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"Do as I say!" : parenting and the biology of child self-regulation

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Citation
Kok, R. (2013, March 21). "*Do as I say!*" *: parenting and the biology of child self-regulation*. Retrieved from https://hdl.handle.net/1887/20647

Version:	Not Applicable (or Unknown)
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Note: To cite this publication please use the final published version (if applicable).

Cover Page

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Author: Kok, Rianne
Title: "Do as I say!" : parenting and the biology of child self-regulation
Issue Date: 2013-03-21

2

Attachment insecurity predicts child active resistance to parental requests in a compliance task

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Abstract

Aim We studied the effects of early mother-child relationship quality and child temperament on the development of child compliance and active resistance in a large population-based cohort study ($N = 534$).

Background Parenting and the quality of the parent-child relationship can either hamper or support the development of child compliance directly or in interplay with child temperament.

Method Mother-infant dyads were observed at 14 and 36 months and maternal and child behaviours were independently coded. The quality of compliance was assessed at 36 months in a clean-up task. Child behaviour was coded using a system differentiating between two dimensions: Compliance and Active Resistance.

Results Controlling for concurrent maternal sensitivity, child temperament, and gender children with a more insecure attachment relationship showed higher levels of active resistance during Clean-Up than more securely attached children. The effect was stronger for boys than for girls and mainly driven by attachment avoidance.

Introduction

Young children's *compliance* is related to better developmental outcomes at later ages, such as empathy and internalization (e.g., Feldman, 2007; Kochanska, 2002). Defiance or *active resistance* against requests has been found to result in less optimal developmental outcomes (e.g., Patterson, 2002). However, defiance can also be viewed as part of the development of autonomy and therefore an immature but healthy attempt to control events (Dix et al., 2007). It is important to investigate which factors affect the development of compliance or defiance in young children. The parent-child relationship is one of the factors that may play a role in fostering children's compliance with parental requests (Laible & Thompson, 2000; Van IJzendoorn, 1997). Though many scholars have emphasized the importance of parent-child *relationship quality* in the development of moral behaviour, interest has shifted towards interactive processes between parenting and child temperament as a result of equivocal empirical evidence for a substantial main effect of parenting (e.g., Kochanska et al., 2004). Recently this view has been broadly adopted and research is focused on the additive or interactive effects of relationship quality and temperament on child development (Vaughn et al., 2008). In the current study we investigate the influence of the early mother-child relationship and temperament on active resistance and compliance.

In infancy and the pre-school period, children gradually develop the ability to comply with parental requests and prohibitions and to show altruistic behaviours and empathy (e.g., Kochanska et al., 2010; Warneken & Tomasello, 2007; Zahn-Waxler & Radke-Yarrow, 1990), but there are large individual differences in when and whether they reach these milestones. Some children seem more inclined to show prosocial or moral behaviour, whereas others seem more prone to be disobedient and defiant (National Institute of Child Health and Human Development Early Child Care

Research Network [NICHD ECCRN], 1998). The gender of the child can explain some of these differences, as in most studies girls show more advanced levels of moral behaviour than boys (e.g., Kochanska et al., 2010; Silverman, 2003). Compliance to parental requests and prohibitions is often described as a precursor of later moral development (e.g., Feldman, 2007; Kochanska et al., 1995). Compliance that is internally motivated has been found to predict more advanced moral behaviour at later ages, whereas externally controlled compliance or noncompliance resulted in less optimal moral development (Kochanska, 2002).

The quality of the parent-child relationship is an important influence on moral development in children (Kochanska et al., 2005; Londerville & Main, 1981). The quality of the relationship can be indexed in various ways, such as through *attachment security* or *sensitive parenting*. Children are securely attached when they seek proximity to the attachment figure, for example the mother, in times of stress, illness or distress, and feel comforted by the attachment figure (Bowlby, 1969). Parental sensitivity is one of the predictors of attachment security and is defined as the sensitive responsiveness to the child's signals and communications (Ainsworth et al., 1978). Relationship quality can influence the development of compliance in three different ways. First, a responsive caregiver models social norms within a relationship and thereby teaches the child to be compliant. Second, children are better able to regulate their emotions and behaviour within a secure parent-child relationship and are hence in a better position to comply. Finally, children might also be more inclined to comply with a responsive caregiver because of the reciprocal positive relationship they have with this caregiver (Grusec & Davidov, 2010; Thompson & Meyer, 2007; Van IJzendoorn, 1997).

Studies on the effect of mother-child relationship quality on the development of compliance are inconsistent (e.g., Feldman, 2007; Kochanska & Aksan, 1995; Laible & Thompson, 2000; NICHD ECCRN, 1998; Van der Mark et al., 2002; Volling et al., 2006). Not all studies found an association between relationship quality and compliance. This may be because of differences in the way relationship quality was defined. Different measures of attachment security were used (Strange Situation Procedure or Attachment Q Sort), as well as other indicators of relationship quality, such as mutual positive affect, dyadic synchrony, or maternal sensitivity. These studies also focused on varying aspects of compliance as outcome measures. The taxonomy developed by Kochanska and Aksan (1995) has often been used to distinguish five categories of child behaviour: *committed compliance, situational compliance, passive noncompliance, resistant noncompliance*, and *defiant noncompliance*. Committed compliance is defined as a genuine eagerness and internal commitment in the child to comply with the parent's agenda. In the case of situational compliance the child is essentially cooperative but does not seem to embrace the parent's agenda and does not show sincere commitment. Passive noncompliance refers to the child's ignoring of the parent because

of reluctance to accept parental requests or prohibitions. Resistant noncompliance is defined as an overt form of resisting the parent's request by simply refusing or negotiating with the parent. Defiant noncompliance refers to overt rejection of the parent's request by defiant physical or verbal behaviours. Some studies reported on the first category only (e.g., Feldman & Klein, 2003; Kochanska et al., 2010), whereas other studies included several categories, either as separate variables or aggregated into one or more variables (e.g., Kochanska, 2002; NICHD ECCRN, 1998).

Child characteristics such as temperament can also contribute to the development of moral behaviour. Temperament refers to constitutionally based individual differences in the reactivity to and the regulation of domains of attention, emotions, and behaviour (Rothbart & Posner, 2006). Many different temperamental dimensions have been studied in the context of the development of moral behaviour. Regulatory capacities of the child (also referred to as *effortful control*) have been described as an important underpinning of compliance because to be compliant a child needs to be able to suppress a dominant response and/or initiate a subdominant response (Kochanska et al., 2001). Also, negative reactivity of the child, manifested in anger proneness or fearfulness, has been found to be related to lower levels of compliance (Braungart-Rieker et al., 1997; Kochanska et al., 2001; Kotler & MacMahon, 2004). Most recent studies moved away from studying main effects of temperament to investigating the interplay between parental and child determinants in predicting moral development. Grazyna Kochanska and her colleagues, for example, have conducted several studies on the combined effects of attachment security, parenting, and child temperament (e.g., Kochanska, 1997; Kochanska et al., 2001, 2007). She proposed and tested a model in which interactions between difficult temperament and attachment security, and between difficult temperament and parenting style predicted moral development. Kochanska (1997) reported that in fearful children gentle discipline elicited an appropriate level of arousal that fostered internalization of norms. For fearless children she found a different pathway, emphasizing the importance of the quality of the relationship between parent and child, in which the positive emotions led to internalized conscience. This model was replicated with different measures of relationship quality (Kochanska et al., 2007) and similar results were found with anger proneness as a moderator (Kochanska et al., 2001).

In the current study we examined all categories of compliance-related child behaviour as described by Kochanska and Aksan (1995) in a clean-up task in a large population-based cohort study of 534 children. We analysed the underlying correlation structure of these behaviours with categorical principal components analysis (CATPCA) to reduce the categorical ratings to a smaller number of dimensions. This analysis showed that the categories of compliance are best described by two dimensions, representing *compliance* and *active resistance*. Next, we investigated the influence of mother-child relationship quality at 14 months on compliance and active resistance

at 36 months, controlling for concurrent relationship quality. We expected that early relationship experiences remain important in explaining child behaviour at later ages. We also tested the moderating role of fearful temperament in the association between relationship quality and compliance or active resistance, because variation in fearfulness is one of the temperamental domains implicated in the development of moral behaviour (e.g., Fowles & Kochanska, 2000; Kochanska et al., 2007). Gender of the child was taken into account as (small) gender differences in the ability to inhibit responses and the ability to comply have been previously reported (e.g., Kochanska et al., 2010; Silverman, 2003).

Method

Setting

The current investigation is embedded within the Generation R Study, a prospective cohort study investigating growth, development, and health from fetal life onwards in Rotterdam, the Netherlands (Jaddoe et al., 2010). Detailed measurements were obtained in a subgroup of children of Dutch national origin, meaning that the children, their parents, and their grandparents were all born in the Netherlands. Further eligibility criteria were enrolment before a gestational age of 25 weeks and a delivery date between February 2003 and August 2005. Data were collected with questionnaires and visits to the research centre for behavioural assessments. All measures were approved by the Medical Ethics Committee of the Erasmus Medical Center, Rotterdam. Written informed consent was obtained from all adult participants.

Study population

In the current study, data of the visits at the age of 14 and 36 months are presented. Infant-mother attachment classification was available for 721 dyads. One of these children could not be assigned an attachment status because of a 'cannot rate' classification, thus information on the security of the attachment relationship with the mother was available for 720 children. Of these remaining mother-child dyads, 552 also participated in the 36-month visit. Eighteen children were excluded because of procedural or technical difficulties during the clean-up task. The sample therefore consisted of 534 mother-child dyads. Non-response analyses on the 187 children excluded from the analyses or with missing data on compliance and active resistance indicated that these children did not differ from the participating children on most background variables, temperament, attachment security, or maternal sensitivity. A significant difference was found only for 'experience with cleaning-up': children excluded from analyses had more experience with cleaning-up than children included in the analyses, χ^2 (1, $N = 721$) = 5.26, $p < .05$.

Of the 534 mother-child dyads participating in this study we had full data available for gender of the child, gestational age at birth, attachment security, and active resistance and compliance during Clean-Up. Information on the amount of experience the child had with cleaning-up was available for 524 children. Maternal sensitivity scores at 36 months were available for 533 children. A rating for temperamental fearfulness was available for 492 children. Reasons for missing data on predictor variables and covariates were procedural or technical difficulties. Missings were imputed by the mean as multiple imputation generally does not add information if missings are less than 10% (Steyerberg, 1996).

The sample consisted of 49% girls; and 60% of all children were firstborn. The average weight at birth was 3511 g ($SD = 523$) and the average age of the child when compliance was assessed was 37.5 months ($SD = 1.4$). The mean age of mother at intake was 31.8 years ($SD = 3.7$); 64% of mothers had a high level of education (at least higher vocational training or a bachelor's degree).

Central measures

Compliance and active resistance during Clean-Up

Compliance was assessed around 36 months in a disciplinary context ("Clean-Up") of 4 min in which the parent asked the child to clean-up toys. Child behaviour was coded every 20 s using a coding system based on Kochanska and Aksan (1995) and Kuczynski and colleagues (1987). The predominant behaviour of the child in the 12 segments of 20 s was coded in five mutually exclusive categories. Committed compliance was coded if the child eagerly cleaned up the toys, needed no prompting by the parent, and/or showed positive affect during cleaning-up. Situational compliance was coded when the child needed regular prompting and/or showed difficulty in complying. Passive noncompliance was coded if the child ignored the mother's request. Resistant noncompliance was coded when a child actively resisted the mother, i.e. protesting or whining. Defiant noncompliance was coded if the child reacted angrily through physical or verbal behaviours. Child behaviour was independently coded from DVD recordings by one of four trained coders. Coders were extensively trained and regularly supervised. Reliability of the coders was assessed directly after the training and at the end of the coding process to detect possible rater drift. The intercoder reliability (intraclass correlation coefficients, ICC) for the four coders was .75 on average for both reliability measurements (range .56 - .85, $n = 48$).

Categorical principal components analysis (Meulman, Heiser, & SPSS, 2010; see also Linting et al., 2007) was used to investigate the correlation structure of the data, accounting for categorical measurement levels and possible non-linearity in relations between the variables. With this analytical procedure the interrelations between the categorical ratings were investigated and the variables were reduced to a limited number of dimensions. A solution with all variables on nominal scaling level was

compared with a solution with all variables treated numerically (which equals the standard PCA solution) to investigate whether there was substantial non-linearity in the relations across variables. The difference between nominal and numerical solutions was only 7% in variance accounted for, so non-linearity did not have much influence on the solution and the numerical solution was selected. The two-dimensional structure explained 59% of variance compared with 31% in the one-dimensional structure. The second dimension was therefore maintained in the solution. For interpretation purposes an oblique rotation was performed in standard principal components analysis on the transformed variables from the CATPCA, because the category scores are mutually exclusive and thus not independent. Factor scores were extracted by regression method, and were used for all further analyses. The first dimension, labelled *Compliance*, indicates whether the child complies with the request of the parent and contrasts committed and situational compliance with passive noncompliance. The second dimension, representing *Active Resistance*, indicates the amount of active resistance against the request of the parent, which contrasts resistant noncompliance and defiant noncompliance with the other categories. Factor loadings per variable and per dimension are presented in Table 1. The two dimensions were not correlated, $r\,(532) = -.04$, $p = .36$. Factor scores for Active Resistance were log transformed to approach normality.

Table 1. *Factor loadings of category scores for the two dimensions Compliance and Active Resistance.*

	Dimensions Principal Components Analysis	
Categories coding system	Compliance	Active Resistance
Committed compliance	.44	.00
Situational compliance	.68	-.45
Passive noncompliance	-.95	-.33
Resistant noncompliance	-.03	.87
Defiant noncompliance	.06	.56

Attachment security

Attachment quality was assessed in the Strange Situation Procedure (SSP, Ainsworth et al., 1978) when the infant was about 14 months of age ($M = 14.6$; $SD = 0.9$). The SSP is a widely used and well-validated procedure to measure the quality of the attachment relationship. The procedure consists of seven episodes of 3 min each and is designed to evoke mild stress in the infant to trigger attachment behaviour evoked by the unfamiliar lab environment, a female stranger entering the room and engaging with the infant, and the parent leaving the room twice (see Ainsworth et al., 1978, for the protocol). The SSP used in the current study included all these stimuli but to make it fit into a tight time schedule, we shortened the (pre)separation episodes with 1 min keeping the critical reunion episodes intact (see also Luijk et al., 2010a, 2010b; Tharner et al., 2011). Attachment behaviour was coded from DVD recordings according to the Ainsworth and colleagues (1978) and Main and Solomon (1990) coding systems by two reliable coders, trained at the University of Minnesota. Coders were extensively trained and regularly supervised. Reliability of the coders was assessed directly after the training and at the end of the coding process to detect possible rater drift. Intercoder agreement was calculated on a total of 70 SSPs that were coded by both coders. For ABCD classification, intercoder agreement was 77% ($\kappa = .63$); agreement on disorganization was 87% ($\kappa = .64$). Continuous scores for avoidance and resistance were used in the analyses, which were the means of the scores of the two reunion episodes (one for avoidance in the two reunions, and one for resistance in the two reunions). The scores were square root transformed to approach normality.

Richters and colleagues (1988) developed a series of classification functions to score infants' attachments in a continuous way on the basis of the interactive scales (proximity seeking, contact maintaining, avoidance, and resistance) and crying behaviour in the two Strange Situation reunion episodes. Van IJzendoorn and Kroonenberg (1990) adapted the algorithm by leaving out the crying episodes, producing a valid Attachment Security Scale. Higher security scores indicate a more secure attachment relationship. In the Generation R Study the ICC for the continuous attachment security was .88 ($n = 70$).

Maternal sensitivity

At 36 months maternal sensitivity was observed when mother and child performed two 3-min tasks that were too difficult for the child: building a tower and an etch-a-sketch task. Mothers were instructed to help their child as usual. Maternal sensitivity was coded from DVD recordings with the revised Erickson 7-point rating scales for *Supportive Presence* and *Intrusiveness* (Egeland et al., 1990). The subscales Supportive Presence and Intrusiveness were coded for each task. An overall sensitivity score was created by reversing the Intrusiveness scales, standardizing the scores on the subscales, and creating an average over both subscales and both tasks. The two tasks

were independently coded by 13 trained coders. Coders were extensively trained and regularly supervised. Reliability of the coders was assessed directly after the training and at the end of the coding process to detect possible rater drift. Total ICCs for the subscales were .75 on average for the tower task (range .73 - .77, $n = 53$) and .79 on average for the etch-a-sketch task (range .65 - .93, $n = 55$).

Fearful temperament

Fearful temperament was measured at the age of 36 months with the Stranger Approach (SA) episode of the Laboratory Temperament Assessment Battery Preschool Version (Lab-TAB, Goldsmith et al., 1999). The Lab-TAB is a widely used, standardized instrument for laboratory assessment of early temperament. In the SA episode the child deals with social fear when a novel, slightly threatening stranger approaches. The situation is modelled after real-life events. The child is left alone in a room. After 10 s a female stranger entered the room and asks standard questions from the child in a neutral tone of voice. In the original Lab-TAB protocol a male stranger enters the room in the Stranger Approach episode. For practical reasons we chose to have a female stranger who controlled the cameras during the visit in an adjacent room and thus had not been interacting with the child. We made the person more male appearing by a baseball cap, sunglasses, and a dark coat. This also ensured that the stranger was as uniform as possible for all children.

The episode is divided in nine epochs. Episodes were coded from DVD recordings according to the original coding system provided in the manual for the Lab-TAB Preschool Version. Regular checks were conducted to make sure that episodes closely followed the procedure as described in the manual. Intensities of fear expressions, distress vocalizations, activity decrease, approach, avoidance, gaze aversion, verbal hesitancy, and nervous fidgeting were scored in each epoch by coders, who were blind to all other measures. Coders were extensively trained and reliability was established before data were coded. For each parameter (e.g., intensity of fear expressions), average scores were calculated by dividing the child's overall score for that parameter across the nine epochs. The mean ICC for these average scores was .84 (range .71 - .97, $n = 25$). Then each average score was divided by the maximum attainable score for that parameter per epoch. This was done to ensure that scores for each parameter were standardized along the same scale to range between 0 and 1. Finally, one overall 'fearfulness' score was created by taking the mean of the standardized average scores for the different parameters. This fearfulness score ranged from 0 to 1 with higher scores indicating a more fearful temperament.

Covariates

Gender, gestational age at birth, and experience with cleaning-up

Gender and gestational age at birth were obtained from community midwife and hospital registries at birth. Gestational age at birth is included as an indicator of the biological risk of developmental delays (MacKay et al., 2010; Yang et al., 2010). Information on the amount of experience the child had with cleaning-up was provided by the mother at the 36-month visit prior to the clean-up task and dichotomized as "often" ($n = 360$) or "not often" ($n = 164$).

Statistical analyses

First, the bivariate associations among covariates, attachment quality, maternal sensitivity, fearful temperament, and compliance and active resistance during Clean-Up were explored with Pearson's correlations, *t*-tests, and chi-squared analyses. A linear regression analysis was performed to test the association between attachment quality and child behaviour during Clean-Up, controlling for gender, child temperament, gestational age at birth, concurrent maternal sensitivity, and the amount of experience the child had with cleaning-up. Interaction terms between gender, child temperament, and attachment security were computed after centering. Non-significant interaction terms were removed from the model before interpreting the main effects. As gender differences in the child's ability to inhibit responses and the ability to comply have been found (e.g., Kochanska et al., 2010; Silverman, 2003), and because some studies used samples with only one gender (e.g., girls, Van der Mark et al., 2002), we decided to explore possible differences between boys and girls by rerunning the same regression models for boys and girls separately.

Results

None of the demographic variables were associated with both attachment security and compliance or active resistance during Clean-Up. Children of older mothers showed less compliance during Clean-Up, $r\ (532) = -.10$, $p < .05$, and more active resistance during Clean-Up, $r\ (532) = .09$, $p < .05$. Children of mothers with a high educational level were less compliant during Clean-Up than children of mothers with a low or medium educational level, $t\ (532) = 2.45$, $p < .05$.

Bivariate correlations between the factor scores of the two dimensions derived from the CATPCA and the relative frequencies of categorical ratings were investigated to compare our new outcome measures with measures used in previous research. The relative frequency of the categories defiant and resistant noncompliance and the factor scores for the dimension active resistance were strongly correlated, $r\ (532) = .92$, $p < .01$. The relative frequency of the categories committed and

situational compliance was also significantly correlated with the factor scores for the dimension compliance, r (532) = .90, p < .01.

Attachment security and active resistance

Attachment security and active resistance during Clean-Up were significantly correlated: more securely attached children showed less active resistance, r (532) = -.09, p < .05. A linear regression analysis was performed to control for gender of the child, fearful temperament, the amount of experience the child had with cleaning-up toys, maternal sensitivity at 36 months, and gestational age at birth. Interaction terms were not significant and therefore excluded from the analysis. Table 2 shows that more experience with cleaning-up predicted less active resistance during Clean-Up. After controlling for the other predictors and covariates attachment security again predicted less active resistance during Clean-Up.

The linear regression analysis was repeated with the continuous resistance score and with the continuous avoidance score of the children to investigate whether the association between attachment insecurity and higher levels of active resistance was accounted for by avoidant or resistant attachment behaviour. After controlling for the other predictors and covariates attachment resistance score did not predict active resistance (β = -.01, p = .81). However, a higher attachment avoidance score did predict more active resistance (β = .09, p < .05).

We repeated the analyses after stratification by gender. The association between attachment security and active resistance during Clean-Up reached significance only in boys, r (270) = -.12, p < .05; but not in girls, r (260) = -.05, p = .47, although the results were in the same direction. Linear regression analyses (presented in Table 2) showed that a more secure attachment relationship predicted less active resistance in boys. No effects of the covariates and other predictors were found. More experience with cleaning-up predicted less active resistance during Clean-Up in girls. Attachment security and the other predictors and covariates were not significantly associated with active resistance of girls during Clean-Up. Similar results were found when attachment avoidance scores or attachment resistance scores were entered as predictors.

Table 2. *Regression analysis predicting active resistance from attachment security.*

	B	*SE*	β	*t*	*p*	*F*	R^2	R^2change
Total group ($N = 534$)								
Step 1:						2.47*	.02	.02
Gender	-0.01	0.01	-.05	-1.10	.27			
Fearfulness	-0.12	0.11	-.04	-1.03	.30			
Gestational age at birth	-0.01	0.01	-.08	-1.88	.06			
Experience cleaning-up	-0.04	0.02	-.09*	-2.17	.03			
Step 2:						1.98	.02	.00
Sensitivity at 36 months	0.00	0.01	.01	0.29	.77			
Step 3:						2.34*	.03	.01
Attachment security	-0.01	0.00	-.09*	-2.02	.04			
Boys ($n = 272$)								
Step 1:						0.56	.01	.01
Fearfulness	-0.02	0.15	-.01	-0.14	.89			
Gestational age at birth	-0.01	0.01	-.09	-1.46	.15			
Experience cleaning-up	-0.01	0.03	-.01	-0.21	.84			
Step 2:						0.51	.01	.00
Sensitivity at 36 months	0.01	0.02	.03	0.56	.58			
Step 3:						1.31	.02	.02
Attachment security	-0.01	0.00	-.13*	-2.12	.04			
Girls ($n = 262$)								
Step 1:						4.13**	.05	.05
Fearfulness	-0.28	0.17	-.10	-1.61	.11			
Gestational age at birth	-0.01	0.01	-.07	-1.18	.24			
Experience cleaning-up	-0.07	0.02	-.18**	-2.99	<.01			
Step 2:						3.14*	.05	.00
Sensitivity at 36 months	-0.01	0.02	-.03	-0.40	.69			
Step 3:						2.57*	.05	.00
Attachment security	0.00	0.00	-.04	-0.58	.56			

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

Note. Betas are taken from the final models

Attachment security and compliance

The bivariate correlation between attachment security at 14 months and compliance during Clean-Up at 36 months was not significant, r (532) = .02, p = .67. In a linear regression analysis controlling for other predictors and covariates (gender of the child, fearful temperament, the amount of experience the child had with cleaning-up toys, maternal sensitivity at 36 months, and gestational age at birth) interaction terms were not significant and therefore removed from the analysis. Attachment security did not significantly predict compliance during Clean-Up (β = .02, p = .65), and none of the covariates were significantly associated with compliance. The results were similar for boys and girls.

The linear regression analysis was again repeated with the continuous resistance score and with the continuous avoidance score of the children to investigate whether there was an association with compliance. After controlling for the other predictors and covariates resistance (β = .06, p = .20) and avoidance (β = -.07, p = .09) did not significantly predict compliance.

Discussion

A more secure attachment relationship between mother and infant predicted less active resistance during Clean-Up at toddler age. The security of the mother-infant relationship did not predict compliance in toddlerhood. The findings from this large sample are in concordance with previous studies that found an association between relationship quality and defiance in children (e.g., Kochanska & Aksan, 1995), but do not converge with studies that found an effect of relationship quality on compliance in children (e.g., Feldman & Klein, 2003). An important difference between our study and previous studies was the use of the empirically derived two-dimensional structure of child compliance behaviour: compliance and active resistance. The correlations between these newly derived measures and the categorical ratings which they were based on were, however, strong. Indeed there is no inherent contradiction between the empirical dimensions used in the present study and the a priori defined dimensions because we used Kochanska's taxonomy to score the child's behaviour. However, our empirical approach to derive dimensions yielded fewer dimensions (factors) that were only slightly interrelated and that were based on all compliance related behavioural patterns observed in the children. One dimension, compliance, indicates the distinction between compliance and noncompliance, whereas the dimension active resistance indicates whether the child actively resists the mother's demand. Given the oblique rotation, the second dimension might represent more extreme noncompliant behaviours than the first dimension, which we found to be more common in children with an insecure attachment relationship. Noncompliance without active

resistance might be the more normative behaviour that all toddlers display now and again, regardless of the quality of the relationship with their mother.

The association between attachment insecurity and the level of active resistance during Clean-Up at 36 months was specific for children who showed more avoidance during the Strange Situation Procedure at 14 months of age. This finding is in concordance with previous studies that found an association between avoidance and externalizing behaviour manifested already during toddlerhood (Keller et al., 2005; Munson et al., 2001). A recent meta-analysis indicated a significant but small association between avoidant attachment and externalizing behaviour (Fearon et al., 2010).

Besides the influence of a secure relationship we found that less experience with cleaning-up was also predictive of more active resistance in toddlerhood. Practising with cleaning-up seems to result in less resistance to this request in the future. Socializing children in cleaning-up may effectively reduce their resistance against this task. Although we did not find significant gender interactions, analyses were performed separately for boys and girls because in many respects they represent two different populations, and previous studies found evidence for gender differences in child compliance behaviours (e.g., Kochanska et al., 2010; Silverman, 2003). The association between less attachment security and more active resistance was largely accounted for by boys, as for girls the extent to which they had experience with cleaning-up was the only significant predictor for their level of active resistance. Because there were no gender differences in the amount of active resistance, these findings could indicate that for this aspect of their development boys are more susceptible to the influence of relationship quality than girls. This is in line with a study by Shaw and colleagues (1998) in which maternal unresponsiveness resulted in an increased risk for externalizing problems in boys but not in girls.

Further research is needed to complement these findings with the examination of the effect of the *father*-child relationship on compliance. Differences might exist between fathers and mothers in expectations and parental behaviour towards boys and girls in disciplinary contexts. Furthermore, the behaviour of boys and girls during Clean-Up might be different towards their mother and father. Previous studies found that fathers use more warm control strategies towards girls than towards boys (Feldman & Klein, 2003) and some studies indicated that boys are more compliant towards fathers than towards mothers (e.g., Power et al., 1994).

We did not find an association between temperamental fearfulness and compliance or active resistance, and we also failed to find an interaction effect of relationship quality and temperamental status. These findings are in concordance with the study of Van der Mark and colleagues (2002), but do not support the findings of Kochanska and colleagues (2007). In the latter study, however, the interaction effect of temperament and relationship quality was only found when all constructs were measured at age 2, and no interaction effects were found in 3-year-old children who

were the targets of the present study. Perhaps a 'developmental window' around 2 years of age could explain the lack of significant interaction effects between temperament and relationship quality in older toddlers (Kochanska et al., 2007). It is also possible that instead of fearfulness other temperamental domains such as the self-regulatory capacity or anger proneness of the child might be better predictors of respectively the level of compliance or the level of active resistance in children. Kotler and MacMahon (2004), for example, found that children with higher levels of anxiety used less confronting and more passive noncompliance strategies, whereas children with higher levels of anger and aggression showed more direct and assertive types of noncompliance. Moreover, our study was conducted in a relatively homogeneous sample of Dutch, higher socioeconomic status families. For this reason we might have encountered less variation in behaviours and weaker associations than present in more diverse populations. This could explain the relatively small effect sizes we found considering the large sample size.

Other parenting factors or child characteristics not included in this study, could of course contribute to the development of compliance. Future studies should, for example, take into account the parental style of discipline to see whether this affects the quality of the child's compliance behaviour independently or in interplay with attachment quality. However, in a recent study it has been argued that not parenting or child characteristics determine moral and prosocial behaviour but that situational characteristics are the strongest predictor of differences in prosocial behaviour (Van IJzendoorn et al., 2010). From this theoretical perspective a small contribution of relationship quality seems plausible.

In sum, this study indicates the importance of early attachment for the socialization of moral behaviour in toddlers. An important future goal is to investigate whether the differences found in active resistance at toddler age are persistent and result in higher levels of behavioural problems at a later stage.

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