = .38$ ) and fathers' gender stereotypes ( $\beta = -.05, p = .38$ ) did not predict fathers' use of physical control in the first step ( $R^2 = .00, p = .53$ ). In step 2, the association between child gender and fathers' use of physical control was significantly moderated by fathers' gender stereotypes ( $\beta = -.23, p < .01, \Delta R^2 = .03, p < .01$ ). The interaction effect is shown in Figure 5.2. Fathers with strong stereotypical attitudes toward gender used more physical control with boys than with girls, whereas fathers with strong counter-stereotypical attitudes toward gender used more physical control with girls than with boys. Finally, for mothers there was only a significant association between child gender and mothers' use of physical control ( $\beta = -.15, p < .01$ ), indicating that mothers used more physical control with boys than with girls, irrespective of their gender stereotypes. Mothers' gender stereotypes did not predict mothers' use of physical control in the first step ( $\beta = .04, p = .50, \text{step 1 } R^2 = .03, p < .05$ ) The interaction between child gender and mothers' gender stereotypes was not significant and did not improve the model ( $\beta = -.13, p = .11, \Delta R^2 = .01, p = .11$ ).

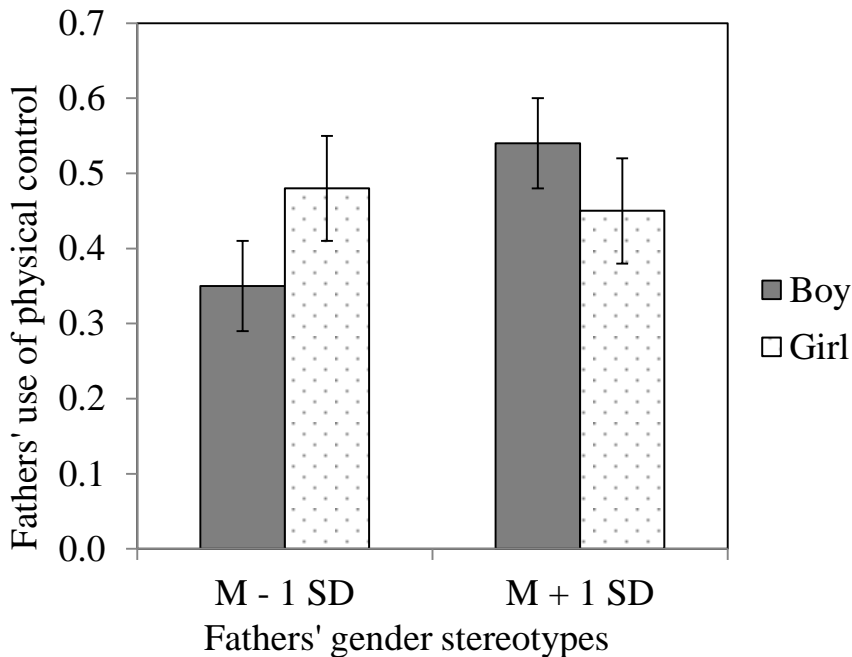


Figure 5.2 Interaction between child gender and fathers' gender stereotypes on fathers' use of physical control.

**Moderated Mediation**

Since fathers' gender stereotypes moderated the association between child gender and fathers' use of physical control, a bias-corrected (BC) bootstrapped moderated mediation analysis (with 5000 resamples) was performed to investigate if fathers' gender stereotypes moderated the indirect effect of child gender via physical control on aggression at Wave 2, controlling for aggressive behavior at Wave 1. The total model (including the moderator, interaction term, and covariates) accounted for 47% of the variance in child aggression ( $R^2 = 0.47$ ,  $p < .001$ ). This model was examined to determine whether fathers' gender stereotypes significantly interacted with child gender to produce differential effects of the predictor (i.e., child gender) on the mediator (i.e., fathers' use of physical control) controlling for aggression of the child at Wave 1. Specifically, we wanted to test the hypothesis that fathers' use of physical control mediates the relation between child gender and later aggressive behavior when fathers' gender stereotypes are extremely traditional or extremely counter-stereotypical.

Two regression analyses were conducted to test the moderated mediation hypothesis. In Table 5.2 normal theory tests (i.e.,  $p$ -values) are provided for the moderator and mediator model. For the conditional indirect effects at different levels of gender stereotypes bootstrapped standard errors are presented (see Table 5.2 and Figure 5.3). In the mediator variable model, which is similar to the simple moderation model that was conducted in SPSS, fathers' gender stereotypes predicted fathers' use of physical control, whereas child gender did not. The significant interaction between child gender and fathers' gender stereotypes, that was also found in the moderation analysis in SPSS, suggests that the indirect effect of child gender on later aggression through fathers' use of physical control might be moderated by fathers' gender stereotypes. The dependent variable model provided further evidence for a moderated indirect effect, since child aggression at Wave 2 was significantly predicted by fathers' use of physical control, over and above the effect of aggressive behavior at Wave 1.



Table 5.2 *Indirect effect of child gender on aggression, via fathers' use of physical control, moderated by fathers' gender stereotypes*

Mediator variable model (predicting physical control)				
Predictor	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Constant	0.36**	0.06	5.89	.00
Child aggression Wave 1	0.04	0.03	1.57	.12
Child gender <sup>a</sup>	-0.02	0.04	-0.61	.54
Gender stereotypes	0.07*	0.03	2.44	.02
Child gender*Gender stereotypes	-0.11**	0.03	-2.79	.01
Dependent variable model (predicting child aggression Wave 2)				
Predictor	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Constant	0.72**	0.10	6.96	.00
Child aggression Wave 1	0.64**	0.04	14.99	.00
Child gender <sup>a</sup>	-0.10	0.06	-1.52	.13
Gender stereotypes	-0.12**	0.04	-2.66	.01
Child gender*Gender stereotypes	0.13*	0.06	2.03	.04
Physical control	0.19*	0.09	1.98	.04

*Note.* Bootstrap  $N = 5000$ . Unstandardized coefficients are shown. BCaL95 = 95% confidence interval lower limit. BCaU95 = 95% confidence interval upper limit.

<sup>a</sup> child gender: boy=0, girl=1.

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

The results of the J-N technique (see Figure 5.3, Table 5.3), provided further evidence of a moderated indirect effect, showing that if fathers have strong stereotypical ideas about gender roles the indirect effect of child gender, through fathers' use of physical control, on later child aggressive behavior, is significant. When fathers have strong counter-stereotypical attitudes toward gender roles the indirect effect was also significant. Overall, the signs of the path coefficients and the conditional indirect effect, and the outcomes of the simple moderation analysis in SPSS (see Figure 5.2) were consistent with the interpretation that physical control was associated with more aggressive behavior a year later, and that child gender was associated with fathers' use of physical control, but this association was different for fathers with strong traditional gender stereotypes and fathers with strong counter-stereotypical ideas about gender roles. Fathers with traditional gender stereotypes used more physical control with boys than with girls, which was related to more

aggression in these boys a year later. Fathers with strong counter-stereotypical attitudes toward gender used more physical control with girls than with boys, which was related to more aggression in these girls a year later. Since the direct effect from child gender to aggressive behavior was no longer significant in the moderated mediation model, gender differences in child behavior were completely accounted for by the differential father-child interaction patterns observed in fathers with strong stereotypical or counter-stereotypical attitudes toward gender roles. Exact values of the J-N technique can be found in Table 5.3. According to the BC confidence intervals, the critical values of fathers' gender stereotypes at which the indirect effect becomes significant are 0.50 on the stereotypical side (88 fathers in our sample) and -0.21 on the counter-stereotypical side (37 fathers in our sample).

Since for mothers only the main effect of child gender on physical control was significant, we did not perform a moderated mediation analysis for mothers. Therefore, the Preacher and Hayes approach to test mediation was applied using the macro package for SPSS available online to examine the direct and indirect effects of the predictors (i.e., child gender, mothers' use of physical control) on child aggressive behavior (Hayes, 2013). This method adopts the bootstrapping approach that does not assume that the sampling distributions of the indirect effect are normal, unlike the traditionally used Sobel test (Preacher & Hayes, 2004). Five thousand bootstrap resamples were used and 95% BC confidence intervals were computed. The indirect path from child gender, through mothers' use of physical control, to child aggressive behavior was not significant,  $B = -0.003$ ,  $S.E. = 0.01$ ,  $BC\ CI = -0.027, 0.013$ . The direct effect of child gender on later child aggressive behavior was not significant either,  $B = -0.11$ ,  $S.E. = 0.06$ ,  $p = .10$ .

Table 5.3. *Conditional indirect effects for different levels of fathers' gender stereotypes*

Fathers' stereotypes <sup>b</sup>	Conditional indirect effect at range of values of gender stereotypes <sup>a</sup>			
	Boot indirect effect	Boot SE	BCaL95	BCaU95
-2.33 (-0.61)	0.04*	0.03	0.004	0.117
-2.07 (-0.51)	0.04*	0.03	0.003	0.111
-1.81 (-0.41)	0.03*	0.02	0.002	0.095
-1.55 (-0.31)	0.03*	0.02	0.001	0.080
-1.29 (-0.21)	0.02*	0.02	0.000	0.067
-1.03 (-0.11)	0.02	0.01	-0.001	0.055
-0.52 (0.08)	0.01	0.01	-0.008	0.032
0.00 (0.29)	-0.01	0.01	-0.029	0.008
0.55 (0.50)	-0.02*	0.01	-0.053	0.000
1.06 (0.69)	-0.03*	0.02	-0.075	-0.002
1.58 (0.89)	-0.04*	0.02	-0.101	-0.004
2.10 (1.09)	-0.05*	0.03	-0.128	-0.006
2.63 (1.29)	-0.06*	0.04	-0.149	-0.006
2.89 (1.39)	-0.06*	0.04	-0.167	-0.008

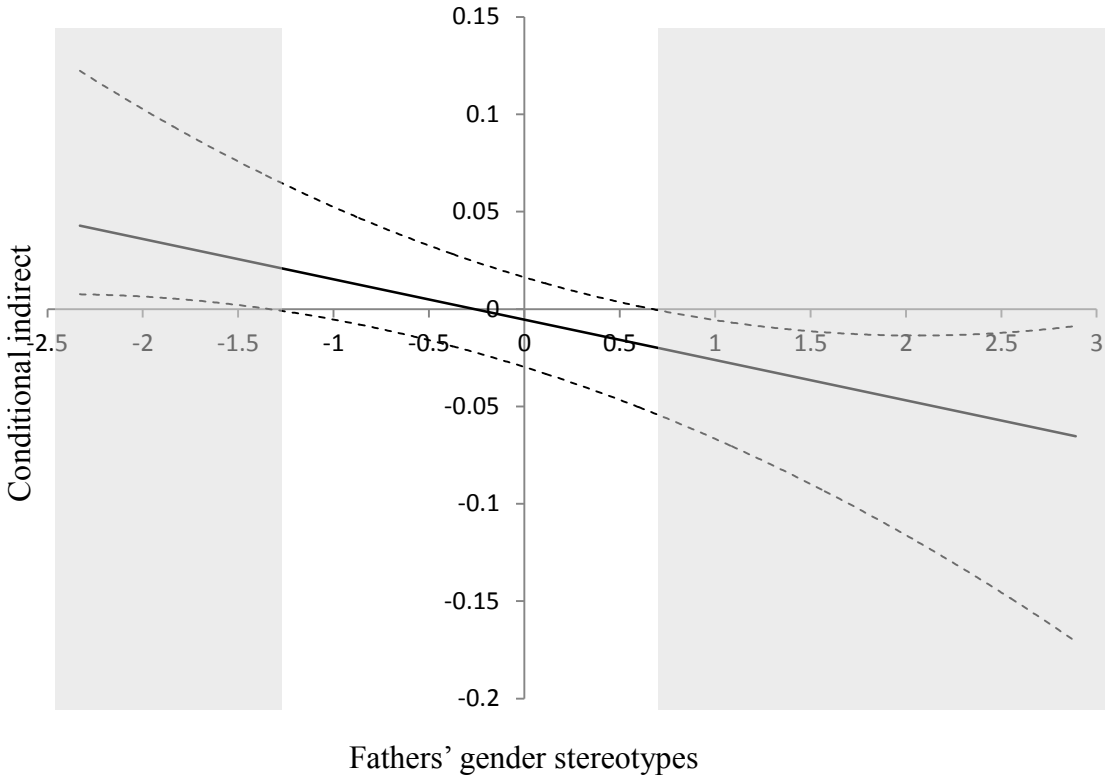
*Note.* Bootstrap  $N = 5000$ . Unstandardized coefficients are shown. BCaL95 = 95% confidence interval lower limit. BCaU95 = 95% confidence interval upper limit.

<sup>a</sup> Controlling for child aggression at Wave 1. Bias corrected and accelerated (BCa) confidence intervals are reported.

<sup>b</sup> Values represent selected output provided by the Preacher et al. (2007) macro. Z-scores outside brackets, raw scores inside brackets.

\*  $p < .05$ .





*Figure 5.3* The indirect association between child gender and child aggression (mediated by fathers' physical control) for different levels of fathers' stereotypes, with bootstrapped 95% confidence bands (dashed lines).

The grey areas represent the areas of significance. The plot shows that with moderate to high stereotypical attitudes about gender roles ( $> .55 SD$ ) fathers used more physical control with boys than with girls, and higher paternal physical control in turn predicted more aggressive behavior a year later. In case of high counter-stereotypical attitudes about gender roles ( $< -1.29 SD$ ) fathers used more physical control with girls than with boys, and higher paternal physical control in turn predicted more aggressive behavior a year later.

## DISCUSSION

The current study confirmed our hypothesis that fathers' gender-differentiated use of physical control is dependent on their gender-role attitudes. Moreover, when fathers' implicit attitudes toward gender roles were strongly stereotypical or strongly counter-stereotypical, their differential treatment of boys and girls was related to children's aggressive behavior a year later. Mothers used more physical control strategies with boys than with girls, regardless of their level of gender stereotypes. Mothers' gender-differentiated parenting practices were unrelated to aggressive behavior in either boys or girls a year later.

As expected, the association between child gender and the use of father's physical control strategies was influenced by his implicit attitudes toward gender roles. These results converge with evidence of the link between attitudes toward gender and actual gender-related behavior (Bem, 1981; Endendijk et al., 2013; Gelman et al., 2004; Friedman et al., 2007). Fathers with strong stereotypical attitudes toward gender roles use more physical control with boys than with girls. As a consequence boys might be socialized into a more masculine role, characterized by assertiveness, power, and dominance (Eagly et al., 2000; Hosley & Montemayor, 1997), because they will learn that using physical strategies is effective in getting one's own way (Bandura, 1977). On the other hand fathers with strong counter-stereotypical attitudes toward gender roles (i.e., women as economic providers, men as caregivers) show the opposite gender-differentiated parenting practices. By using more physical control with girls than with boys, these girls might be socialized towards a more masculine role than boys (Bandura, 1977; Eagly et al., 2000; Hosley & Montemayor, 1997). These fathers appear to encourage power assertive behaviors more in girls than in boys. Because individuals with counter-stereotypical attitudes are relatively rare (Frable & Bem, 1985) little is known about the development of these attitudes and the associated gender-related behaviors. There is evidence from one study that highly non-traditional gender-role attitudes can be a reflection of fathers' own gender roles (i.e., highly involved in child care, McGill, 2011). However, in the current study data on child care involvement was only available at the second wave of data collection, and it was unrelated to fathers' gender stereotypes at Wave 1. Future research should incorporate measures of parents' own gender roles and division of labor in and outside the home to further elucidate the development of counter-stereotypical attitudes and the behaviors associated with these attitudes. As opposed to fathers with strong traditional or counter-stereotypical attitudes, fathers with more egalitarian implicit gender-role attitudes (about 60% of our sample) treated boys and girls more similarly.

Our results suggest that gender-differentiated parenting practices indeed have important consequences for later child behavior. Fathers' differential treatment of

boys and girls was related to children's aggressive behavior a year later, but only when fathers' attitudes toward gender roles were strongly stereotypical or strongly counter-stereotypical. By using physical control strategies more often with boys than with girls, fathers with traditional gender-role attitudes appear to reinforce later aggression more in boys than in girls. On the other hand, fathers with counter-stereotypical attitudes reinforce aggression more in girls than in boys by their increased use of physical control strategies with girls. These results imply that fathers might employ the gender-differential use of physical control strategies to encourage their children to show behavior that is consistent with their attitudes toward gender roles (i.e., stereotypical or counter-stereotypical). Our finding that fathers' differential use of physical control strategies with boys and girls completely accounted for the relation between child gender and child aggressive behavior also provides evidence for the idea that gender-differentiated parenting is an important mechanism underlying gender differences in children's behavior (Chaplin et al., 2005; Mandara et al., 2012, Tamis-LeMonda, Briggs, McClowry, & Snow, 2009). Interestingly, the association between child gender and maternal use of physical control strategies was not dependent on mothers' attitudes toward gender roles. Overall, mothers used more physical control strategies with boys than with girls. Apparently, for mothers there is a less strong link between attitudes toward gender and differential behavior towards boys and girls, which converges with previous evidence that men are more concerned about acting in accordance with attitudes toward gender roles than women (Fischer & Arnold, 1994; Hort, Fagot, & Leinbach, 1990).

Mothers' differential use of physical strategies with boys versus with girls was also unrelated to boys' and girls' aggressive behavior a year later. These results are not surprising in light of previous studies on gender-differentiated parenting in relation to child outcomes. Chaplin and colleagues (2005) also found the strongest associations for fathers and not for mothers. In the same vein, Mandara et al. (2012) found associations between mothers' gender-differentiated use of positive parenting practices, such as sensitivity and responsiveness, and later child behavior, but no associations for more negative practices such as control. Mothers may make use of positive parenting strategies to socialize their children into the expected gender roles, with fathers making use of more negative strategies for gender socialization (Russel et al., 1998). In that case mothers' attitudes toward gender may be more strongly related to her differential use of *positive* parenting strategies, rather than any gender-differentiated use of *negative* strategies.

This study has some limitations. First, harsh physical control strategies, like spanking, rarely occurred in our sample, probably because of the high number of highly educated parents who generally use less harsh parenting practices than parents from a lower socioeconomic status (Hoff, Laursen, & Tardif, 2002). However, differences in the treatment of boys and girls were still found, as were meaningful associations with later child behavior. Second, although it was a strength of the

current study that our coding system was based on parental control in response to child non-compliance (i.e., physical control generally only occurs when there is a conflict between the wishes of the parent and those of the child), almost 20% of the families were excluded from the sample because the child did not show any noncompliance. This might have left us with the more disruptive part of our sample, reducing the generalizability of our results. However, there were no differences in aggressive behavior between compliers and non-compliers. Finally, we adopted a between-family design to examine differences in parenting boys and girls. With this approach parenting in families with boys is compared with parenting practices in families with girls. An important limitation of this approach is that differences in parenting practices do not necessarily reflect a gender difference in the offspring, but may also be related to other family characteristics. It is thus of vital importance to also examine gender-differentiated parenting longitudinally in a within-family design (i.e., compare boys and girls within families at the same age).

Despite these limitations our results provide important implications and directions for future research. First, the current study provides support for the theoretical assumptions of gender schema theory (Bem, 1981) and for the link between parents' gender-related attitudes and actual gender socialization of their children. Previous evidence in this area has been surprisingly weak (e.g., Fagot, Leinbach, & O'Boyle, 1992; Tenenbaum & Leaper, 2003), possibly because parents' attitudes were often assessed explicitly, whereas implicit stereotypes may be better predictors of behavior (Nosek et al., 2002). Second, our study highlights the importance of taking into account parents' implicit gender stereotypes when examining gender-differentiated parenting or gender socialization, since parents with egalitarian, strongly stereotypical, or strongly counter-stereotypical attitudes toward gender differ substantially in their parenting practices towards boys and girls. Parents at both extremes of the distribution (i.e., highly stereotypical, highly counter-stereotypical) showed the largest differences in the treatment of boys and girls. Third, even the more subtle forms of physical control strategies, such as grabbing, pushing, holding, or physically redirecting (representing most of the physical control acts in this study), predict aggression in children, suggesting a strong role for modeling and social learning (Bandura, 1977). Most importantly, gender-differentiated parenting indeed appears to be an important mechanism underlying gender differences in children's behavior. When fathers had strong traditional or counter-stereotypical attitudes toward gender roles, their differential use of physical control strategies with boys and girls completely accounted for later gender differences in child aggressive behavior.

