

# Interrelated Changes in Parental Stress, Parenting, and Coparenting Across the Onset of the COVID-19 Pandemic

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Parental stress is a known risk factor for coercive parenting and for lower coparenting quality. In the present study, we examined whether and how changes in parental stress of mothers and fathers from the pre-COVID-19 period (T1) into the height of the first lockdown in the Netherlands (T2) were linked to changes in coercive parenting of mothers and fathers and to changes in coparenting quality. A total of 96 families (46.9% lower or medium and 53.1% higher educational background), with mother, father, and child (53.1% girls; T1:  $M_{\text{age}} = 3.44$  years,  $SD = 0.32$ ; T2:  $M_{\text{age}} = 4.72$  years,  $SD = 0.61$ ) participated. To examine interrelations between parental stress (reported using the Parental Stress Scale), coparenting, and coercive parenting (both reported using the Parenting And Family Adjustment Scales), a multivariate Latent Change Score (LCS) model was employed. Higher initial levels of parental stress were associated with higher initial levels of coercive parenting and lower initial levels of coparenting quality. Similarly, stronger increases in parental stress were associated with stronger increases in coercive parenting and with stronger decreases in coparenting quality. Directions of associations and effect sizes were similar for mothers and fathers in all analyses. The results from the present study indicate the importance of a family systems perspective in prevention and intervention programs. Promotion of systematic family-based preventive and intervention activities by the government might support families during challenging times, as during the novel COVID-19 pandemic.

**Keywords:** parental stress, coercive parenting, coparenting, Latent Change Score, COVID-19

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The novel coronavirus (COVID-19) brought along challenges for families across the world. As public health efforts were taken to contain the virus after the emergence of COVID-19, constraining actions included the closing of schools and professional child care centers. Many families experienced the global COVID-19 pandemic

as stressful (Brown et al., 2020); parents suddenly faced the multi-tasking of being a parent, an employee, a teacher, and a daycare facilitator on a daily basis in the context of their homes. These new and challenging parental roles, combined with increased social isolation due to physical distancing, were likely to provide parents with experiences of increased parental stress. Parental stress is a known risk factor for adverse parenting behaviors (Brooks-Gunn et al., 2013; Crnic & Coburn, 2019), including coercive parenting (de Haan et al., 2009) and lower quality of coparenting (Feinberg, 2003). The aim of the present study was to investigate whether changes in parental stress from the pre-corona-period (T1) to the height of the first lockdown (T2) were linked to changes in maternal and paternal coercive parenting (e.g., shouting, guilt inducing, spanking) and changes in the coparenting relationship (e.g., parental relationship quality, parenting agreement).

## The Link Between Parental Stress, Parenting, and Coparenting

Parenting is not only complex and challenging as it can involve experiences of joy, affection, and positive energy, but it can also be demanding and stressful (Crnic & Coburn, 2019). The demands of childcare and the pressure of performing adequate socialization roles as parents can result in aversive emotional reactions by parents, conceptualized as parental stress (Crnic & Coburn, 2019; Crnic et al., 2005). According to the Parenting Stress Model (Abidin, 1992), higher levels of parental stress result in more dysfunctional parenting.

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The Family Stress Model (FSM; Masarik & Conger, 2017) not only posits the same link between parental stress and dysfunctional parenting but also moves beyond an impact on *individual* parenting practices by theorizing that parental stress also impacts the way that parents *collaborate* in parenting, generally labeled as coparenting. Coparenting involves the various ways in which mothers and fathers (or more general: care providers) coordinate their parenting efforts, engage in supportive and undermining actions toward each other, and manage the childrearing conflicts that arise in families (Feinberg, 2003). The FSM was originally developed with a focus on economic stress and family functioning. In the revised version of the FSM, Masarik and Conger (2017) state that “Although the FSM focuses on economic stress and family functioning, we suggest that it also applies to various environmental stressors” (p. 85). In the current manuscript, we extend the FSM with the application of one particular environmental stressor: parental stress. Higher levels of parental stress would be negatively related to the quality of parenting and coparenting: when the demands of parenthood exceed the joy and positive energy of being a parent, it becomes more difficult to be emotionally available for your child and your partner, to discipline your child in a sensitive way, and to work together with your partner in parenting as a team.

Empirical research, including studies applying parental stress to the FSM framework (e.g., Ward & Lee, 2020), supports the proposed links between parental stress, dysfunctional parenting behavior, and coparenting. Parental stress tends to spill over into the parent–child relationship by negatively affecting parental behaviors such as being less responsive, less affectionate, harsher, more hostile, more punitive, and even abusive toward children (Anthony et al., 2005; Beckerman et al., 2017). In addition, previous studies have shown a direct and independent negative link between parental stress and coparenting quality: in families experiencing lower parental stress, coparenting quality was higher (Feinberg et al., 2010; Riina & McHale, 2012). Next to the links between parental stress on the one hand and quality of parenting and coparenting on the other hand, studies have also revealed that parenting and coparenting are interrelated within the family system (Masarik & Conger, 2017): parenting negatively spills over into coparenting quality and vice versa (McHale & Rasmussen, 1998).

### Differences Between Mothers and Fathers

Although most studies on parental stress have been conducted with mothers (Crnic & Coburn, 2019), theory suggests that fathers’ parental stress might affect their parenting in similar ways or to an even greater extent compared to mothers’ parental stress. Although not focused on stress in specific, scholars have argued that fathering is more sensitive to contextual influences than mothering:

Not that mothering is not also contextually sensitive, but the cultural norms are stricter on the centrality and endurance of the mother-child dyad, regardless of what is happening outside that relationship. Father-child relations, on the other hand, are culturally defined as less dyadic and more multilateral, requiring a threshold of support from inside the family and from the larger environment. Undermining from the mother or from a social institution or system may induce many fathers to retreat from responsible fathering unless their own individual level of commitment to fathering is quite strong (Doherty & Erickson, 2000, p. 39).

The fathering vulnerability hypothesis, developed by Cummings et al. (2004), more specifically focuses on fathers’ stronger

susceptibility to stress and describes that fathering and father–child relationships are more vulnerable to stress from marital conflict than mothering and mother–child relationships. Results of studies testing the hypothesis that fathering would be more vulnerable than mothering to spill-over of stress are mixed. On the one hand, several (meta-analytical) studies find support for the fathering vulnerability hypothesis (Davies et al., 2009; Frosch et al., 2000; Krishnakumar & Buehler, 2000; Owen & Cox, 1997; Pedro et al., 2012; Sutton et al., 2017; Zvara et al., 2015). On the other hand, there are (meta-analytical) studies that do not find significant differences between mothers and fathers (Erel & Burman, 1995; Klausli & Owen, 2011; Ponnet et al., 2013; Stevenson et al., 2019). There are several studies in which differences between mothers and fathers are reported, but not tested statistically, which prevents us from drawing conclusions on the basis of their findings. However, rarely, if ever, do studies find support for greater vulnerability of mothering than fathering (Stevenson et al., 2019).

Based on the abovementioned insights, we investigate whether and to what extent fathering is more vulnerable to the spill-over of parental stress to parenting and coparenting than mothering. We expect that mothers are more likely to remain in their expected parenting roles, irrespective of the height of parental demands and stress. Fathers’ parenting, in contrast, would be more susceptible to perceived levels of parental stress, and heightened levels of parental stress might cause fathers to retreat from their parenting roles.

### Family Dynamics From Pre-COVID-19 to the Height of the First Lockdown

In sum, parental stress is theoretically and empirically asserted to relate to parenting and coparenting behavior, with mixed findings for the effects of maternal stress versus paternal stress. The theoretical assumptions framing studies on these family dynamics are usually based on assumptions of *change* proposed by the aforementioned Parenting Stress Model and Family Stress Model. However, the interindividual effects of change over time are often not tested because cross-sectional designs are used or because mean level differences across time points are examined, not taking into account interindividual differences over time (Tucker-Drob et al., 2019). Within the Family Systems Theory (Cox & Paley, 1997; Minuchin, 1988), the family system is viewed as dynamic and changing through time: *change* in the functioning of one subsystem (e.g., parental stress of the mother) might be followed by *change* in the functioning of other subsystems within the family system (e.g., the coparenting relationship). An increased demand on parental resources, in the current context, the COVID-19 pandemic, places parents at risk to rely more heavily on direct but less effective parenting approaches, including coercive parenting (Chung et al., 2020). In addition, the coparenting relationship may become strained in times of (elevated) stress related to the COVID-19 outbreak (Brooks-Gunn et al., 2013; Prime et al., 2020), for example, discussions centered around disagreements concerning the child may ensue (e.g., use of digital media, nighttime structure).

### Present Study

The present study examines whether (changes in) parental stress of mothers and fathers from the pre-COVID-19 period (T1) into the height of the COVID-19 lockdown (T2) were related to (changes in) coercive parenting of mothers and fathers and to (changes in)

coparenting quality. At T1, before the onset of the pandemic, children were on average 3.4 years old ( $SD = 0.3$ ). At the height of the lockdown in the Netherlands (when schools and day-care centers were closed) in April 2020 (T2), children were on average 4.7 years old ( $SD = 0.6$ ).

First, we expected a significant *increase* of parental stress, a significant *increase* of coercive parenting, and a significant *decrease* of coparenting quality from the pre-COVID-19 period (T1) into the height of the first lockdown (T2). Second, we expected stronger increases in parental stress of mothers and fathers to be related to stronger increases in both maternal and paternal coercive parenting and to be related to stronger decreases in coparenting quality. Third, derived from the father vulnerability hypothesis, we expected that the link between parental stress on the one hand and coercive parenting and coparenting on the other was stronger for fathers than for mothers.

The present study adds to the existing literature in several ways. The theoretical frameworks proposing the mechanisms of parental stress affecting parenting and coparenting assume a change of family dynamics over time. However, the effects of change over time are often not tested statistically because mean score levels are used, which do not provide insights on how parental stress, coercive parenting, and coparenting are interrelated over time within individual families. In the present study, Latent Change Score (LCS) modeling, a specific type of Structural Equation Modelling (McArdle, 2009; McArdle & Hamagami, 2001) is employed. Two critical aspects of LCS are that it can disentangle the extent to which parents *change* across time from their average, stable levels of parental stress, coparenting, and coercive parenting, and second, that it allows for examining interindividual differences in intraindividual changes in the constructs. Because LCS are constructed from latent factors, it is possible to examine and take into account measurement (non)invariance of the constructs under study. If the constructs demonstrate metric invariance, this means that they are conceptually similar for mothers and fathers and across measurement occasions (i.e., invariance of factor loadings) and that the latent factor means can be meaningfully compared between mothers and fathers and across measurement occasions (i.e., invariance of the intercepts of observed indicators).

In addition, studies on parenting and family dynamics in times of the COVID-19 pandemic are often initiated after the onset of the pandemic using a cross-sectional study design (e.g., Russell et al., 2020; Spinelli et al., 2020) in which change over time cannot be investigated. Studies that do make comparisons between stress levels prior to the onset of the COVID-19 pandemic and during the pandemic mostly rely on retrospective data which entail recall bias (Coughlin, 1990), referring to a systematic error caused by differences in the accuracy of retrieving the levels of parental stress and the quality of parenting and coparenting before the outbreak. Having data from a time point prior to the onset of the COVID-19 pandemic and one at the height of the first lockdown provides us with a unique natural experiment (Ahrens et al., 2021) in which parental stress is likely exacerbated from Time 1 to Time 2. Natural experiments are operationalized by a change in exposure caused by forces outside the researchers' control, which may be used to examine changes preexposure and postexposure (Thomson, 2020). Several (mainly epidemiological) studies examined the pre- and postexposure effects within natural experimental study designs, for example, the health impact of exposure to ionizing radiation in populations living near Hiroshima during the atomic blast

(Yamazaki & Schull, 1990). A more recent, COVID-19-related, natural experiment is the study by Schmidt et al. (2020) on physical activity and screen time of children and adolescents before and during the COVID-19 lockdown in Germany. Thomson (2020) described that "the worldwide response to the COVID-19 pandemic may be the first truly global natural experiment of the modern, big data era" (p. 14). Natural experimental designs using the COVID-19 pandemic as exposure do not contain a control group because the whole world is, to a more or less similar extent, affected by the COVID-19 pandemic. The present study design thus can be labeled as a natural experiment, but without the control group, implying that we cannot infer from our data that any changes we witness are in fact due to the COVID-19 pandemic specifically.

## Method

### Participants

In the present study, data were used from an interdisciplinary research project investigating the role of fathers and mothers from the same family in child development in early childhood. A total of 104 3-year-old children and both their parents (104 mothers and 104 fathers) from the city region of Rotterdam, the Netherlands participated in the study. Families were recruited by a team of student assistants at (indoor) playgrounds, national festivities, swimming pools, libraries, and general outdoors. Eligibility criteria were (a) having a 3-year-old child, (b) being a residential family in which one or more children were raised by a mother and a father, and (c) having a Dutch native background (mother and father of both parents were born in the Netherlands).

The first wave took place between May 2018 and January 2020 (51.0% girls,  $M_{\text{age}} = 3.44$  years,  $SD = 0.32$ ), well before the first case of COVID-19 was detected in the Netherlands (February 27, 2020) and the start of the first lockdown in the Netherlands (March 12, 2020). On April 15, 2020, during the first COVID-19 lockdown (T2), all participants from the first wave (T1) were asked to fill in a follow-up questionnaire. Of the initial sample, 96 families replied (53.1% girls,  $M_{\text{age}} = 4.72$  years,  $SD = 0.61$ ): 94 mothers and 89 fathers.

At T2, families were requested to provide general information on the COVID-19 home context. Mothers and fathers described that during the lockdown most often one of the parents (more often mother than father) stayed at home to take care of the children. Most families included in our sample described that the chances that the coronavirus would lead to a situation in which the household income would be lower compared to what would be needed to fulfill basic living needs were low, indicating that the financial context of these families during the first lockdown in the Netherlands was relatively stable. In the present study sample, 45 families (46.9%) had a lower or medium educational background (neither parents more than intermediate vocational training) and 51 (53.1%) had a higher educational background (at least one of the parents obtained higher vocational training or [post] university degree).

Nonresponse analyses comparing the sample with data on both time points ( $n = 94$  mothers and  $n = 89$  fathers) versus the samples with missing data at T2 ( $n = 10$  mothers and  $n = 15$  fathers) revealed that the samples did not significantly differ regarding maternal and paternal educational level, maternal and paternal parental stress levels at T1, and maternal and paternal levels of coercive parenting at T1. Reported coparenting at T1, however, was

significantly lower for the sample of mothers not included in the analyses ( $M = 6.42$ ,  $SD = 1.38$ ) compared to the mothers with available data at both time points ( $M = 7.36$ ,  $SD = 1.26$ ;  $p = .042$ ). Similarly, in the sample of fathers, reported coparenting at T1 was significantly lower for the fathers not included in the analyses ( $M = 6.60$ ,  $SD = 0.99$ ) compared to the fathers with available data at both time points ( $M = 7.47$ ,  $SD = 1.24$ ;  $p = .006$ ).

## Procedure

At the first wave of data collection, all families were visited at home by two trained research assistants. The order of the visit (father or mother first) was counterbalanced across families. During the first 30 min of each parent–child session, the parent was asked to fill in an online questionnaire using a tablet. The research assistants did not interfere with the parent while they were filling in the questionnaire. Children were instructed to play while their parent filled in the questionnaire. During the lockdown period, due to COVID-19 restrictions, the families could not be visited at home. Therefore, all participants (mothers and fathers) received the online questionnaire through email. Both studies (T1 and T2) were approved by the Ethics Committee of the Department of Public Administration and Sociology, Erasmus University Rotterdam. All parents provided informed consent for participating in the study.

## Measure

### Parental Stress

Parental stress was reported by mothers and fathers using the Parental Stress Scale (PSS; Berry & Jones, 1995). The PSS is an 18-item self-report measure in which parents respond to statements about their typical relationship with their child. For each statement, respondents rate their level of agreement on a 5-point Likert scale ranging from *strongly disagree* to *strongly agree*. The PSS was created with the parenting paradox at the core with both positive and negative aspects of parenting. An example of a positive item is “I am happy in my role as a parent” and an example of a negative item is “The major source of stress in my life is my child(ren).” To reduce the number of parameters in the LCS models, we created three parcels, or subscales, each consisting of six items that were randomly distributed across parcels. We chose to use parcels instead of individual items, because of parsimony. To allow us to report descriptives, a total parental stress score was computed in which the positive items were reverse scored and all items were summed, with higher scores reflecting higher levels of parental stress (possible range 18–90). Cronbach’s  $\alpha$ s for mothers and fathers at T1 and T2 ranged between 0.78 and 0.85. Studies support the validity and reliability of the PSS (Berry & Jones, 1995).

### Coercive Parenting

Coercive parenting was reported by mothers and fathers using the subscale coercive parenting (five items) of the Parenting And Family Adjustment Scales (PAFAS; Sanders et al., 2014), an inventory assessing parenting practices and parent and family adjustment. The PAFAS was designed as a brief outcome measure for assessing changes in parenting practices and parental adjustment in the evaluation of both public health and individual or group parenting

interventions. Example items are “I shout or get angry with my child when they misbehave” and “I argue with my child about their behavior/attitude.” Each item is rated on a 4-point scale from *not true of me at all* (0) to *true of me very much* (3). To report descriptives, items were summed to provide scores, with a possible range between 0 (low levels of coercive parenting) and 15 (high levels of coercive parenting). Psychometric evaluation revealed that the scale had good internal consistency and satisfactory construct and predictive validity (Sanders et al., 2014). In the present study, Cronbach’s  $\alpha$ s for mothers and fathers at T1 and T2 ranged between 0.59 and 0.62.

### Coparenting

Coparenting was reported by mothers and fathers using the subscale Parental Teamwork of the Parenting And Family Adjustment Scales (PAFAS; Sanders et al., 2014). Parental teamwork is defined here as the level of social support a parent receives from the partner in the parenting role. The subscale consists of three items: “I work as a team with my partner in parenting,” “I have a good relationship with my partner,” and “I disagree with my partner about parenting” (reverse coded). Each item is rated on a 4-point scale ranging from *not at all* (0) to *very much* (3). To report descriptives, items were summed, with higher scores indicating higher levels of parental teamwork (range 0–9). Psychometric evaluation revealed that the scale had good internal consistency and satisfactory construct and predictive validity (Sanders et al., 2014). In the present study, Cronbach’s  $\alpha$ s for mothers and fathers at T1 and T2 ranged between 0.41 and 0.72.

### Covariates

Possible included covariates were child sex, child age, age of the parents, parental educational attainment, and time between measurement occasions. Parents’ educational background was measured with the single question “What is the highest completed degree you achieved?” Response options ranged from 1 = *elementary school not completed* to 9 = *postacademic*. Family’s educational attainment was based on the highest educational degree one or both parents had achieved and was dummy-coded. Families in which the highest educational level achieved was secondary school or intermediate vocational training (scores 1–6) were categorized as a family with a lower or medium educational attainment, and families in which at least one parent completed higher vocational training or completed university or higher (scores 7–9) were classified as families with a higher educational attainment.

### Analytic Strategy

In preliminary analyses, measurement invariance of the constructs across (a) parent sex and (b) measurement occasions was examined by comparing increasingly stringent models, reflecting (A) configural invariance (i.e., is the construct theoretically operationalized in similar ways for mothers vs. fathers and for T1 vs. T2?), (B) metric invariance (i.e., do mothers vs. fathers and respondents at T1 vs. T2 attribute the same meaning to the latent constructs under study?), and (C) scalar invariance (i.e., is the meaning of the construct including the levels of the underlying items equal in mothers vs. fathers and at T1 vs. T2?; Van de Schoot et al., 2012) as follows. First, multigroup measurement models

(grouping variable = parent sex) were investigated for each construct and each measurement occasion separately, and invariance constraints were imposed on the parameters across parent sex (A = no constraints; B = factor loadings; C = item intercepts). Second, measurement models of the same construct assessed on the two measurement occasions were combined into one multigroup (parent sex), multiwave measurement model, in which adjustments that were found to be necessary for the previous step of analyses were retained. In these combined models, invariance constraints were imposed on parameters (factor loadings; item intercepts) across measurement occasions. If imposing invariance constraints resulted in a significant Satorra–Bentler scaled Chi-square difference value ( $p < .05$ ) and, additionally, in  $\Delta_{CFI} \geq .01$  supplemented by  $\Delta_{RMSEA} \geq .015$  or  $\Delta_{SRMR} \geq .03$  (item loadings) or  $\Delta_{SRMR} \geq .010$  (item intercepts), the respective type of constraints was not tenable (Chen, 2007). If the more stringent model fits significantly worse, model identification indices were inspected and plausible adjustments to the measurement models were made to improve model fit. In the two-wave models, residual variances of parallel items (coercive parenting, coparenting, parcels parenting stress) across waves were allowed to correlate (Marsh & Hau, 1996). For parental stress, three parcels (each created from six items) were used as the indicators of the underlying latent factor; for coparenting and coercive parenting, individual items were used as the observed indicators of the underlying latent factors.

After assessing the extent to which constructs were invariant across parent sex and time, univariate LCS models were specified that include the adjustments to the measurement models from the measurement invariance analyses. In these univariate LCS models, it was first investigated whether model parameters (intercept and change score means; intercept and change score variances; internal proportional change score) were different for mothers versus fathers. This was done by comparing a model in which these (five) parameters were freely estimated for mothers versus fathers, to a model in which these parameters were constrained to be equal across parent sex. If model comparisons indicated that the parameters were similar (i.e., not statistically different; increase in Satorra–Bentler-scaled Chi-square  $p > .05$ ) for mothers versus fathers, the constraints were retained in the final, multivariate LCS models.

To examine interrelations between parental stress, coparenting, and coercive parenting, a multivariate LCS model was examined in which the parameters (intercepts and change scores) of parental stress, coercive parenting, and coparenting were combined into one model. As mentioned above, two critical aspects of LCS are that it explicitly distinguishes between group-level initial levels (intercepts) and changes across time, and second, that it explicitly models individual differences in intercepts and change scores. Using multivariate LCS in which models for parental stress, coercive parenting, and coparenting are combined thus allows for an examination of the extent to which the levels of parental stress, coercive parenting, and coparenting are interrelated at the prepandemic assessment (T1; intercept–intercept covariances), an examination of the extent to which the initial levels of parental stress, coercive parenting, and coparenting affect intrafamilial changes in the other constructs at T2 (longitudinal coupling effects), and an examination of interrelations between intrafamilial changes in parental stress, coercive parenting, and coparenting (correlated changes).

In the multivariate LCS model, it was examined whether the associations between constructs (covariances between intercepts,

covariances between change scores, and coupling effects of intercepts on change scores of the other constructs) differed for mothers versus fathers, using multigroup analyses with parent sex as the grouping variable. At first, a baseline model in which all associations between the constructs were estimated freely was compared to a model in which the associations between constructs were constrained to be equal for mothers versus fathers. If imposing these invariance constraints does not result in a significant deterioration of model fit (Satorra–Bentler-scaled Chi-square  $p > .05$ ), associations between the constructs can be concluded to be similar across parent sex. In the final model, for parsimony, only covariates that were significantly related to the study variables (bivariate correlations) were included in the multivariate LCS models.

All analyses were conducted in MPlus 7 (Muthén & Muthén, 2012), using Robust Maximum Likelihood (MLR) estimation. To deal with missing data, Full Information Maximum Likelihood (FIML) was employed. Possible interdependency in the data, stemming from the fact that mothers and fathers came from the same families, was accounted for by adjusting standard errors using a sandwich estimator by specifying the *complex* option in Mplus (Muthén & Satorra, 1995).

## Results

### Descriptive Statistics

Descriptive statistics are presented in Table 1. Regarding background variables (not shown in table), bivariate correlations suggested that parents of older children reported more parental stress at T1 ( $r = .18, p = .013$ ), and that parents of older children ( $r = .16, p = .031$ ) and parents of girls ( $r = .15, p = .048$ ) reported higher levels of coercive parenting at T2. In the multivariate LCS model, these background variables were, therefore, controlled for by including them as covariates for the intercepts (T1) or change scores (T1–T2) of the respective variables.

### Measurement Invariance

Tests of model invariance indicated that assessments of parental stress, coercive parenting, and coparenting demonstrated configural, metric, and scalar invariance across parent sex, although for parental stress and coercive parenting, one minor adjustment was necessary for one measurement model (parental stress: the intercept of one

**Table 1**  
*Descriptives of the Study Variables*

Variables	T1	T2
	<i>M (SD)</i>	<i>M (SD)</i>
Parental stress—mother	36.22 (7.68)	37.90 (7.93)
Parental stress—father	34.50 (7.20)	36.19 (8.12)
Coercive parenting—mother	2.89 (1.59)	3.04 (1.59)
Coercive parenting—father	2.56 (1.61)	2.89 (1.73)
Coparenting reported by mother	7.35 (1.25)	7.00 (1.57)
Coparenting reported by father	7.41 (1.24)	7.36 (1.48)
Family educational background— % lower	48.1%	46.9%
Child sex, % girls	51.0%	53.1%
Child age (years)	3.44 (0.32)	4.72 (0.61)

parcel was freely estimated across parent sex; coercive parenting: a residual error covariance was added between two items at T2 for fathers). Further, measures of all constructs demonstrated configural, metric, and scalar invariance across the two measurement occasions, although for coercive parenting and coparenting, minor adjustments were necessary for the scalar models (coercive parenting: the intercepts of two items were freely estimated across measurement occasions; coparenting: the item intercept of one item was freely estimated across measurement occasions). In the final measurement models, factor loadings for parental stress ranged between 0.85 and 1.00, and for coparenting between 1–0.65 and 1.00. For coercive parenting, one indicator loaded less strongly, but still significant on the underlying factor (item 3,  $b = 0.21$ ,  $SE = 0.07$ ,  $p < .01$ ), factor loadings of the other indicators ranged between 0.52 and 1.03. Because in each measurement model, one factor loading was set to 1 to set the metric for this factor, the sizes of the factor loadings indicate that the observed indicators were similarly important for the conceptualization of the underlying constructs. Relative fit indices indicated adequate to excellent fit for the three multiwave, multi-group measurement models for parental stress, CFI = 0.993, RSMEA = 0.048, SRMR = 0.065; coercive parenting, CFI = 0.973, RMSEA = 0.035, SRMR = 0.081, and coparenting, CFI = 0.998, RMSEA = 0.011, SRMR = 0.072 (see Supplemental Material for all model fit indices and model comparisons).

### Univariate Latent Change Score

Constraining model parameters (intercept and change score means; intercept and change score variances; internal proportional change scores) to be equal for mothers and fathers did not lead to a significant deterioration in Satorra–Bentler-scaled Chi-square values in any of the models, parental stress  $\Delta\chi^2_{SB}(5) = 10.12$ ,  $p = .072$ ; coercive parenting,  $\Delta\chi^2_{SB}(5) = 6.27$ ,  $p = .281$ ; and coparenting,  $\Delta\chi^2_{SB}(5) = 9.71$ ,  $p = .084$ . These findings indicate that the intercept and change score means, the intercept and change score variances, and the internal proportional change score were not statistically different for mothers versus fathers. Thus, mothers and fathers showed similarly high initial levels (intercept means), changed to a similar extent over time (change score means), interindividual differences in the growth parameters were similar for mothers and fathers (intercept, change score variances), and the extent to which initial levels were associated with change rates were similarly strong for mothers and fathers (internal proportional change scores).

Model parameters of the univariate LCS models indicated that on average, mothers' and fathers' stress levels increased, coparenting quality decreased, and levels of coercive parenting did not change

across the two measurement occasions (means change scores; see Table 2). Significant interindividual differences were found in both initial levels of, and changes over time in all constructs (variances intercepts and change scores). Changes in parental stress, in coercive parenting, and in coparenting over time were not associated with initial levels (nonsignificant internal proportional change score coefficients) of these variables.

### Multivariate Latent Change Score

Constraining the associations between parameters across parent sex did not yield a significant increase in Satorra–Bentler Chi square,  $\Delta\chi^2_{SB}(12) = 11.76$ ,  $p = .465$ . The fully constrained model including relevant background variables showed adequate fit to the data,  $\Delta\chi^2_{SB}(520) = 657.69$ , CFI = 0.903, RMSEA = 0.053, SRMR = 0.093. Thus, all associations between intercepts and change scores of parental stress, coercive parenting, and coparenting were similar for mothers versus fathers. In Figure 1, the interrelations between initial levels of and changes in parental stress, coercive parenting, and coparenting quality are represented. Associations between the parameters are shown in Tables 3 (coupling effects) and 4 (intercept–intercept and change–change covariances). Coupling effects indicate that initial levels of the constructs were unrelated to change scores in the other constructs. In contrast to the univariate LCS models, higher initial levels of stress were associated with smaller increases in parental stress over time, and higher initial levels of coercive parenting were associated with smaller increases in coercive parenting between the two measurement occasions (significant internal proportional change scores). Higher initial levels of parental stress were related to lower initial levels of coparenting, and to higher initial levels of coercive parenting, but initial levels of coparenting were unrelated to initial levels of coercive parenting (covariances intercepts). Increases in parental stress were associated with stronger decreases in coparenting and with stronger increases in coercive parenting. Changes in coparenting were not associated with changes in coercive parenting.

### Discussion

In the present study, we examined whether and how changes in parental stress of mothers and fathers from the pre-COVID-19 period (T1) into the height of the first COVID-19 lockdown in the Netherlands (T2) were linked to changes in reported coercive parenting of mothers and fathers and to changes in reported coparenting quality. Analyses using LCS modeling showed that higher initial levels of parental stress were associated with higher initial

**Table 2**  
*Model Parameters in the Final, Fully Constrained Univariate LCS Models*

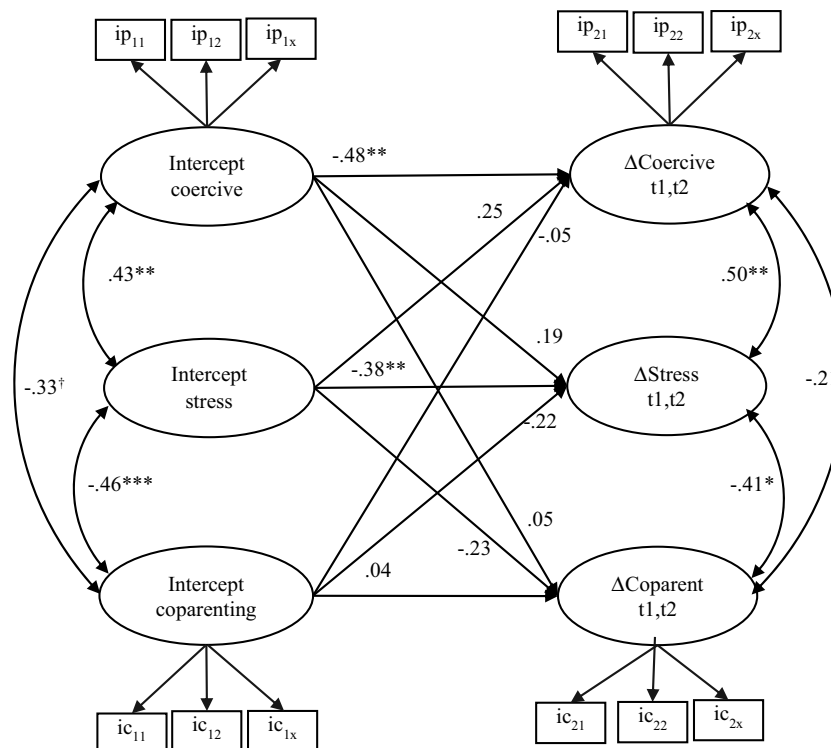
Variables	Means		Variance		IPC	
	Intercept	Change score	Intercept	Change score	<i>b</i>	SE
Stress	0 <sup>a</sup>	0.11**	0.20***	0.09***	-0.13 <sup>†</sup>	0.07
Coparenting	0 <sup>a</sup>	-0.16***	0.14***	0.11**	0.12	0.16
Coercive	0 <sup>a</sup>	0.04	0.11**	0.05**	-0.18	0.12

Note. IPC = Internal Proportional Change score coefficient; LCS = Latent Change Score.

<sup>a</sup> Intercept means in the univariate LCS models were constrained at zero for model identification purposes.

<sup>†</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Figure 1**  
 Latent Change Score Model: Interrelations Between Initial Levels of, and Changes in Parental Stress, Coparenting Quality, and Coercive Parenting



*Note.* Coefficients are standardized estimates. Similar to coparenting and coercive parenting, a latent factor was created for parental stress using observed indicators, but these are not shown for clarity of presentation. Residual variances of parallel items were allowed to correlate between T1 and T2.  $ip_{11}$  = Parenting time 1; Indicator 1;  $ip_{12}$  = Parenting time 1, Indicator 2, etc.  
<sup>†</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

levels of coercive parenting and lower initial levels of coparenting quality (intercept–intercept covariances). Similarly, stronger increases in parental stress were associated with stronger increases in coercive parenting and with stronger decreases in coparenting quality across the height of the COVID-19 lockdown (correlated changes). Initial levels and change scores of coparenting and coercive parenting were, however, not significantly related. Further, initial levels of parental stress, coercive parenting, and coparenting during the pre-COVID-19 period were not related to changes in these family dynamics (longitudinal coupling effects). Directions of associations and effect sizes were similar for mothers and fathers in all analyses.

### Interrelations of Parental Stress, Coercive Parenting, and Coparenting

The LCS analyses revealed that higher initial levels of parental stress were associated with higher initial levels of coercive parenting and lower initial levels of coparenting quality, which is in line with previous cross-sectional empirical research. Initial levels of parental stress and coercive parenting, but not coparenting, were negatively related to change in parental stress and coercive parenting respectively, meaning that higher initial levels of parental stress and

coercive parenting were related to stronger decreases within these family dynamics. These findings could point into the direction of regression to the mean, a statistical phenomenon that occurs when repeated measurements are made (Barnett et al., 2005). Initial levels of parental stress were, however, not related to changes in coercive parenting and coparenting. Similar nonsignificant cross-subsystem findings were also present for initial levels of coercive parenting and coparenting. These findings seem to indicate that the changes between T1 and T2 brought along so many new challenges, uncertainties, and stressors for parents that the levels of parental stress and (co)parenting at T1 (before the onset of the COVID-19 pandemic) do not add to the prediction of change between pre-COVID-19 and the first lockdown.

Importantly, *changes* in parental stress were related to *changes* in coercive parenting and *changes* in coparenting. These results resonate with the theoretical frameworks of the Parenting Stress Model (Abidin, 1992), the Family Stress Model (Masarik & Conger, 2017), and the Family Systems Theory (Cox & Paley, 1997; Minuchin, 1988), in which each subsystem (e.g., mother, father, dyadic relationship between mother and father) within the family is not only a system of its own, but is also “dynamic, open to constant revision, and constantly influenced by and influencing the other systems in which it is embedded” (Cox & Paley, 1997, p. 257). Fundamental to

**Table 3**  
*Coupling Effects in Final Multivariate LCS Model*

IS <sub>stress1</sub> →		IS <sub>stress1</sub> →		IS <sub>stress1</sub> →		IC <sub>copar1</sub> →		IC <sub>copar1</sub> →		IC <sub>copar1</sub> →		IC <sub>copar1</sub> →		IC <sub>coerc1</sub> →		IC <sub>coerc1</sub> →	
ΔC <sub>copar1,2</sub>		ΔC <sub>coerc1,2</sub>		ΔC <sub>stress1,2</sub>		ΔC <sub>copar1,2</sub>		ΔC <sub>coerc1,2</sub>		ΔC <sub>copar1,2</sub>		ΔC <sub>coerc1,2</sub>		ΔC <sub>copar1,2</sub>		ΔC <sub>stress1,2</sub>	
<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
-0.27**	0.10	-0.17	0.17	0.13	0.08	0.03	0.19	-0.18	0.13	-0.03	0.08	-0.34**	0.13	0.05	0.19	0.18	0.14

Note. LCS = Latent Change Score.  
 † *p* < .10. \* *p* < .05. \*\* *p* < .01. \*\*\* *p* < .001.

accurately assessing family dynamics are longitudinal approaches that index within-person or within-family changes in multiple subsystems over time, like in the present study the LCS approach, to enable answering the important question "Does it all go together when it goes?" (Rabbitt, 1993; Tucker-Drob et al., 2019): Are changes in parental stress in the parental subsystem accompanied by changes in their coercive parenting and by changes in coparenting in the interparental subsystem?

**Differences Between Mothers and Fathers**

As the associations were similar for mothers and fathers, our hypothesis that fathers were more vulnerable to spill-over from parental stress than mothers could not be supported based on the present study. On the one hand, this might indicate that using state-of-the-art methodological approaches, we simply do not find evidence that fathers' parenting and coparenting behavior is more susceptible to heightened parental stress than mothers'. Another possibility, however, could be that fathers are not specifically vulnerable to stresses within their "own" subsystems, but merely to stresses from other subsystems within the family, such as heightened levels of parental stress of mother (Cmic & Coburn, 2019). Due to sample power limitations, we were not able to examine such cross-over associations.

Importantly, most studies on vulnerability for maternal and paternal spill-over of stress were conducted in white middle-class families from the United States. For example, existing research shows minimal variation in background characteristics of studies testing the father vulnerability hypothesis, with a few exceptions for socioeconomic backgrounds (e.g., Zvara et al., 2015) and ethnic and cultural backgrounds (e.g., Sutton et al., 2017; Zvara et al., 2015). Our study was situated in the Netherlands. The Dutch society was long characterized by a male bread-winner model. Although the Netherlands now has one of the highest female labor force participation rates among OECD (Organisation for Economic Co-operation and Development) countries, there is a high share of women in part-time jobs (Organisation for Economic and Co-operation Development [OECD], 2019). The unpaid work at home is predominantly performed by women, a pattern found in most Western countries (OECD, 2019). It would be interesting to examine the spill-over of parental stress to other family subsystems in countries or cultures with varying degrees of gender specialization in work and child care. In sum, we would recommend future studies to take into account the sociocultural and socioeconomic contexts when testing spill-over of stress to other family subsystems.

**The Context of the COVID-19 Pandemic**

In the present study, we made use of a pre-COVID-19 (T1)–first lockdown (T2) study design. We hypothesized that the lockdown would trigger an increase in parental stress, and by the use of LCS, we aimed to investigate to what extent these increases in parental stress were associated with increases in coercive parenting and decreases in coparenting quality. However, in addition to parental stress, there might be other stressors at work due to the COVID-19 crisis, for example, acute financial stressors, sudden unemployment, and the collapse of the economic market (Prime et al., 2020). These financial and work-related stressors come alongside the medical and



**Table 4**  
Associations Between Intercepts and Change Scores in the Final Multivariate LCS Model

Variable	Covariances between intercepts			Covariances between change scores		
	ICopar <sub>1</sub> -IStress <sub>1</sub>	ICopar <sub>1</sub> -ICoerc <sub>1</sub>	IStress <sub>1</sub> -ICoerc <sub>1</sub>	ΔStress <sub>1,2</sub> -ΔCopar <sub>1,2</sub>	ΔStress <sub>1,2</sub> -ΔCoerc <sub>1,2</sub>	ΔStress <sub>1,2</sub> -ΔCoerc <sub>1,2</sub>
	b	b	b	b	b	b
	SE	SE	SE	SE	SE	SE
Coercive	-0.07***	-0.04 <sup>†</sup>	0.06***	-0.04*	0.01	0.03**
	0.02	0.02	0.02	0.02	0.01	0.01

Note. In the final multivariate LCS model, effects of child age and sex on change score coercive parenting, and effect of child age on the initial level of parental stress were controlled for. LCS = Latent Change Score.  
<sup>†</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

social consequences of the COVID-19 pandemic, including threats to the health of oneself or loved ones and lower social support from networks (Prime et al., 2020). Studies having data on the larger range of stressors pre-pandemic into the lockdown could further unravel the impact of different (COVID-19 related) stresses on family dynamics. In studying the impact of stress, it would also be interesting to examine possible resilience factors: skills and strengths to cope with and recover from problems and challenges derived from the COVID-19 pandemic.

Importantly, based on the present study design, we cannot claim that the link between changes in parental stress and changes in coercive parenting and coparenting were due to the COVID-19 pandemic as the present study design is not a classic natural experiment in which individuals (or families) were exposed to experimental versus control conditions. The COVID-19 pandemic is a worldwide-spread pandemic affecting all families more or less. In the present study, we “benefited” from hypothesized interrelated changes in family dynamics due to the pandemic and related regulations. However, interrelated changes in these family dynamics might also have developed without a COVID-19 context, for example, alongside children’s developmental transition to primary school, changes in family size or structure (e.g., birth of a sibling), change of jobs, or parental psychological wellbeing (Crnic & Coburn, 2019). Conceptual models of parental stress hardly ever consider context or developmental phase as critical characteristics (Crnic & Coburn, 2019). As the instigators of parental stress may differ, over time and across contexts, the present study results might well be generalizable to other stress contexts and other developmental phases.

**Insights on Policy and Practice**

Our findings on parenting and family dynamics over time provide valuable insights on policy and practice. When caregivers experience parenting as more demanding and stressful, parents also change the interaction with their child and partner, using more coercive parenting strategies and less effective coparenting strategies. Although we cannot claim that increases in parental stress were due to the COVID-19 pandemic, our findings might indicate that along with the public health efforts taken to contain the virus after the emergence of COVID-19, constraining actions like the closing of schools and center-based child care and actions to increase physical distancing have, in some families, negatively influenced the family environment. Promotion of systematic family-based preventive and intervention activities by the government could support families during challenging times. Fontanesi et al. (2020), Humphreys et al. (2020), and Racine et al. (2020) provide excellent recommendations for practice to enhance teamwork in professionals and in families to strengthen family functioning; For example, to inquire about family stress levels and how parents manage stress (Humphreys et al., 2020), by providing best practice principles and guidelines to adequately deal with the impact of stressful events on families (e.g., the lockdown; Fontanesi et al., 2020), and by offering parent-specific strategies (e.g., self-care and self-compassion) combined with child-specific strategies (e.g., promoting general wellbeing; Racine et al., 2020).

The results from the present study indicate that prevention and intervention programs should focus on both caregivers as similar mechanisms of parental stress and coercive parenting are at work for

mothers and fathers. More importantly, our results showed that changes in parental stress affected changes in coparenting quality, and thus the way mothers and fathers effectively collaborated in parenting. Higher quality of coparenting is associated with more positive child developmental outcomes (Feinberg et al., 2010; Riina & McHale, 2012), above and beyond the effects of maternal and paternal individual parenting (Teubert & Pinguart, 2010), indicating the importance of a family systems perspective in prevention and intervention programs.

### Strengths and Limitations

The present study uniquely contributes to the literature as changes in family dynamics from the pre-COVID-19 period into the height of the first COVID-19 lockdown were studied using LCS modeling. Research on parental stress and parenting primarily focuses on mothers. In the present study, mothers and fathers from the same families were included and advanced methods were applied to test for differences in mothers versus fathers. Besides these strengths, it is also important to mention the limitations of our study.

First, reciprocity of effects was not examined in the present study. Based on the Parenting Stress Model (Abidin, 1992) and the Family Stress Model (Masarik & Conger, 2017), we argued that parental stress affects coercive parenting and coparenting. However, these effects might be reciprocal, as argued by the Family Systems Theory (Cox & Paley, 1997; Minuchin, 1988). For example, more time spent at home may lead to more opportunities for disagreements in coparenting, which in turn leads the parent to experience more stress in their role as a caregiver. Second, within the present study design, multigroup or moderator analyses were not possible due to limited power. It can, for example, be argued that the impact of parental stress on coercive parenting and coparenting is stronger for families living in conditions of economic, educational, and sociorelational disadvantage (Fontanesi et al., 2020). We encourage scholars who have access to data from a larger sample of respondents to examine whether the impact of increases in parental stress on increases in coercive parenting and decreases in coparenting quality is stronger for families with lower levels of socioeconomic status. Third, the constructs under study were all based on parent reports, introducing shared method bias. Fourth, the concept of coparenting was assessed using three items. Although studies on coparenting commonly generate conclusions through the inclusion of a single aspect of coparenting, coparenting is conceptualized as a multidimensional construct, including interrelated dimensions (Feinberg, 2003; Van Egeren & Hawkins, 2004) which were not fully covered in the present study. Finally, nonresponse analyses showed that reported coparenting at T1 was significantly lower for the sample of mothers and fathers not included in the analyses compared to the mothers and fathers with available data at both time points, which may have affected the associations we found between parental stress and coparenting.

### Conclusion

The findings of the present study showed that higher initial levels of parental stress were associated with higher initial levels of coercive parenting and lower initial levels of coparenting quality. Similarly, stronger increases in parental stress were associated with stronger increases in coercive parenting and with stronger decreases

in coparenting quality across the height of the COVID-19 lockdown. By providing insights into parenting and family dynamics over time, our findings could inform policy and practice. The results from the present study indicated that prevention and intervention programs should focus on both caregivers as similar mechanisms of parental stress and coercive parenting are at work for mothers and fathers. Moreover, our results showed that changes in parental stress affect changes in coparenting quality, indicating the importance of a family systems perspective in prevention and intervention programs. Promotion of systematic family-based preventive and intervention activities by the government might support families during challenging times, as during the novel COVID-19 pandemic.

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