Universiteit
Leiden
The Netherlands

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

Kok, R.

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)
License:	Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden
Downloaded from:	https://hdl.handle.net/1887/20647

Note: To cite this publication please use the final published version (if applicable).

Cover Page

Universiteit Leiden

The handle http://hdl.handle.net/1887/20647 holds various files of this Leiden University dissertation.

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

5

Maternal sensitivity and internalizing problems: Evidence from two longitudinal studies in early childhood

Rianne Kok, Mariëlle Linting, Marian J. Bakermans-Kranenburg, Marinus H. Van IJzendoorn, Vincent W. V. Jaddoe, Albert Hofman, Frank C. Verhulst, and Henning Tiemeier. *Manuscript submitted for publication.*

Abstract

The goal of this study is to clarify the relation between maternal sensitivity and internalizing problems during the preschool period. For this purpose, a longitudinal, bidirectional model was tested in two large prospective, population-based cohorts, the Generation R Study and the National Institute of Child Health and Human Development Study of Early Child Care and Youth Development (NICHD SECCYD), including over 1800 mother-child dyads in total. Maternal sensitivity was repeatedly observed in mother-child interaction tasks and information on child internalizing problems was obtained from maternal reports. Modest but consistent associations between maternal sensitivity and internalizing problems were found in both cohorts, confirming the importance of sensitive parenting for positive development in the preschool years. Pathways from maternal sensitivity to child internalizing problems were consistently observed but child-to-mother pathways were only found in the NICHD SECCYD sample.

Introduction

It is broadly acknowledged that internalizing problems can develop already during the preschool years [1], that these problems are relatively stable over time [2, 3], and that they can have a profound effect on young children and their families [4]. There is mixed evidence on the influence of early parenting on internalizing problems in early childhood and the possible bidirectional nature of the relationship between parenting and internalizing problems has not been extensively studied in longitudinal designs [5]. The current study aims to clarify the relation between maternal sensitivity and internalizing problems in the preschool period by investigating and replicating a longitudinal, bidirectional model in two large prospective, population-based cohort studies, the Generation R Study and the NICHD SECCYD, including over 1800 mother-child dyads in total.

The dearth of studies on the origins of internalizing problems in the preschool period may be reminiscent of the historical notion that prepubertal children lack the cognitive and emotional abilities to experience depression [1] and the perception that the manifestation of internalizing problems in the preschool period is markedly different from the presentation at later ages [3]. Population-based studies and clinical studies focusing on the role of parenting in the development of internalizing problems in children and adolescents have found mixed results. In toddlerhood over-involved and protective parenting was associated with higher levels of internalizing problems [4]. However, in an earlier study on the NICHD SECCYD sample, a composite of maternal sensitivity over seven years was not found to contribute to maternally reported internalizing problem trajectories from preschool to school years [6]. A study on the association between parenting and internalizing problems in a heterogeneous sample of European Americans and African Americans indicated

that warm and responsive parenting was associated with less internalizing problems only in African American families [7]. In middle to late childhood some studies find no evidence for an association between high quality of mother-child interaction and lower levels of internalizing problems [8, 9]. Other studies indicate that low levels of parental warmth and high levels of harsh punishment contribute to depressive symptoms in children [10, 11]. In adolescence, parental positive discipline was negatively associated with initial levels of internalizing problems but did not predict trajectories over time [12]. Overall, more and stronger evidence is found for an association between parenting quality and externalizing problems in children than between parenting quality and internalizing problems [8, 9, 12].

Mixed findings on the association between maternal sensitivity and child internalizing problems might be the result of methodological issues. Firstly, some studies include relatively small or convenience samples [4, 7, 12] which makes it difficult to generalize and compare results. Secondly, some studies rely partly or solely on parental reports [9-12] which can result in artificially inflated correlations and can introduce reporter bias. Finally, though some studies have measured predictors and outcome across time [4, 6, 7] most studies have not used repeated measures of parenting and repeated measures of child internalizing problems in their analyses. An exception is the study by Haltigan, Roisman, and Fraley [13] in which transient and enduring effects models of early caregiving experiences on child behavioral problem trajectories were distinguished. However, in this study the main focus was on total behavioral problem trajectories and not specifically on internalizing problems. Because in most studies predictors and outcomes were not measured across time, the pattern and direction of the association between parenting and internalizing problems is not yet clarified. Even though the unidirectional view of parent-child socialization has been replaced by a bidirectional model of parent-child interactions in the last decades empirical studies focusing on both sides of the coin are still relatively rare [5]. Recent evidence indicates that emotional and behavioral problems in children can influence the behavior of parents. Increases in disruptive behavior in children can evoke more negative maternal parenting [14] and depressed mood in girls predicted lower parental warmth over time [10].

We addressed these issues by conducting a study on the association between observed maternal sensitivity and mother-reported child internalizing problems with repeated measures of both variables in two independent large population-based samples of the Generation R Study and the NICHD SECCYD. We applied structural equation modeling of enduring effects similar to Fraley, Roisman, and Haltigan [15] and Haltigan and colleagues [13] but in this study we emphasized the implications of bidirectional associations between sensitivity and internalizing problems over time. We hypothesized that maternal sensitivity and child internalizing problems are significantly though modestly associated across time. The use of repeated, standardized

observational assessments of parenting and of a well-known and accepted mother-report instrument of child internalizing problems in two well-powered cohorts can extend the knowledge on the nature of the association between maternal sensitivity and child internalizing problems.

Method

Setting

This investigation was based on two studies, the Generation R Study, a prospective cohort study investigating growth, development, and health from fetal life onwards in Rotterdam, the Netherlands [16], and the NICHD SECCYD, a prospective study carried out at 10 sites in the United States following children from birth to 17.5 years of age [17]. As the variables measured with these samples were not the same, we will analyze the data sets separately, and compare results.

Detailed measurements were obtained in a subgroup of the Generation R Study of children of Dutch national origin, that is, the children, their parents, and their grandparents were all born in the Netherlands. Further eligibility criteria were enrollment before a gestational age of 25 weeks and a delivery date between February 2003 and August 2005. The NICHD SECCYD is an ethnically diverse sample. To match the Dutch Generation R sample, we restricted the NICHD SECCYD sample to Caucasian non-Hispanic participants, as done by Luijk and colleagues [18]. Data in both samples were collected during visits to the research centre or home visits for observational assessments and with questionnaires. All measures were approved by the Medical Ethics Committee of the Erasmus Medical Center, Rotterdam and the Internal Review Boards of the NICHD SECCYD participating universities, respectively. Written informed consent was obtained from all adult participants.

Study samples

In Generation R information on child internalizing problems was obtained from mother-reports on postal questionnaires at 1.5, 3, and at 6 years of age. Maternal sensitivity was observed and coded during lab and home visits at 1, 3, and 4 years of age. Mother-child dyads were included in the analyses when at least one measure of maternal sensitivity and at least one measure of child internalizing problems was available. 1137 mothers reported on their child's internalizing problems at least once. For 913 of these mothers at least one observation of maternal sensitivity was available. Two dyads were excluded because the data available concerned 3 years only, making it impossible to investigate pathways. Twenty-five mothers participated in Generation R with twins. One sibling of each twin pair was randomly selected for the analyses. The final sample therefore consisted of 886 mother-child dyads. Non-response

analyses were performed. Children included in the analyses were more often firstborn than excluded children, χ^2 (1, 1137) = 8.92, $p < .05$. Dyads included in the analyses did not differ from the excluded dyads on child gender, maternal educational level, child internalizing problems, and maternal sensitivity.

In the NICHD SECCYD Study mothers reported on their child's internalizing problems in postal questionnaires at 2, 3, 4.5, and 5.4 years. Maternal sensitivity was observed in the home or in the laboratory at 0.5, 1.3, 2, 3, and 4.5 years. Similar to the Generation R selection, mother-child dyads were included in the analyses when at least one measure of maternal sensitivity and at least one measure of child internalizing problems was available. A total of 1022 mothers reported on their child's internalizing problems at least once. For 935 of these mothers at least one observation of maternal sensitivity was available. Non-response analyses were performed. Mothers included in the analyses were older than mothers excluded, $t(1020) = -3.66$, $p < .01$, and had a higher educational level than mothers excluded, χ^2 (1, 1022) = 6.00, $p < .05$. Dyads included in the analyses did not differ from the excluded dyads on child gender, parity, child internalizing problems, and maternal sensitivity.

Regarding the final samples, in Generation R ($N = 886$) information on maternal sensitivity was incomplete for 135 mothers (15%) at 1 year, for 102 mothers (12%) at 3 years, and for 266 mothers (30%) at 4 years. Information on child internalizing problems was missing for 61 children at 1.5 years (7%), 89 children at 3 years (10%), and 207 children at 6 years of age (23%). In the NICHD SECCYD ($N = 935$) information on maternal sensitivity at 0.5, 1.3, 2, 3, and 4.5 years of age was missing for respectively 20, 16, 44, 41, and 139 mothers (2%, 2%, 5%, 4%, and 15%). Information on child internalizing problems was missing for 28 children at 2 years (3%), 28 children at 3 years (3%), 124 children at 4.5 years (13%), and for 129 children at 5.4 years (14%).

Characteristics of the mothers and children in the two samples are displayed in Table 1. In the Generation R Study gender was evenly distributed and 62.5% of children were firstborn. The majority of mothers had a high educational level (65.7%, at least higher vocational training or a bachelor's degree). In NICHD SECCYD gender was evenly distributed and 44.8% of children were firstborn. In addition, 42.7% of mothers had a high educational level, operationalized as having at least a bachelor's degree at the study onset.

Central measures

Child internalizing problems

In both the Generation R and the NICHD SECCYD Study, the Child Behavior Checklist (CBCL) was used to repeatedly measure child internalizing problems. However, different versions were used. In the Generation R Study the CBCL/1½-5 [19] was repeatedly used. Mothers filled out this questionnaire when the children were on average 1.5 years of age, 3 years of age, and 6 years of age. We decided to

use the CBCL for ages 1½-5 for the last measurement because 74% of the children were younger than 6 years at assessment (90th percentile 6.1 years). The CBCL/1½-5 contains 99 items, which are scored on a three-point scale; 0 = not true, 1 = somewhat true or sometimes true, and 2 = very or often true, based on the two proceeding months. The Internalizing Symptoms subscale consists of four syndrome scales: Emotionally Reactive, Anxious/Depressed, Somatic Complaints, and Withdrawn. In our analyses, we used the scores on these four syndrome scales as indicators of Internalizing Problems. The psychometric properties of the CBCL/1½-5 are well established [20]. The internal consistency of the CBCL internalizing syndrome scales in the Generation R sample ranged from $\alpha = .61$ to $\alpha = .75$.

Table 1. *Sample characteristics for Generation R and NICHD SECCYD.*

	Generation R	NICHD SECCYD
Child characteristics		
Child gender (% female)	49.3	48.7
Birth weight (g)	3502.2 (553)	3530.1 (511)
Gestational age (weeks)	40.0 (1.8)	39.3 (1.5)
Apgar score (% < 7)	4.6	---
Parity (% firstborn)	62.5	44.8
Maternal characteristics		
Age at intake	31.9 (3.7)	29.1 (5.4)
Educational level (% high)	65.7	42.7

Note. Unless otherwise indicated, values are mean (*SD*).

In the NICHD SECCYD, child internalizing problems were repeatedly measured with the CBCL 2-3 [21] at 2 and 3 years of age, and with the CBCL 4-18 [22] at 4.5 years and 5.4 years of age. The CBCL 2-3 contains 99 items, which are scored on a three-point scale; 0 = not true, 1 = somewhat true or sometimes true, and 2 = very or often true, based on the two proceeding months. The Internalizing Symptoms subscale of the CBCL 2-3 consists of two syndrome scales: Anxious/Depressed and Withdrawn. In the analyses, scores on these two syndrome scales were used as indicators of Internalizing Problems. The CBCL 4-18 contains 118 items and is similarly scored. The Internalizing Symptoms subscale of the CBCL 4-18 consists of the same two syndrome scales plus a scale on Somatic Complaints. In the analyses, the scores on the three syndrome scales were used as indicators of Internalizing Problems. The internal consistency of the CBCL internalizing syndrome scales in the NICHD SECCYD sample ranged from $\alpha = .66$ to $\alpha = .76$.

Maternal sensitivity

In the Generation R Study maternal sensitivity was measured when the children were 1, 3, and 4 years of age. In the lab visit at 1 year of age, DVD recordings were made of a 5-minute free play session and a psychophysiological assessment, which were coded using the Ainsworth's 9-point rating scales for *Sensitivity* and *Cooperation* [23]. The intercoder reliability (intraclass correlation coefficient [ICC], single measure, absolute agreement) ranged from .65 to .71. Sensitivity and Cooperation were used as indicators of maternal sensitivity at 1 year of age. In a lab visit at 3 years of age and a home visit at 4 years of age, mother and child were asked to perform two 3- to 4-minute 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. DVD recordings of these tasks were used to code maternal sensitivity using the revised Erickson 7-point rating scales for *Supportive Presence* and *Intrusiveness* [24]. The intercoder reliability (ICC) ranged from .75 to .79 for the 3 year measurement and from .79 to .85 for the 4 year measurement [25, 26]. Maternal Supportive Presence scores and Intrusiveness scores were used as indicators of maternal sensitivity at 3 and 4 years of age.

In the NICHD SECCYD maternal sensitivity was measured at child age 0.5, 1.3, 2, 3, and 4.5 years in semi-structured 15-minute observations in the home (0.5 and 1.3 years) or in lab visits (2, 3, and 4.5 years). Details on the tasks and procedures can be found in prior publications [27, 28]. Maternal sensitivity at 0.5 to 2 years was coded from videotapes on 4-point scales of *sensitivity to non-distress, positive regard,* and *intrusiveness* during play, ranging from 1 (not at all characteristic of the interaction) to 4 (highly characteristic of the interaction). Intercoder reliability (ICC) ranged from .83 to .87. The three subscales were used as indicators of maternal sensitivity at 0.5 to 2 years of age. Maternal sensitivity at 3 and 4.5 years was coded from videotapes on 7-point scales of *supportive presence*, *respect for autonomy*, and *hostility*, ranging from 1 (not at all characteristic of the interaction) to 7 (highly characteristic of the interaction). ICCs ranged from .84 to .88. The three subscales were used as indicators of maternal sensitivity at 3 and 4.5 years of age.

Statistical analyses

We used Structural Equation Modeling with EQS 6.1 for Windows [29] to test whether sensitivity of the mother is related to the child's internalizing problem behavior across time. Structural equation models in this study were comparable to the "enduring effects model" as presented in Fraley and colleagues [15] and Haltigan and colleagues [13]. For both the Generation R and the NICHD SECCYD data, we first estimated measurement models for sensitivity and internalizing problem behavior separately, followed by estimating a combined model by adding cross-paths between different constructs across time. Error terms corresponding to the same or similar measurement scales across time were allowed to correlate.

We moved a few extreme scores (99th percentile and higher) of problem behavior in Generation R close to the 99th percentile of the variables. The original data ordering was maintained (this procedure resembles winsorizing, [30]). The NICHD SECCYD data did not contain extreme values. As in both data sets the input variables were skewed, and multivariate kurtosis values were high (normalized estimate of Yuan, Lambert, & Fouladi's coefficient equaled 26.1 for the Generation R data and 42.4 for the NICHD SECCYD data), we report and interpret robust parameter estimates. Missing values were imputed using the maximum likelihood (ML) imputation procedure in EQS (see, for instance, Allison [31]).

We report the following estimates of model fit: (a) χ^2 (*df*), (b) the ratio between χ^2 and degrees of freedom, where a ratio smaller than 2.0 indicates a good model fit [30], (c) the non-normed fit index (NNFI) and the comparative fit index (CFI), with values exceeding .90 indicating reasonable model fit, and values above .95 indicating good model fit, and (d) the root mean square error of approximation (RMSEA), with values lower than .05 indicating good model fit [32, 33].

Results

Inspection of observed data

We inspected the correlation matrices of the raw variables (see Appendix A, Tables A1 and A2) and the latent variables within both study samples (see Appendix B, Tables B1 and B2) before performing the structural equation models. As expected, bivariate correlations within the two constructs were modest to high in both samples which indicates the relatively stable nature of maternal sensitivity and child internalizing problems. Cross-over correlations between maternal sensitivity and child internalizing problems were rare and of modest size.

Model testing

Measurement models

We tested the measurement models for maternal sensitivity and child internalizing problems in both samples. For each measurement model we specified pathways between adjacent time-points and all other pathways across time. Per latent variable, the loading on one indicator was set to 1.0, the others were freely estimated. We allowed the errors of indicators measured with the same subscales to correlate across time. In the measurement model for maternal sensitivity in the Generation R dataset the error-variance of the indicator 'sensitivity at 1 year' and the corresponding error covariance were constrained at zero. In the measurement model for maternal sensitivity in the NICHD SECCYD dataset the error-variance of the indicator 'sensitivity to non-distress at 0.5 years' and the corresponding error covariance were constrained

at zero by EQS. We found a reasonable to good fit for all four measurement models (see Table 2).

Table 2. *Measurement models for Generation R and NICHD SECCYD.*

		Chi-square	CFI	NNFI	RMSEA
Generation R	Sensitivity	9.46, $df = 5$; $\chi^2/df = 1.89$	1.00	0.98	0.04
	Internalizing	48.52, $df = 39$; $\chi^2/df = 1.24$	0.98	0.97	0.03
NICHD SECCYD	Sensitivity	224.40, $df = 71$; $\chi^2/df = 3.16$	0.95	0.92	0.05
	Internalizing	11.48, $df = 16$; $\chi^2/df = 0.72$	1.00	1.00	0.00

Predictive models

The results of the analyses based on the theoretical models are presented in Figures 1 and 2. In the predictive models for both samples we specified all crossing pathways between maternal sensitivity and child internalizing problems in both directions across time. Structural equation modeling showed a good fit for both samples: for the Generation R sample, $\chi^2(108) = 133.01$; $\chi^2/df = 1.23$; NNFI = 0.97; CFI = 0.98; RMSEA = 0.03, and for the NICHD SECCYD sample, $\chi^2(220) = 380.00$; $\chi^2/df = 1.73$; NNFI = 0.95; CFI = 0.97; RMSEA = 0.03.

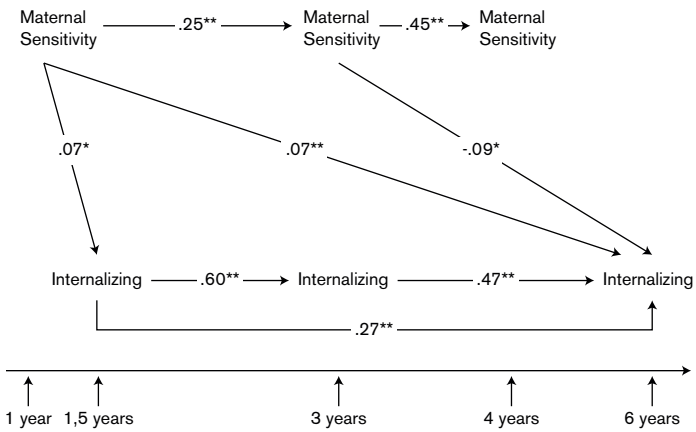

Figure 1. Standardized coefficient estimates of final Structural Equation Model for the Generation R Study (N=886). Only significant paths are presented in this figure. For the sake of clarity indicators and error covariances are not presented.

In the Generation R sample both maternal sensitivity and child internalizing problems showed stability over time (see Figure 1). Only three of eight possible pathways between maternal sensitivity and child internalizing problems or vice versa were significant. Higher levels of maternal sensitivity at 1 year predicted lower levels of child internalizing problems at 1.5 years but higher levels of child internalizing problems at 6 years. However, the standardized coefficient estimate of the total effect of maternal sensitivity at 1 year on child internalizing problems at 6 years, including both the direct path and the indirect pathways via maternal sensitivity at 3 years and via internalizing problems at 1.5 and 3 years, was non-significant ($\beta = .01$). More maternal sensitivity at 3 years predicted fewer child internalizing problems at 6 years.

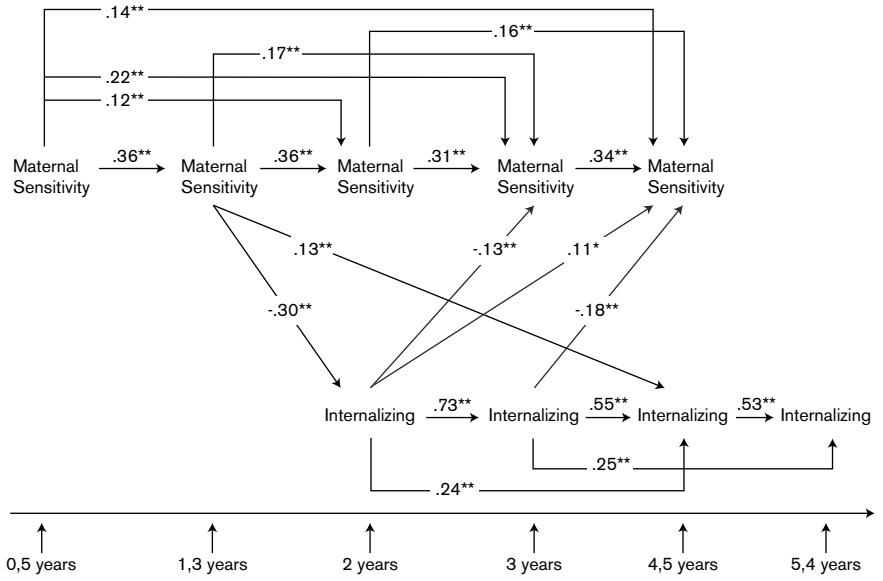

Figure 2. Standardized coefficient estimates of final Structural Equation Model for the NICHD SECCYD (*N*=935). Only significant paths are presented in this figure. For the sake of clarity indicators and error covariances are not presented.

In the NICHD SECCYD sample a very similar level of stability was found for maternal sensitivity and child internalizing problems (see Figure 2). Only 5 of the 17 possible pathways between maternal sensitivity and child internalizing problems or vice versa were significant. Lower maternal sensitivity at 1.3 years predicted more internalizing problems at 2 years but fewer internalizing problems at 4.5 years. The standardized coefficient estimate of the total effect of maternal sensitivity at 1.3 years on child internalizing problems at 4.5 years, including both the direct path and the indirect

pathway via internalizing problems at 2 and 3 years of age, was non-significant (β = -.01). Child internalizing problems at 2 years predicted lower levels of maternal sensitivity at 3 years but higher levels of maternal sensitivity at 4.5 years. However, the total effect of child internalizing problems at 2 years on maternal sensitivity at 4.5 years, including both the direct path and the indirect pathways via maternal sensitivity at 3 years and via internalizing problems at 3 years of age, was negative (β = -.07, $p < .05$). Child internalizing problems at 3 years predicted less maternal sensitivity at 4.5 years. All other cross pathways were non-significant and are therefore not displayed in Figure 2.

Discussion

In this study we aimed to clarify the nature and direction of the association between maternal sensitivity and internalizing problems during the preschool years. When taking into account all associations within the two constructs at all time points to control for stability, in both samples we found modest but consistent evidence for an association between sensitivity and internalizing problems across time. Initial levels of sensitivity and internalizing problems were the strongest predictors for subsequent sensitivity and subsequent internalizing problems. Because we controlled for the stability of maternal sensitivity and child internalizing problems over time, the associations between maternal sensitivity and child internalizing problems or vice versa represent longitudinal pathways and not concurrent associations. Pathways between adjacent time points of maternal sensitivity and child internalizing problems were negative, indicating that lower levels of maternal sensitivity predicted higher levels of internalizing problems and higher levels of internalizing problems predicted lower levels of maternal sensitivity in the short term. Positive associations between maternal sensitivity and child internalizing problems were found over a longer period of time. In the interpretation of these positive associations one should be aware that these pathways do not represent bivariate associations. The positive pathways from maternal sensitivity to child internalizing problems or the other way around are corrected for all other associations within the models, including the negative associations between adjacent time points. The direct positive pathways combined with the indirect negative pathways yielded non-significant or negative (but not positive) overall associations between maternal sensitivity and child internalizing problems and vice versa in both samples. Our models seem consistent with the modest associations that have been reported in earlier studies [4, 10, 11]. The advantage of investigating these associations in two well-powered samples is the possibility to clearly demonstrate the pathways from maternal sensitivity to child internalizing problems and the other way around even if they show rather small effect sizes.

We investigated the bidirectional nature of the association between maternal sensitivity and child internalizing problems. Both pathways from maternal behavior to child behavior and pathways from child behavior to maternal behavior were found, but the child-to-mother pathways could not be replicated. The influence of parenting on child internalizing problems is more consistent and replicable than the influence of the child's internalizing problems on the parent's behavior. This finding is in accordance with studies indicating that the influence of parenting on child development is larger and more robust than vice versa [34, 35]. However, our finding also supports the idea that mother-child interaction is bidirectional in nature and that preschoolers are already active agents in this interaction [5].

Of course, alternative explanations should be considered for the fact that we did not find evidence for a strong association between maternal sensitivity and child internalizing problems. Characteristics of the mothers, such as history of psychopathology, can influence the validity of the perception of her child [36, 37]. However, our samples were population-based, including mainly healthy mother-child dyads, so psychopathology was rare in our sample of mothers. Moreover, maternal sensitivity can directly influence the validity of the perception of internalizing problems. In prior studies it has been found that the security of the attachment relationship between mothers and children can be related to maternal ratings of child and mother-child relationship characteristics. For example, mothers of securely attached children rated their child as less securely attached and more fearful of strangers compared to laboratory assessments, while mothers of insecurely attached children rated their child more securely attached and less fearful of strangers [38]. Similarly, sensitive mothers who are more attuned to their child's thoughts, feelings, and interests might be more inclined to report internalizing problems in their children compared to less sensitive mothers. However, this bias should have resulted in quite strong positive associations between maternal sensitivity and child internalizing problems.

Another argument against the validity of maternal reports is that the nature of internalizing problems makes them less visible to the outside world [39-41]. However, considering the challenge of obtaining valid self-reports in preschoolers, and considering the fact that children might be more likely to confide in a parent than in a teacher their internalizing problems [42] and that parental reports are more predictive of future diagnoses than teacher reports [43], maternal reports appear to be the most suitable way of measuring internalizing problems in preschoolers.

As only modest associations between maternal sensitivity and internalizing problems were found, perhaps other aspects of parenting may be more predictive of preschool internalizing problems. For example, more extreme parenting experiences such as physical neglect in the preschool period have been found related to internalizing problems [44]. Also, a combination of specific parenting practices might influence the developmental course of internalizing problems. For example, high levels

of psychological control when combined with high maternal affection have been found to predict increases in internalizing problems [45]. Lastly, the two study samples consisted of a homogeneous, population-based group of Caucasian, non-Hispanic mother-child dyads. Therefore, we do not know whether these results are easily generalizable to more high-risk or clinical populations, or populations with a different ethnic and cultural background.

In sum, this study contributes to the literature by clarifying the nature of the relation between maternal sensitivity and internalizing problems in the preschool period. Modest negative associations between maternal sensitivity and internalizing problems exist, with the most robust influences of parental sensitivity on child internalizing problems.

Summary

In this study the longitudinal and bidirectional nature of the associations between maternal sensitivity and child internalizing problems in the preschool years were studied. Maternal sensitivity was observed and coded in mother-child interaction tasks and child internalizing problems were reported repeatedly using the Child Behavior Checklist, completed by the child's mother. Structural equation modeling of enduring effects were applied to the large population-based sample of the Generation R Study ($N = 886$) and the NICHD SECCYD ($N = 935$) to see whether similar patterns of associations between maternal sensitivity and child internalizing problems were found.

In both samples modest but consistent negative associations between maternal sensitivity and internalizing problems were found over the preschool years. The pathways from maternal sensitivity to child internalizing problems were apparent in both cohorts. Child-to-mother pathways were only found in the NICHD SECCYD sample. Our findings emphasize the importance of sensitive parenting for positive development in preschoolers. Although this study also supports the bidirectional nature of mother-child interactions, the results are clearly in accordance with studies indicating that the influence of parenting on child development is larger and more robust than vice versa.

References

1. Luby JL, Heffelfinger AK, Mrakotsky C, Brown KM, Hessler MJ, Wallis JM et al (2003) The clinical picture of depression in preschool children. J Am Acad Child Adolesc Psychiatry 42:340-348
2. Bongers IL, Koot HM, Van der Ende J, Verhulst FC (2003) The normative development of child and adolescent problem behavior. J Abnorm Psychol 112:179-192
3. Sterba SK, Prinstein MJ, Cox M (2007) Trajectories of internalizing problems across childhood: heterogeneity, external validity, and gender differences. Dev Psychopathol 19:345-366
4. Bayer JK, Sanson AV, Hemphill SA (2006) Parent influences on early childhood internalizing difficulties. J Appl Dev Psychol 27:542-559
5. Pardini DA (2008) Novel insights into longstanding theories of bidirectional parent-child influences: introduction to the special section. J Abnorm Child Psychol 36:627-631
6. Campbell SB, Matestic P, von Stauffenberg C, Mohan R, Kirchner T (2007) Trajectories of maternal depressive symptoms, maternal sensitivity, and children's functioning at school entry. Dev Psychol 43:1202-1215
7. Propper C, Willoughby M, Halpern CT, Carbone MA, Cox M (2007) Parenting quality, DRD4, and the prediction of externalizing and internalizing behaviors in early childhood. Dev Psychobiol 49:619-632
8. Ewell Foster CJ, Garber J, Durlak JA (2008) Current and past maternal depression, maternal interaction behaviors, and children's externalizing and internalizing symptoms. J Abnorm Child Psychol 36:527-537
9. McCarty CA, McMahon RJ, Conduct Problems Prevention Research Group (2003) Mediators of the relation between maternal depressive symptoms and child internalizing and disruptive behavior disorders. J Fam Psychol 17:545-556
10. Hipwell A, Keenan K, Kasza K, Loeber R, Stouthamer-Loeber M, Bean T (2008) Reciprocal influences between girls' conduct problems and depression, and parental punishment and warmth: a six year prospective analysis. J Abnorm Child Psychol 36:663-677
11. Leve LD, Kim HK, Pears KC (2005) Childhood temperament and family environment as predictors of internalizing and externalizing trajectories from age 5 to age 17. J Abnorm Child Psychol 33:505-520
12. Galambos NL, Barker ET, Almeida DM (2003) Parents *do* matter: trajectories of change in externalizing and internalizing problems in early adolescence. Child Dev 74:578-594
13. Haltigan JD, Roisman, GI, Fraley, RC (2012) The predictive significance of early caregiving experiences for symptoms of psychopathology through midadolescence: enduring or transient effects? Dev Psychopathol. Advance online publication
14. Combs-Ronto LA, Olson SL, Lunkenheimer ES, Sameroff AJ (2009) Interactions between maternal parenting and children's early disruptive behavior: bidirectional associations across the transition from preschool to school entry. J Abnorm Child Psychol 37:1151-1163
15. Fraley RC, Roisman, GI, Haltigan, JD (2012) The legacy of early experiences in development: formalizing alternative models of how early experiences are carried forward over time. Dev Psychol 49:109-126
16. Jaddoe VWV, Van Duijn CM, Franco OH, Van der Heijden AJ, Van IJzendoorn MH, De Jongste JC et al (2010) The Generation R Study: design and cohort update 2012. Eur J Epidemiol 27:739-756
17. National Institute of Child Health and Human Development Early Child Care Research Network (2005) Nonmaternal care and family factors in early development: an overview of

the NICHD Study of Early Child Care. In The NICHD Early Care Research Network (ed) Child care and child development: results from the NICHD study of early child care and youth development. Guilford Press, New York, pp 3–36

18. Luijk PCM, Roisman GI, Haltigan JD, Tiemeier H, Booth-LaForce C, Van IJzendoorn, MH et al (2011) Dopaminergic, serotonergic, and oxytonergic candidate genes associated with infant attachment security and disorganization? In search of main and interaction effects. J Child Psychol Psychiatry 52:1295-1307
19. Ivanova MY, Achenbach TM, Rescorla LA, Harder VS, Ang RP, Bilenberg N et al (2010) Preschool psychopathology reported by parents in 23 societies: testing the seven-syndrome model of the child behavior checklist for ages 1.5-5. J Am Acad Child Adolesc Psychiatry 49:1215-1224
20. Achenbach TM, Rescorla LA (2000) Manual for the ASEBA preschool form & profiles. University of Vermont, Research Centre for Children, Youth, and Families, Burlington
21. Achenbach TM (1992) Manual for the Child Behavior Checklist/2-3 and 1992 profile. University of Vermont, Department of Psychiatry, Burlington
22. Achenbach TM (1991) Manual for the child behavior checklist/4-18 and 1991 profile. University of Vermont, Department of Psychiatry, Burlington
23. Ainsworth MS, Bell SM, Stayton DJ (1974) Infant-mother attachment and social development: 'socialization' as a product of reciprocal responsiveness to signals. In: Richards MPM (ed) The integration of a child into a social world. Cambridge University Press, London, pp 99-135
24. Egeland B, Erickson MF, Clemenhagen-Moon J, Hiester MK, Korfmacher J (1990) 24 months tools coding manual. Project STEEP-revised 1990 from mother-child project scales. Unpublished Manuscript. University of Minnesota, Minneapolis, MN, USA.
25. Kok R, Van IJzendoorn MH, Linting M, Bakermans-Kranenburg MJ, Tharner A, Luijk PCM et al (2012) Attachment insecurity predicts child active resistance to parental requests in a compliance task. Child Care Health Dev 39:277-287
26. Lucassen N, Lambregtse-Van den Berg MP, Van IJzendoorn MH, Bakermans-Kranenburg MJ, Verhulst FC, Hofman A et al History of psychopathology and family functioning during pregnancy as predictors of observed parental sensitivity. Submitted for publication.
27. National Institute of Child Health and Human Development Early Child Care Research Network (1999) Child care and mother-child interaction in the first 3 years of life. Dev Psychol 35:1399-1413
28. National Institute of Child Health and Human Development Early Child Care Research Network (2003) Early child care and mother-child interaction from 36 months through first grade. Infant Behav Dev 26:345-370
29. Bentler PM (1995) EQS structural equations program manual. Multivariate Software Inc, Encino, CA
30. Tukey JW (1962) The future of data analysis. Ann Math Statist 33:1-67
31. Allison PD (2003) Missing data techniques for structural equation modeling. J Abnorm Psychol 112:545-557
32. Byrne BM (2006) Structural equation modeling with EQS, basic concepts, applications and programming (2nd edition). Sage, Thousand Oaks, CA
33. Tabachnick BG, Fidell LS (2001) Using multivariate statistics. Allyn & Bacon, Boston

34. Calkins SD (2002) Does aversive behavior during toddlerhood matter? The effects of difficult temperament on maternal perceptions and behavior. Infant Ment Health J 23:381-402
35. Lansford JE, Criss MM, Laird RD, Shaw DS, Pettit GS, Bates JE et al (2011) Reciprocal relations between parents' physical discipline and children's externalizing behavior during middle childhood and adolescence. Dev Psychopathol 23:225-238
36. Chilcoat HD, Breslau N (1996) Does psychiatric history bias mothers' reports? An application of a new analytic approach. J Am Acad Child Adolesc Psychiatry 36:971-979
37. Kroes G, Veerman JW, De Bruyn EEJ (2003) Bias in parental reports? Maternal psychopathology and the reporting of problem behavior in clinic-referred children. Eur J Psychol Assess 19:195-203
38. Stevenson-Hinde J, Shouldice A (2011) Fear and attachment in 2.5-year-olds. Br J Dev Psychol 8:319-333
39. Groh AM, Roisman GI, Van IJzendoorn MH, Bakermans-Kranenburg MJ, Fearon RP (2012) The significance of insecure and disorganized attachment for children's internalizing symptoms: a meta-analytic study. Child Dev 83:591-610
40. Edelbrock C, Costello AJ, Dulcan MK, Conover NC, Kala R (1986) Parent-child agreement on child psychiatric symptoms assessed via structured interview. J Child Psychol Psychiatry 27:181-190
41. Rey JM, Schrader E, Morris-Yates A (1992) Parent-child agreement on children's behaviours reported by the child behaviour checklist (CBCL). J Adolesc 15:219-230
42. Berg-Nielsen TS, Solheim E, Belsky J, Wichstrom, L (2012) Preschoolers' psychosocial problems: in the eyes of the beholder? Adding teacher characteristics as determinants of discrepant parent-teacher reports. Child Psychiatry Hum Dev 43:393-413
43. Ferdinand RF, Van der Ende J, Verhulst FC (2006) Parent-teacher disagreement regarding psychopathology in children: a risk factor for adverse outcome? Acta Psychiatr Scand 115:48-55
44. Manly JT, Kim JE, Rogosch FA, Cicchetti D (2001) Dimensions of child maltreatment and children's adjustment: contributions of developmental timing and subtype. Dev Psychopathol 13:759-782
45. Aunola K, Nurmi J (2005) The role of parenting styles in children's problem behavior. Child Dev 76:1144-1159

Appendix A

Table A1. *Generation R: Bivariate correlations between raw variables (N = 886).*

			1	2	3	4	5	6	7	8
Age (y)			Maternal Sensitivity							
1	1	Sens.		.00	.01	-.02	.00	.01	.01	-.04
2		Coop.	.88[b]		.05	.05	.02	-.02	.03	-.04
3	3	Sup. Pr.	.17[b]	.19[b]		.00	.00	.00	.02	.00
4		Non-Intrus.	.13[b]	.18[b]	.41[b]		.01	.00	-.03	-.05
5	4	Sup. Pr.	.12[b]	.13[b]	.30[b]	.21[b]		.00	.02	.00
6		Intrus.	-.11[a]	-.13[b]	-.20[b]	-.32[b]	-.51[b]		-.02	.04
			Child Internalizing Problems							
7	1.5	Emot. R	-.04	-.01	.02	-.03	.03	-.04		-.01
8		Anx-D.	-.08[a]	-.08[a]	-.01	-.04	.01	.03	.44[b]	
9		Somat.	-.01	.00	.10[b]	.03	-.04	.03	.28[b]	.31[b]
10		Withd.	-.04	-.05	.01	-.01	.01	-.01	.29[b]	.26[b]
11	3	Emot. R	-.01	-.03	-.03	-.03	-.06	.00	.40[b]	.23[b]
12		Anx-D.	-.03	-.03	.02	.04	-.01	.00	.29[b]	.34[b]
13		Somat.	-.07	-.07	-.01	-.02	-.06	.06	.20[b]	.20[b]
14		Withd.	.02	.03	-.01	-.02	.01	-.03	.23[b]	.20[b]
15	6	Emot. R	-.02	-.03	-.02	-.08	.03	.05	.32[b]	.17[b]
16		Anx-D.	.06	.05	-.04	-.04	-.01	.06	.37[b]	.21[b]
17		Somat.	.01	.01	-.03	-.06	-.07	.13[b]	.19[b]	.15[b]
18		Withd.	-.01	-.01	-.04	-.10[a]	.01	.04	.26[b]	.16[b]

[a] $p < .05$; [b] $p < .01$

Note. Below diagonal: bivariate correlations. Above diagonal: standardized residuals derived from total model for Generation R data. Sens. = Sensitivity; Coop. = Cooperation; Sup.Pr. = Supportive Presence; Non-Intrus. = Non-Intrusiveness; Intrus. = Intrusiveness; Emot. R. = Emotionally Reactive; Anx-D = Anxious/ Depressed; Somat. = Somatic Complaints; Withd. = Withdrawn; y = years

9	10	11	12	13	14	15	16	17	18	*M(SD)*
Maternal Sensitivity										
.03	-.01	.01	-.02	-.07	.03	-.04	.05	-.01	-.03	0.00 (0.85)
.03	-.02	.00	-.01	-.06	.06	-.04	.04	.00	-.02	0.00(0.86)
.10	.00	-.03	.01	-.02	-.01	.03	.02	.00	-.01	0.01 (0.80)
.02	-.02	-.03	.03	-.02	-.03	-.04	.01	-.04	-.08	0.00 (0.82)
-.05	.01	-.04	.01	-.05	.04	.05	.02	-.06	.02	0.01 (0.79)
.03	.00	.00	-.01	.06	-.05	.02	.03	.12	.01	-0.01 (0.81)
Child Internalizing Problems										
-.02	-.02	.00	.01	.00	.00	.01	.05	.03	.01	1.34 (1.54)
.06	.01	-.03	-.01	.03	.01	-.08	-.03	.02	-.04	0.81 (0.95)
	.01	.01	.01	.01	-.03	-.05	-.01	.00	-.03	1.25 (1.26)
.18[b]		-.01	.02	-.04	.00	.01	.01	.06	.01	0.56 (0.79)
.18[b]	.16[b]		.00	.01	-.01	-.01	.00	-.01	.03	1.30 (1.45)
.17[b]	.18[b]	.47[b]		.01	.01	-.08	-.04	.07	-.04	0.62 (0.98)
.25[b]	.08[a]	.34[b]	.32[b]		-.01	.03	.01	.03	.04	1.32 (1.33)
.10[b]	.28[b]	.37[b]	.35[b]	.24[b]		.06	.04	.06	.04	0.68 (0.93)
.10[b]	.18[b]	.46[b]	.23[b]	.23[b]	.29[b]		.00	-.01	.05	1.58 (1.90)
.16[b]	.19[b]	.34[b]	.33[b]	.24[b]	.28[b]	.62[b]		.02	.00	1.15 (1.46)
.18[b]	.15[b]	.17[b]	.24[b]	.36[b]	.19[b]	.32[b]	.37[b]		-.04	1.22 (1.46)
.10[a]	.29[b]	.29[b]	.21[b]	.20[b]	.43[b]	.54[b]	.51[b]	.23[b]		1.03 (1.16)

Table A2. *NICHD SECCYD: Bivariate correlations between raw variables (N = 935).*

			1	2	3	4	5	6	7	8	9	10	11
Age (y)			Maternal Sensitivity										
1	0.5	Sens.		-.01	.01	-.01	-.06	.04	-.01	-.06	.06	.01	-.03
2		Intrus.	-.65[b]		.07	.01	.04	.00	-.01	.04	-.03	-.01	-.02
3		Pos.R.	.55[b]	-.28[b]		.11	-.01	.06	.05	-.02	.07	.14	.05
4	1.3	Sens.	.29[b]	-.19[b]	.26[b]		-.03	.03	-.01	-.03	.04	.04	-.05
5		Intrus.	-.26[b]	.27[b]	-.12[b]	-.51[b]		.04	.06	-.01	.02	.02	-.01
6		Pos.R.	.21[b]	-.11[b]	.28[b]	.44[b]	-.24[b]		.05	-.01	.05	.15	.04
7	2	Sens.	.22[b]	-.16[b]	.17[b]	.23[b]	-.15[b]	.22[b]		.01	.02	.00	-.01
8		Intrus.	-.18[b]	.20[b]	-.09[b]	-.20[b]	.27[b]	-.10[b]	-.48[b]		.09	.02	-.11
9		Pos.R.	.20[b]	-.12[b]	.23[b]	.24[b]	-.11[b]	.30[b]	.56[b]	-.22[b]		.10	.03
10	3	Sup.Pr.	.30[b]	-.19[b]	.30[b]	.31[b]	-.16[b]	.30[b]	.34[b]	-.17[b]	.31[b]		.01
11		Resp.A	.26[b]	-.20[b]	.20[b]	.22[b]	-.19[b]	.18[b]	.33[b]	-.30[b]	.25[b]	.64[b]	
12		Host.	-.24[b]	.17[b]	-.22[b]	-.19[b]	.12[b]	-.18[b]	-.27[b]	.24[b]	-.19[b]	-.47[b]	-.50[b]
13	4.5	Sup.Pr.	.27[b]	-.20[b]	.27[b]	.22[b]	-.09[a]	.20[b]	.30[b]	-.14[b]	.25[b]	.38[b]	.32[b]
14		Resp.A	.24[b]	-.16[b]	.18[b]	.18[b]	-.16[b]	.20[b]	.29[b]	-.21[b]	.21[b]	.33[b]	.37[b]
15		Host.	-.22[b]	.19[b]	-.14[b]	-.15[b]	.14[b]	-.13[b]	-.21[b]	.21[b]	-.11[b]	-.23[b]	-.28[b]
			Child Internalizing Problems										
16	2	Anx-D	-.11[b]	.11[b]	-.07[a]	-.20[b]	.13[b]	-.10[b]	-.15[b]	.12[b]	-.10[b]	-.16[b]	-.16[b]
17		Withd.	-.11[b]	.11[b]	-.07[a]	-.20[b]	.13[b]	-.12[b]	-.15[b]	.12[b]	-.13[b]	-.16[b]	-.15[b]
18	3	Anx-D	-.06	.10[b]	-.03	-.11[b]	.12[b]	-.06	-.10[b]	.10[b]	-.05	-.13[b]	-.12[b]
19		Withd.	-.11[b]	.09[b]	-.10[b]	-.10[b]	.10[b]	-.06	-.13[b]	.13[b]	-.09[b]	-.15[b]	-.14[b]
20	4.5	Anx-D	.01	-.03	.02	.02	-.01	.00	-.03	.07[a]	-.02	-.02	-.03
21		Withd.	.01	-.04	.00	.01	.01	.01	.04	-.03	.00	-.03	.00
22		Somat.	-.01	-.01	-.02	-.03	.06	-.03	-.01	.07	-.02	-.04	-.06
23	5.4	Anx-D	.04	-.04	-.01	-.01	.02	-.01	-.01	.08[a]	.02	.00	.01
24		Withd.	.00	.00	-.06	-.01	.03	.02	.00	.04	-.06	-.05	-.01
25		Somat.	-.02	.01	-.05	.05	.03	.00	-.02	.05	-.04	-.01	.01

[a] $p < .05$; [b] $p < .01$

Note. Below diagonal: bivariate correlations. Above diagonal: standardized residuals derived from total model for NICHD data. Sens = Sensitivity; Intrus. = Intrusiveness; Pos. R. = Positive Regard; Sup. Pr. = Supportive Presence; Resp A. = Respect for Autonomy; Host. = Hostility; Anx-D. = Anxious/Depressed; Withd = Withdrawn; Somat. = Somatic Complaints; y = years

12	13	14	15	16	17	18	19	20	21	22	23	24	25	M (SD)
Maternal Sensitivity														
-.03	.01	-.02	-.01	.00	.00	.03	-.04	.01	.00	-.02	.02	-.02	-.04	3.06 (0.70)
.03	-.04	-.01	.06	.04	.04	.04	.05	-.03	-.03	-.01	-.03	.02	.02	1.50 (0.71)
-.11	.13	.04	-.03	-.03	-.02	.01	-.06	.01	-.01	-.03	-.02	-.07	-.05	2.91 (0.65)
.01	.02	-.03	.02	.01	.00	.01	.01	.01	.00	-.04	.00	-.01	.04	3.15 (0.64)
-.01	.03	-.03	.02	-.01	.00	.03	.02	-.01	.01	.07	.01	.03	.04	1.33 (0.61)
-.08	.09	.07	-.03	.02	-.01	.01	.00	.00	.00	-.04	-.01	.02	.01	2.87 (0.65)
-.02	.02	.00	.03	-.05	-.06	-.02	-.06	-.05	.02	-.03	-.02	-.01	-.03	3.11 (0.69)
.10	.01	-.06	.08	.06	.07	.05	.09	.09	-.01	.08	.09	.05	.06	1.38 (0.63)
-.04	.08	.03	.04	-.04	-.08	.00	-.05	-.03	-.01	-.03	.01	-.06	-.05	2.89 (0.67)
.01	.02	.02	.03	.00	-.02	-.02	-.04	.00	-.02	-.03	.00	-.05	-.01	5.48 (1.20)
-.01	.01	.00	-.02	.00	-.01	-.01	-.04	-.02	.01	-.05	.01	.00	.01	5.44 (1.03)
	-.01	.04	-.02	.02	.03	.04	.08	.02	.01	.07	.06	.00	.03	1.30 (0.69)
-.25[b]		.00	.01	-.04	-.05	-.05	-.05	-.01	-.03	-.02	-.01	-.01	.02	5.35 (1.18)
-.21[b]	.69[b]		-.02	.04	.01	.02	.01	.03	.03	-.06	.00	.02	.01	5.39 (1.01)
.22[b]	-.57[b]	-.59[b]		.02	.06	-.01	.01	.02	.01	.05	.05	-.03	.00	1.33 (0.77)
Child Internalizing Problems														
.12[b]	-.13[b]	-.04	.09[a]		.00	.00	.00	.00	.02	.01	.00	.01	-.02	4.27 (2.75)
.12[b]	-.13[b]	-.07[a]	.13[b]	.55[b]		.01	.00	-.02	.00	.01	.00	.00	-.02	3.41 (2.51)
.13[b]	-.18[b]	-.10[b]	.09[a]	.59[b]	.41[b]		.00	.00	.02	-.01	.00	.01	-.05	4.53 (2.84)
.16[b]	-.17[b]	-.11[b]	.11[b]	.41[b]	.59[b]	.61[b]		-.01	.00	-.02	.00	.01	.02	3.84 (2.67)
.04	-.06	-.02	.06	.38[b]	.31[b]	.49[b]	.40[b]		-.01	.02	.00	-.01	.01	2.02 (2.38)
.02	-.06	-.01	.04	.32[b]	.31[b]	.40[b]	.41[b]	.56[b]		-.03	-.01	-.01	-.01	1.63 (1.61)
.08[a]	-.04	-.08[a]	.07	.20[b]	.18[b]	.22[b]	.21[b]	.39[b]	.28[b]		.03	-.03	.01	0.69 (1.17)
.07	-.06	-.07	.10[b]	.31[b]	.27[b]	.41[b]	.38[b]	.60[b]	.40[b]	.29[b]		-.01	.00	2.29 (2.47)
.02	-.06	-.03	.02	.25[b]	.24[b]	.34[b]	.37[b]	.39[b]	.54[b]	.19[b]	.60[b]		.01	1.32 (1.58)
.03	-.01	-.03	.03	.15[b]	.14[b]	.18[b]	.24[b]	.29[b]	.22[b]	.40[b]	.43[b]	.36[b]		0.86 (1.35)

Appendix B

Table B1. *Correlations between latent variables Generation R Study.*

		Sensitivity			Internalizing		
		1y	3y	4y	1.5y	3y	6y
Sensitivity	1y						
	3y	.30[b]					
	4y	.16[b]	.58[b]				
Internalizing	1.5y	-.06[b]	-.01[b]	.03			
	3y	-.02	-.03	-.04	.68[b]		
	6y	.01	-.10	-.06	.54[b]	.70[b]	

[a] $p < .05$; [b] $p < .01$

Note. $\chi^2/df = 3.76$; NNFI = 0.84; CFI = 0.88; RMSEA = 0.06; y = years

Table B2. *Correlations between latent variables NICHD Study.*

		Sensitivity					Internalizing			
		0.5y	1.3y	2y	3y	4.5y	2y	3y	4.5y	5.4y
Sensitivity	0.5y									
	1.3y	.37[b]								
	2y	.27[b]	.36[b]							
	3y	.38[b]	.44[b]	.49[b]						
	4.5y	.33[b]	.34[b]	.41[b]	.53[b]					
Internalizing	2y	-.15[b]	-.31[b]	-.23[b]	-.28[b]	-.19[b]				
	3y	-.11[b]	-.17[b]	-.18[b]	-.24[b]	-.23[b]	.87[b]			
	4.5y	.01	.00	-.04	-.06	-.07[a]	.60[b]	.72[b]		
	5.4y	.02	-.04	-.04	-.03	-.10[a]	.45[b]	.59[b]	.78[b]	

[a] $p < .05$; [b] $p < .01$

Note. $\chi^2/df = 3.76$; NNFI = 0.84; CFI = 0.88; RMSEA = 0.06; y = years