

**This is an electronic reprint of the original article.
This reprint *may differ* from the original in pagination and typographic detail.**

Author(s): Aunola, Kaisa; Ruusunen, Anna-Kaisa; Viljaranta, Jaana; Nurmi, Jari-Erik

Title: Parental affection and psychological control as mediators between parents' depressive symptoms and child distress

Year: 2015

Version:

Please cite the original version:

Aunola, K., Ruusunen, A.-K., Viljaranta, J., & Nurmi, J.-E. (2015). Parental affection and psychological control as mediators between parents' depressive symptoms and child distress. *Journal of Family Issues*, 36(8), 1022-1042.
<https://doi.org/10.1177/0192513X13494825>

All material supplied via JYX is protected by copyright and other intellectual property rights, and duplication or sale of all or part of any of the repository collections is not permitted, except that material may be duplicated by you for your research use or educational purposes in electronic or print form. You must obtain permission for any other use. Electronic or print copies may not be offered, whether for sale or otherwise to anyone who is not an authorised user.

Running head: PARENTAL DEPRESSIVE SYMPTOMS AND CHILD DISTRESS

Parental affection and psychological control as mediators
between parents' depressive symptoms and child distress

Kaisa Aunola, Anna-Kaisa Ruusunen,
Jaana Viljaranta, and Jari-Erik Nurmi

Authors' Note

Kaisa Aunola (corresponding author), Department of Psychology, University of Jyväskylä, Finland; phone: +358 408053481, fax: +358 142602801, email: kaisa.aunola@jyu.fi. Anna-Kaisa Ruusunen, Psychiatric outpatient clinic, Satakunnan sairaanhoitopiiri, Finland; phone: + 358 40 592 1985, fax: -, email: anna-kaisa.ruusunen@satshp.fi. Jaana Viljaranta, Department of Psychology, University of Jyväskylä, Finland; phone: +358 50328 8145, fax: +358 142602801, email: jaana.viljaranta@jyu.fi. Jari-Erik Nurmi, Department of Psychology, University of Jyväskylä, Finland; phone: +358 504285308, Fax: +358 142602801, email: jari-erik.nurmi@jyu.fi.

*Requests for reprints should be addressed to Kaisa Aunola, Department of Psychology, P.O. BoX 35, 40014 University of Jyväskylä, Finland (e-mail: kaisa.aunola@jyu.fi, phone: +358408053481, fax: +358142602801).

This study was funded by grants from the Academy of Finland (# 7119742) and Jacobs Foundation to Kaisa Aunola.

Abstract

The present study investigated the extent to which parental behavior in daily interaction with one's child mediates the associations between parental depressive symptoms and children's daily distress. The participants were 152 Finnish families with a 6- to 7-year-old child. Parents' depressive symptoms were assessed using the revised Beck Depression Inventory. Children's distress was operationalized as negative daily emotions assessed by using mother-, father-, and teacher-reported diary questionnaires. Parental affection and psychological control in daily interaction were measured using parent self-reported diary questionnaires. The results of structural equation modeling showed that both mothers' and fathers' depressive symptoms were associated with their children's high level of daily distress. Further, the association between parental depressive symptoms and children's distress was fully mediated via parents' psychological control, in particular: depressive parents applied psychological control in their daily interaction with their children, which then was associated with their children's distress.

Keywords: parental depressive symptoms, child distress, parenting, psychological control, negative emotions.

Parental Affection and Psychological Control as Mediators
Between Parents' Depressive Symptoms and Child Distress

The role of parental depression or depressive symptoms in children's depressive symptoms and well-being has been widely investigated (for a review, see Cummings & Davies, 1994; Goodman & Gotlib, 1999; Goodman, 2007; Hammen, 2009). This research has shown that children of depressed parents are at increased risk for a wide range of emotional and behavioral problems including the development of psychopathology, as well as milder forms of distress. For example, children of depressed parents have been shown to evidence more anxiety and depression than children who don't have a depressive parent (for a review, see Biederman et al., 2006; Cummings & Davies, 1994; Goodman & Gotlib, 1999). This association between the depressive symptoms of parents and their offspring also has been found in nonclinical samples (Hops, 1992; Ge, Conger, Lorenz, Shanahan, & Elder, 1995). In general, mothers' depression (for a review, see Connell & Goodman, 2002) and depressive symptoms (Durbin, Klein, Hayden, Buckley, & Moerk, 2005) seem to be more strongly associated with child distress than those of fathers. Results concerning the role of child's gender, in turn, have been inconsistent: some studies have found that females are more susceptible to the negative effects of parental depression than males are (e.g., Burt et al., 2005; Fergusson, Horwood, & Lynskey, 1995; Davies & Windle, 1997), whereas some other studies have found that the effects are stronger for boys than girls, particularly among younger children (Carter, Garrity-Rokous, Chazan-Cohen, Little, & Briggs-Gowan, 2001; Weinberg, Olson, Beeghly, & Tronick, 2006). There are still some other studies that have not found any gender differences (for a review, see Gartstein, Bridgett, Dishion, & Kaufman, 2009; Goodman, Rouse, Connell, Broth, Hall, & Heyward, 2011).

It has been suggested that, besides shared genetic background, one mechanism by which parental depressive symptoms may have impact on child distress and emotional development is parenting (Cummings, Keller, & Davies, 2005; Downey, Purdie, & Schaffer-Neitz, 1999; Elgar et

al., 2007). Particularly, parents' low affection, referring to parents' lack of interactional warmth, has been suggested to play a role in the transmission of parental depressive symptoms to children (for a review, see Turney, 2011; Wilson & Durbin, 2010). For example, depressed parents have been shown to respond to their children more negatively, intrusively, and with less supportive nurturing and decreased sensitivity than non-depressed parents (for a review, see Cummings & Davies, 1994; Goodman & Gotlib, 1999; Lovejoy, Graczyk, O'Hare, & Neuman, 2000). Moreover, lack of parental affection—or a high parental rejection—has been shown to be associated with depressed mood and poor emotion regulation among children (for a review, see Cummings & Davies, 1994; McLeod, Weisz, & Wood, 2007). There are also some studies indicating that parental affection may mediate the association between parental depression and child distress. In the study by Elgar et al. (2007), lack of nurturance and a high rejection by parents mediated the association between both mothers' and fathers' depressive symptoms and their 10- to 15-year-old offspring's emergence of emotional and behavioral problems. In the study by Jaser et al. (2008), the relation between maternal depressive symptoms and adolescents' internalizing and externalizing problems was mediated by the observed sadness in mothers' interactions with their children (see also, Burt et al., 2005; Johnson et al., 2001).

Another aspect of parenting, i.e., psychological control, has also been suggested to play a central role in children's emotional development. *Psychological control* refers to parents' control of their child's emotions and behavior through psychological means, such as guilt induction and withdrawal of love (Barber, 1996). An increasing amount of research has shown that parents' high level of psychological control yields distress in children, being evident in negative affects, such as shame, guilt (Assor, Roth, & Deci, 2004), and anxiety (for a review, see Barber, 1996). Psychological control is also associated with the development of various forms of problem behavior among children (for a review, see Barber & Harmon, 2002). Further, psychological control has been shown to be particularly typical of depressed parents (Cummings & Davies, 1999; Cummings et al.,

2005). However, only few attempts have been made to investigate the possible mediating role of psychological control between parents' depressive symptoms and child distress (Cummings et al., 2005; Mezulis, Hyde, & Clark, 2004). In the study of Cummings et al. (2005), parental psychological control was positively correlated with both mothers' and fathers' depressive symptoms. However, due to the small sample size, they failed to test the mediating role of psychological control between parental symptoms and child adjustment. In a study by Du Rocher Schudlich and Cummings (2007), disrupted parenting—including psychological control—partially mediated the relations between maternal and paternal dysphoric mood and children's internalizing and externalizing problems.

Although many theoretical models of how parents' depressive symptoms are transmitted to children's feelings of depression or related negative emotions have been introduced (Goodman & Gotlib, 1999), these transmission processes have rarely been empirically tested (Cummings et al., 2005; Elgar et al., 2007; Pugh & Farrell, 2011). The studies carried out thus far have also mainly focused on the impacts of maternal depressive symptoms on children, and less is known about the role of depressive symptoms in fathers (Ramchandani, Stein, Evans, O'Connor, et al., 2005). Moreover, although it has been shown that parents' psychological control plays an important role in child distress (for a review, see Barber & Harmon, 2002), only few studies (Cummings et al., 2005; Du Rocher Schudlich & Cummings, 2007; Mezulis et al., 2004) have been conducted to examine the role of psychological control as a mediator in the associations between parental depressive symptoms and child outcomes. Consequently, the aim of the present study was to investigate the extent to which mothers' and fathers' depressive symptoms are associated with their children's daily distress, and the extent to which parenting in terms of affection and psychological control (see also, Cummings et al., 2005) mediates this association. Because there are mixed evidence concerning the extent to which child's gender have an impact on the strength of the association between parental depression and child distress (for a review, see Gartstein et al., 2009; Goodman et

al., 2011), the present study examined also the extent to which the associations between parents' depressive symptoms, their parenting, and child distress are different among boys and girls.

Methods

Participants

The study sample consisted of the parents and teachers of 152 first grade children (79 girls, 73 boys; Age $M = 7.5$ years, $SD = 3.61$ months). The sampling was started by contacting 334 first grade teachers and asking them to participate in the study. 166 teachers agreed and signed a written consent. Next, one student from each classroom was randomly selected and the children's parents were asked to participate. If the parents did not respond or withheld their consent, another child from the class was selected, again at random, and his or her parents were contacted. This procedure continued until one student was obtained from each classroom. A total of 114 parents agreed to participate in the first round, 33 in the second round, 15 in the third round, and 4 in the fourth round. From this total of 166 children and their parents, 14 families were omitted from the analyses because the children were in special education classrooms. Thus, the final sample comprised 152 children in normal classrooms and their mothers ($N = 152$), fathers ($N = 118$), and teachers ($N = 152$). The schools participating in the study were situated in three mid-sized towns in Finland.

The families were fairly representative of the general Finnish population. 52% of the mothers and 31% of the fathers had completed at least a senior high school education, 47% of the mothers and 66% of the fathers had completed at least a junior high school education (comprehensive school), and 1% of the mothers and 3% of the fathers had not completed a junior high school education. 78% of the families were nuclear families (67 married, 11 cohabiting parents), 12% blended families, and 10% single-parent families. The number of children per family ranged from 1 to 10 ($M = 2.39$, $SD = 1.03$).

Procedure

Both of the children's parents or legal guardians were asked to respond to a mailed questionnaire concerning their depressive symptoms in the fall (October or November) of their child's first grade. At the same time point, both parents were asked to fill in a structured diary questionnaire concerning their daily interactions with their child, their daily parenting, and their child's negative and positive emotions over seven successive days (diary). The diary was filled in for 7 days, separately by the mother and father, before going to bed. Also, at the same time as the other measures were administered, participating teachers were asked to fill in a structured diary concerning children's emotions over five successive days (diary). Each parent was paid 50 EUR (about 62 US Dollars) and teacher 100 EUR (about 123 US Dollars) for participating in the study.

Measurements

Parents' depressive symptoms. Mothers' and fathers' depressive symptoms were assessed using a revised version of Beck's Depression Inventory (BDI; Beck et al., 1961, 1979). The participants were not asked to choose one of the four alternatives of 21 sets of items, as in the original version, but rather to rate 10 items (e.g., "*I often feel sad*") on a 5-point Likert scale ranging from 1 (*not at all true of me*) to 5 (*very true of me*). These 10 items were drawn from the original set of 21 second mildest statements (Statements numbered "1" in the original scale). The score for depressive symptoms was calculated as the mean of the ten items, separately for mothers and fathers. The score for depressive symptoms gathered using the revised version of BDI has no clinical cut-off values but was treated as continuous variable. The Cronbach's alpha reliabilities for the depressive symptoms were .83 for mothers and .82 for fathers. This revised version of Beck's Depression Inventory has been used in many studies (e.g., Elovainio, Kivimäki, Puttonen, Heponiemi, Pulkki, & Keltikangas-Järvinen, 2004; Nurmi & Salmela-Aro, 2002; Salmela-Aro, Aunola, Saisto, Halmesmäki, & Nurmi, 2006), and it correlates strongly with the original BDI ($r = .84$; Salmela-Aro & Nurmi, 1996). The reason for using the revised version of BDI in the present study was that it was more feasible and less time-consuming than the original full 21-item measure.

The means scores of depressive symptoms in the present study (see Table 1) were consistent with those found in other non-clinical samples (see e.g., Elovainio et al., 2004; Salmela-Aro et al., 2006).

Children's daily distress. Children's daily distress was measured by assessing children's negative (anger, anxiety, depressed mood; see also Downey et al., 1999) and positive (cheerfulness, happiness, pride, gratitude) emotions via the Daily Emotion Scale (DES; authors removed for reviewing purposes, 2007), which is based on the Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988). During each day, parents and teachers of the target children completed a structured questionnaire measuring children's negative (8 items; e.g., "*My child was angry today*" / "*The child was angry today*"; "*My child was sad today*" / "*The child was sad today*"; "*My child felt distressed today*" / "*The child felt distressed today*") and positive (3 items; "*My child was cheerful / happy / enthusiastic today*" / "*The child was cheerful / happy / enthusiastic today*"; "*My child was proud today*" / "*The child was proud today*"; "*My child was thankful today*" / "*The child was thankful today*") emotions. Parents and teachers rated each item on a 5-point Likert scale (1 = *not at all*; 5 = *very much*). Principal-axis factor analyses for the DES (carried out separately for mothers', fathers', and teachers' evaluations) suggested that negative and positive emotions should be treated as two separate dimensions rather than one dimension.

Consequently, two separate sum scores were created:

(1) To create indices for *child negative emotions*, the mean of the 8 items measuring children's negative emotions was calculated first, after which the mean of this score across the seven (parents) or five (teachers) days was calculated. Separate scores were calculated with regard to mothers', fathers', and teachers' reports. The Cronbach's alpha reliability for children's negative daily emotions was .82 for mothers' evaluations, .86 for fathers' evaluations, and .88 for teachers' evaluations. The correlation between mothers' and fathers' evaluations was .45 ($p < .001$). The teacher evaluation correlated .35 ($p < .001$) with fathers' evaluations and .13 (p ns) with mothers' evaluations.

(2) To create indices for *child positive emotions*, the mean of the items measuring children's positive emotions was calculated first, after which the mean of this score across the seven (parents) or five (teachers) days was calculated. Separate scores were calculated with regard to mothers', fathers', and teachers' reports. The Cronbach's alpha reliability for children's positive emotions was .59 for mothers' evaluations, .64 for fathers' evaluations, and .63 for teachers' evaluations. The correlation between mothers' and fathers' evaluations was .19 ($p < .05$). The teacher evaluation did not correlate with mothers' or fathers' evaluations (p ns).

The preliminary analyses (see Table 1) showed that mothers' and fathers' depressive symptoms were not correlated with their children's positive emotions evaluated by mothers, fathers, or teachers with one exception: mothers' depressive symptoms were negatively correlated with mothers' own evaluation of their children's positive emotions ($r = -.23, p < .05$). Mothers' and fathers' psychological control was not correlated with child positive emotions (p ns) and mothers' and fathers' affection correlated only with parents' own evaluation of child positive emotions (for mothers $r = .34, p < .001$; for fathers $r = .59, p < .001$). These results suggested that parental depressive symptoms and parenting in terms of psychological control and affection are not related with children's positive daily emotions but only (in some cases) with parents' own perception of her/his child. Consequently, in the further analyses the associations of parental depressive symptoms and parenting with children's positive emotions are not analyzed further, and the focus will be on the associations of parental depressive symptoms and parenting with children's daily distress operationalized in terms of negative daily emotions.

Parenting. The scales for *parental affection* and *psychological control* were created on the basis of the Finnish version of Block's Child Rearing Practices Report (CRPR; Roberts, Block, & Block, 1984; see also Aunola & Nurmi, 2004, 2005) to measure parenting styles in daily interaction contexts. Both parents were asked to log their daily parenting behaviors by responding to 15 items on a 5-point Likert scale (1 = *not at all true*; 5 = *very much true*) at the end of each day. Affection—

measuring the extent to which mothers or fathers reported having shown positive and warm behavior toward their child each day—was measured by four items (e.g., “*I showed my child that I care about him/her*”; “*I asked my child about his/her doings*”; “*I joked with my child*”).

Psychological control—reflecting parental behaviors appealing to guilt and expressing disappointment—was measured by five items (e.g., “*I said that things could be done better*”; “*I tried to get him/her to think or feel differently*”; “*I told him/her that I am disappointed in him/her*”).

To create indices for *affection* and *psychological control*, the mean of the items described above was calculated first, after which the mean of the sum scores across the seven days was calculated. The Cronbach’s alphas for the scales were .77 and .81 for mothers and .80 and .79 for fathers.

Results

Analysis Strategy

The analyses were carried out using structural equation modeling with multisample procedure along the following steps and separately for mothers and fathers. First, a structural equation model¹ was conducted in which a latent variable measuring children’s daily distress was predicted (although the data is cross-sectional, we use here “predicted” as a technical term of statistics) by the observed variable measuring parents’ depressive symptoms. Because parental depression may influence parental reports of child behavior (Durbin & Wilson, 2012; Fergusson, Lynskey, & Horwood, 1993; Gartstein et al., 2009), a latent construct measuring child’s daily distress was created by using three different indicators: mother, father, and teacher report of child daily distress. Consequently, the construct for child distress measured mother’s, father’s, and teacher’s shared view of the child, and the variance related to single informant was treated in the models as residual variance. Second, the parenting variables, i.e., affection and psychological control, were included in the model as mediator variables. Both direct and indirect paths via parenting from parental depressive symptoms to child distress were estimated.

In order to investigate whether an identical model would fit for both boys and girls, a multisample procedure was used in all of the analyses. In this procedure, all model parameters are first constrained to be equal across the two groups which provide a tool to investigate whether the identical model fit for both groups (Raykov & Marcoulides, 2006). If the fit of the tested model is acceptable, it can be interpreted that the same model fit for both groups. If the fit of the model is not acceptable, there are differences between the groups that should be taken account in order to end up to a final and acceptable model. Modification indices of the model will in such case provide information concerning the parts of the models that should be estimated separately for the two groups.

The models were estimated by using the Mplus statistical package (version 5.21; Muthén & Muthén, 1998–2009). Using the missing data method with the path models allowed us to include all of the observations in the data set in order to estimate the parameters in the models. Because some of the variables were initially skewed, the parameters of the models were estimated by use of the MLR estimator. The fit of the models was evaluated using the χ^2 goodness-of-fit statistic, which assesses the magnitude of discrepancy between the sample and fitted covariance matrices. For SEMs, a good fit is obtained when the χ^2 statistic is non-significant, which by convention is taken to happen for p-values $\geq .05$ (Bagozzi & Yi, 2012). In addition to the chi-square tests, Comparative Fit Index (CFI) and Root Mean-Square Error of Approximation (RMSEA) were used to evaluate the fit of the models. For CFI, values larger than .90 are indicative of adequate model fit and values over .95 indicative of a well-fitting model; for the RMSEA, values below .05 are indicative of a well-fitting model and values between .06 and .08 indicative of adequate model fit (see also, for example, Gartstein et al., 2009). The correlations, means and standard deviations of the variables used are shown in Table 1.

Insert Table 1 about here

Mothers' Depressive Symptoms and Child Daily Distress

In the first model, the latent construct measuring child distress was predicted by maternal depressive symptoms. The fit of the model was poor: $\chi^2(12) = 37.71, p < .001; CFI = 0.55; RMSEA = 0.17$. The modification indices suggested that (1) estimating the residual variance of teacher-rated child distress separately for boys (*estimate* = .15) and girls (*estimate* = .06), and (2) estimating the path from maternal depressive symptoms to the residual variance of mother-reported child distress for girls would improve the fit of the model.² After these specifications, the model fit the data adequately well [$\chi^2(10) = 15.08, p = 0.13; CFI = 0.91; RMSEA = 0.08$].

The results showed that the higher the level of mothers' depressive symptoms, the more daily distress the children showed (*standardized estimate* = .52, $p < .001$). Overall, mothers' depressive symptoms explained about 28 % of their children's daily distress. Moreover, the higher the level of mothers' depressive symptoms, the more daily distress mothers reported concerning their daughters (*standardized estimate* = .17, $p < .01$).

Next, the observed parenting variables, i.e., maternal affection and psychological control, were included in the previous model as mediator variables. The fit of the model was good [$\chi^2(23) = 30.36, p = 0.14, CFI = 0.94, RMSEA = 0.06$]. The results of this final model (statistically significant paths) are shown in Figure 1.

Insert Figure 1 about here

The results (Figure 1) showed, first, that mothers' psychological control and affection were both associated with children's daily distress: the higher the level of maternal psychological control and the lower the level of affection, the more daily distress their children showed. Second, the association of maternal depressive symptoms with children's distress was mediated via mothers'

psychological control (*indirect standardized estimate* = .15, $p < .01$) and affection (*indirect standardized estimate* = .06, $p < .05$): the more depressive symptoms mothers' reported, the more psychological control they used and the less affection they showed in daily interaction with their child and, consequently, the more daily distress their children showed. After adding mothers' psychological control and affection to the model, the direct path from maternal depressive symptoms to child daily distress was no longer statistically significant (*standardized estimate* = .19; $p = .07$).

Fathers' Depressive Symptoms and Child's Daily Distress

Next, analogous models were carried out with regard to fathers. In the first model, a latent variable measuring children's negative emotions was predicted by paternal depressive symptoms. The fit of the model was poor: $\chi^2(12) = 28.73$, $p < 0.01$; $CFI = .55$; $RMSEA = .13$. The modification indices suggested that estimating (1) the error variance and (2) intercept of teacher-rated child distress separately for boys (estimate for error variance = .16; estimate for intercept = 1.34) and girls (estimate for error variance = .06; estimate for intercept = 1.19) would improve the fit of the model.³ After these specifications, the fit of the model was good [$\chi^2(10) = 5.16$, $p = 0.88$; $CFI = 1.00$; $RMSEA = 0.00$].

The results showed that fathers' depressive symptoms were statistically significantly and positively associated with their children's daily distress (*standardized estimate* = .22, $p < 0.01$). Overall, fathers' depressive symptoms explained about 5% of their children's daily distress.

Next, fathers' parenting behaviors were added into the previous model. The model fit the data well [$\chi^2(23) = 18.87$, $p = 0.71$; $CFI = 1.00$; $RMSEA = .00$]. The results of the final model (statistically significant paths) are presented in Figure 2.

Insert Figure 2 about here

The results (Figure 2) showed that fathers' psychological control and affection were both associated with their children's distress: the higher the level of paternal psychological control and the lower the level of affection, the more daily distress the children showed. Moreover, the association of paternal depressive symptoms with child distress was mediated via fathers' psychological control (*standardized indirect estimate* = .15, $p < .05$): the more depressive symptoms fathers reported, the more psychological control they used in their daily parenting, which then was associated with daily distress among their children. After adding fathers' psychological control and affection to the model, the direct path from paternal depressive symptoms to child daily distress was no longer statistically significant (*standardized estimate* = .09, $p = .18$).

Discussion

The present study examined to what extent mothers' and fathers' depressive symptoms are associated with their children's daily distress, and the extent to which these associations are mediated via parenting behaviors as manifested in mothers' and fathers' daily interaction with their children. The results showed that the more depressive symptoms mothers and fathers reported, the higher level of distress (in terms of negative emotions) their children showed in daily life. Moreover, the associations between parental depressive symptoms and children's daily distress were mediated by parents' psychological control, in particular.

The first aim of the present study was to investigate to what extent parents' depressive symptoms are associated with their children's distress evident as negative emotions in daily life. In accordance with the previous literature (Cummings & Davies, 1994; Goodman & Gotlib, 1999; Goodman, 2007; Hammen, 2009), the results showed that the more depressive symptoms mothers and fathers reported, the more daily distress their children showed. Because children's daily distress was measured by using items from three data sources (mothers, fathers, and teachers), the result of the present study was independent of errors of measurement in reports of child emotions (see also, Fergusson et al., 1993).

Some studies have reported that girls are particularly susceptible to negative effects of parental depression (Burt et al., 2005; Fergusson, Horwood, & Lynskey, 1995; Davies & Windle, 1997), whereas some other studies have found that boys are more susceptible to negative effects of parental depression than girls are (Carter et al., 2001; Essex, Klein, Cho, & Kraemer, 2003; Weinberg et al., 2006). There are also studies which have not found gender differences at all (for a review, see Gartstein et al., 2009; Goodman et al., 2011). The findings of the present study are in line with the last mentioned studies showing that there were no gender differences in the associations between parental depressive symptoms and child daily distress, when evaluating child distress using multiple informants. The fact that the results concerning the role of child's gender in the association between parental depression or depressive symptoms, and child distress vary from study to study may be due to various factors including child's age, used assessment tools, and sample characteristics. For example, the sample of the present study represented normal, non-clinical population, whereas in the majority of previous studies the focus has been on families with clinically depressed parent.

Although the results of the present study did not detect gender differences in the associations between parental depressive symptoms and child daily distress, gender difference was found in the association of mothers' depressive symptoms and their perceptions of their children (residual variance of mother-reported distress): the higher the level of maternal depressive symptoms was, the more distress in terms of negative daily emotions they reported among their girls, in particular. This result is in line with the depression-distortion hypotheses (Richters & Pellegrini, 1989) according to which depressed mothers perceive their children in more negative light and over-report child adjustment difficulties (for a review, see Gartstein et al., 2009). The results of the present study suggest, however, that when assessing children's distress, this kind of depression-distortion may be true when mothers evaluate their *daughters*, in particular. Similar kinds of results have recently been reported by Gartstein et al. (2009). In their study, mothers with higher levels of

depressive symptoms over-reported internalizing difficulties for daughters and externalizing behavior problems for sons. Gartstein et al. (2009) suggested that one explanation to the gender-specific result in distortion is that the perceptual bias related to symptoms of depression is activated for parental report of child behaviors in a manner consistent with overall attitudes and expectations: because girls are expected to demonstrate more problems with anxiety and depression, and boys, in turn, with externalizing problems, these expectations may be amplified, leading to over-reporting, as mothers experience higher levels of depression.

The second aim of the present study was to investigate the extent to which the association of parental depressive symptoms with children's distress is mediated via mothers' and fathers' daily parenting, i.e., affection and psychological control. The results showed that parental depressive symptoms were associated with children's daily distress via mothers' and fathers' psychological control, in particular: the higher the level of mothers' and fathers' depressive symptoms, the more psychological control they applied in their daily lives, which then was associated with a higher level of distress among the children. This result was found for both boys and girls. These results are in line with previous research which has shown, on the one hand, that parents' depressive symptoms are associated with higher levels of psychological control in parenting (Cummings et al., 2005), and, on the other hand, that parents' high level of psychological control is associated with children's overall distress (for a review, see Barber & Harmon, 2002).

One explanation for the results—according to which parental depressive symptoms are associated with child distress via parental psychological control—is that parents with depressive symptoms observe their children's behavior more negatively (Cummings & Davies, 1994) and, at the same time, feel that they have no resources to handle this observed negative child behavior (see e.g., Dix, 1991), which subsequently leads them to use psychological control in daily interaction. The psychological control and intrusive parenting then fosters distress and negative affects among children (Barber, 1996; Becker, Ginsburg, Domingues, & Tei, 2010; McLeod et al., 2007). The

other possible explanation is that parents with depressive symptoms transmit their negative mood and anxiety to their children by inducing guilt typical in psychological control. Since previous literature has mainly focused on the role of maternal parenting as a mediating mechanism, the results of the present study add to that literature by showing that also the association of fathers' depressive symptoms and child distress are mediated via paternal parenting behaviors—particularly psychological control.

The results showed further that the impact of mothers' depressive symptoms on their children's daily distress was mediated also by low affection displayed by mothers in daily interactions: the higher the level of depressive symptoms mothers reported, the less affection they showed in daily life and, consequently, the more their children showed daily distress. In previous research, parental low affection and high rejection have been suggested to be important mediators between parental and child distress (Elgar et al., 2007). In the present study, the role of parental affection as a mediator was, however, weaker than that of psychological control and, moreover, evident only when regarding mothers.

The present study includes some limitations. First, child distress was evaluated by their parents and teachers, not by the child. To what degree particularly parents' ratings of their children's distress are consistent with children's own ratings or with observational data is still a matter of debate (Durbin & Wilson, 2012; Gartstein et al., 2008; Fergusson et al., 1993; Richters, 1992). However, the fact that in the present study multiple informants were used when evaluating child distress suggests that the results reported here concerning the associations between parental depressive symptoms and child daily distress, or the association between parenting and child distress, are not due to the shared method effect. Further support for this conclusion that the results are not due to the shared method effect comes from the results that parent-reported depressive symptoms were differently related with children's emotions depending on whether the emotions under evaluation were negative or positive. Second, the study was cross-sectional. Consequently,

causal conclusions cannot be drawn on the basis of the results. It is possible that it is children's distress which has an impact on their parents' parenting behavior and depressive symptoms rather than vice versa (Dix, 1999). There are, however, some recent findings suggesting that it is parents' psychological control in the daily context that predicts their children's negative daily emotions rather than vice versa (authors removed in review purposes, 2012). Third, the present study focused on the role of parenting as a mediator of parental depressive symptoms. However, other mediators that have also been suggested—such as marital conflict (Cummings et al., 2005)—were not examined. Fourth, the results may also be explained by some third unmeasured variable, such as the shared genetic background between parents and children (Goodman & Gotlib, 1999; Cummings & Davies, 1994). Since the present study was not genetically sensitive, further studies are needed to examine the role of genetic factors in the reported associations. There may also be some other third variables impacting behind the results, such as family stressors and life situations. It is possible, for example, that families confronting negative life events show overall high level of distress due to those negative events, and this is evident both in parents' and children's emotions and level of distress, as well as in parenting. Finally, the present study examined parents' depressive symptoms and children's daily distress among normative sample. Because the variables used in the present study to measure depressive symptoms and daily distress do not refer to clinical levels of distress but rather to normal variation in related symptoms and emotions, the results may not generalize to clinical samples.

Despite of these limitations, the present study has also some strengths including, for example, multiple informants when assessing child distress and focusing on the role of both mothers and fathers in child distress. A particular strength was also the use of the daily diary method in assessing parenting behavior and child distress. By obtaining ratings of child emotions across multiple days (vs. a single point in time assessment) provided a possibility to capture normative child variability in daily distress. Similarly, obtaining information concerning parenting

behaviors across multiple days provided a possibility to capture normative variability in parenting behaviors. Because diary method provides information of events and experiences in their natural, spontaneous context (Bolger, Davis, & Rafaeli, 2003) and because, due to short-term intervals in data gathering, it avoids usual concerns about distortion and inaccuracies created by recall (Larson & Almeida, 1999), this method can also be seen to increase the validity and reliability of the reports of parenting behaviors and child distress.

One further strength of the presents study was that, although the focus of the study was on child distress operationalized in terms of negative daily emotions, also children's positive emotions were initially examined. The finding of the present study showing that the associations of parental depressive symptoms and parenting with child emotions were evident only in regards to children's negative emotions suggests that the mechanism behind of the transmission of parental depressive symptoms to children is rather related to children's increased negative emotions than decreased positive emotions. However, because the reliabilities of adults' evaluations of children's positive emotions in the present study were substantially lower than those of evaluations of negative emotions, and the mutual correlations between mothers', fathers', and teachers' evaluations of child positive emotions were low, further studies are needed on the role of parental depressive symptoms and parenting on children's positive emotions (or on lack of them).

Overall, the results of the present study suggest that mothers' and fathers' use of psychological control, in particular, plays an important role in the transmission of parents' depressive symptoms to their children. Depressive parents apply psychological control in their daily interactions with their children, which then contributes to the distress felt by their children on a daily basis.

References

- Assor, A., Roth, G., & Deci, E. L. (2004). The emotional costs of parents' conditional regard: A Self-Determination theory analysis. *Journal of Personality, 72*, 47-88.
- Aunola, K., & Nurmi, J.-E. (2004). Maternal affection moderates the impact of psychological control on a child's mathematical performance. *Developmental Psychology, 40*, 965-978.
- Aunola, K., & Nurmi, J.-E. (2005). The role of parenting styles in children's problem behavior. *Child Development, 76*, 1144-1159.
- Bagozzi, R. P., & Yi, Y. (2012). Specification, evaluation, and interpretation of Structural Equation Models. *Journal of the Academy of Marketing Science, 40*, 8-34.
- Barber, B. (1996). Parental psychological control: Revisiting a neglected construct. *Child Development, 67*, 3296-3319.
- Barber, B. K., & Harmon, E. L. (2002). Violating the self: Parental psychological control of children and adolescents. In B. K. Barber (Ed.), *Intrusive parenting. How psychological control affects children and adolescents* (pp. 15 – 52). Washington, DC: American Psychological Association.
- Beck, A. T., Ward, C. H., Mendelsohn, M., Mock, L., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 4*, 561-571.
- Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford Press.
- Becker, K. D., Ginsburg, G. S., Domingues, J., & Tei, J-Y (2010). Maternal control behavior and locus of control: Examining mechanisms in the relation between maternal anxiety disorders and anxiety symptomatology in children. *Journal of Abnormal Child Psychology, 38*, 533-543.
- Biederman, J., Carter, P., Faraone, S. V., Henin, A., Hirshfeld-Becker, D., Pollack, M. H., de Figueiredo, S., Feeley, R., & Rosenbaum, J. F. (2006). Effects of parental anxiety disorders

- in children at high risk for panic disorder: A controlled study. *Journal of Affective Disorders*, *94*, 191-197.
- Bifulco, A., Moran, P. M., Ball, C., Jacobs, C., Baines, R., Bunn, A., & Cavagin, J. (2002). Childhood adversity, parental vulnerability and disorder: Examining inter-generational transmission of risk. *Journal of Child Psychology and Psychiatry*, *43*, 1075-1086.
- Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology*, *54*, 579-616.
- Burt, K. B., Van Dulmen, M. H. M., Carlivati, J., Egeland, B., Sroufe, L. A., Forman, D. R., Appleyard, K., & Carlson, E. A. (2005). Mediating links between maternal depression and offspring psychopathology: the importance of independent data. *Journal of Child Psychology and Psychiatry*, *46*, 490-499.
- Connell, A. M., & Goodman, S. H. (2002). The association between psychopathology in fathers versus mothers and children's internalizing and externalizing behavior problems: A meta-analysis. *Psychological Bulletin*, *128*, 746-773.
- Cummings, E. M., & Davies, P. T. (1994). Maternal depression and child development. *Journal of Child Psychology and Psychiatry*, *35*, 73-112.
- Cummings, E. M., Keller, P. S., & Davies, P. T. (2005). Towards a family process model of maternal and paternal depressive symptoms: Exploring multiple relations with child and family functioning. *Journal of Child Psychology and Psychiatry*, *46*, 479-489.
- Davies, P. T., & Windle, M. (1997). Gender-specific pathways between maternal depressive symptoms, family discord, and adolescent adjustment. *Developmental Psychology*, *33*, 657-668.
- Dix, T. (1991). The affective organisation of parenting: Adaptive and maladaptive processes. *Psychological Bulletin*, *110*, 3-25.

- Downey, G., Purdie, V., & Schaffer-Neitz, R. (1999). Anger transmission from mother to child: A comparison of mothers in chronic pain and well mothers. *Journal of Marriage and the Family, 61*, 62-73.
- Durbin, C. E., Klein, D. N., Hayden, E. P., Buckley, M. E., & Moerk, K. C. (2005). Temperamental emotionality in preschoolers and parental mood disorders. *Journal of Abnormal Psychology, 114*, 28-37.
- Durbin, C. E., & Wilson, S. (in press). Convergent validity of and bias in maternal reports of child emotion. *Psychological Assessment*.
- Du Rocher Schudlich, T. D., & Cummings, E. M. (2007). Parental dysphoria and children's adjustment: Marital conflict styles, children's emotional security, and parenting as mediators of risk. *Journal of Abnormal Child Psychology, 35*, 627-639.
- Elgar, F. J., Mills, R. S. L., McGrath, P. J., Waschbusch, D. A., & Brownridge, D. A. (2007). Maternal and parental depressive symptoms and child maladjustment: The mediating role of parental behavior. *Journal of Abnormal Child Psychology, 35*, 943-955.
- Elovainio, M., Kivimäki, M., Puttonen, S., Heponiemi, T., Pulkki, L., & Keltikangas-Järvinen, L. (2004). Temperament and depressive symptoms: A population-based longitudinal study on Cloninger's psychobiological temperament model. *Journal of Affective Disorders, 83*, 227 - 232.
- Essex, M. J., Klein, M. H., Cho, E., & Kraemer, H. C. (2003). Exposure to maternal depression and marital conflict: Gender differences in children's later mental health symptoms. *Journal of American Academy of Child and Adolescent Psychiatry, 42*, 728-737.
- Fergusson, D. M., Lynskey, M. T., & Horwood, L. J. (1993). The effect of maternal depression on maternal ratings of child behavior. *Journal of Abnormal Child Psychology, 21*, 245-269.

- Fergusson, D. M., Horwood, L. J., & Lynskey, M. T. (1995). Maternal depressive symptoms and depressive symptoms in adolescents. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *36*, 1161-1178.
- Gartstein, M. A., Bridgett, D. J., Dishion, T. J., & Kaufman, N. K. (2009). Depressed mood and maternal report of child behavior problems: Another look at the depression-distortion hypotheses. *Journal of Applied Developmental Psychology*, *30*, 149-160.
- Ge, X., Conger, R. D., Lorenz, F. O., Shanahan, M., & Elder, G. H. (1995). Mutual influences in parent and adolescent psychological distress. *Developmental Psychology*, *31*, 406-419.
- Goodman, S. H. (2007). Depression in mothers. *Annual Review of Clinical Psychology*, *3*, 107-135.
- Goodman, S. H., & Gotlib, I. H. (1999). Risk for psychopathology in the children of depressed mothers: A developmental model for understanding mechanism of transmission. *Psychological Review*, *106*, 458-490.
- Goodman, S. H., Rouse, M. H., Connell, A. M., Broth, M. R., Hall, C. M., & Heyward, D. (2011). Maternal depression and child psychopathology: A meta-analytic review. *Clinical Child and Family Psychology Review*, *14*, 1-27.
- Goodyer, I. M., & Altham, P. M. E. (1991). Lifetime exit events and recent social and family adversities in anxious and depressed school-age children and adolescents .1. *Journal of Affective Disorders*, *21*, 219-228.
- Hammen, C. L. (2009). Children of depressed parents. In I. Gotlib & C. L. Hammen (Eds.), *Handbook of depression* (Vol. 2, pp. 275-297). New York, NY: Guilford Press.
- Hops, H. (1992). Parental depression and child behaviour problems: Implications for behavioural family intervention. *Behaviour Change*, *9*, 126-138.
- Jaser, S. S., Fear, J. M., Reeslund, K. L., Champion, J. E., Reising, M. M., & Compas, B. E. (2008). Maternal Sadness and Adolescents' Responses to Stress in Offspring of Mothers with and

Without a History of Depression. *Journal of Clinical Child and Adolescent Psychology*, 37, 736-746.

Johnson, J. G., Cohen, P., Kasen, S., Smailes, E., & Brook, J. S. (2001). Association of maladaptive parental behavior with psychiatric disorder among parents and their offspring. *Archives of General Psychiatry*, 58, 453-460.

Larson, R. W., & Almeida, D. M. (1999). Emotional transmission in the daily lives of families: A new paradigm for studying family process. *Journal of Marriage and the Family*, 61, 5-20.

Lovejoy, M. C., Graczyk, P. A., O'Hare, E., & Neuman, G. (2000). Maternal depression and parenting behavior: A meta-analytic review. *Clinical Psychology Review*, 20, 561-592.

McLeod, B. D., Weisz, J. R., & Wood, J. J. (2007). Examining the association between parenting and childhood depression: A meta-analysis. *Clinical Psychology Review*, 27, 986-1003.

Mezulis, A. H., Hyde, J. S., & Clark, R. (2004). Father involvement moderates the effect of maternal depression during a child's infancy on child behavior problems in kindergarten. *Journal of Family Psychology*, 18, 575-588.

Muthén, L. K., & Muthén, B. O. (1998-2009). *Mplus user's guide*. Los Angeles, CA : Muthén & Muthén.

Nurmi, J.-E., & Salmela-Aro, K. (2002). Goal construction, reconstruction and depressive symptoms in a life-span context: The transition from school to work. *Journal of Personality*, 70, 385-420.

Pugh, K. L., & Farrell, A. D. (2011). The impact of maternal depressive symptoms on adolescents' aggression: Role of parenting and family mediators. *Journal of Child and Family Studies*.
Online First.

Ramchandani, P., Stein, A., Evans, J., O'Connor, T., & the ALSPAC Study team (2005). Paternal depression in the postnatal period and child development: A prospective population study. *Lancet*, 365, 2201-2205.

- Raykov, T., & Marcoulides, G. A. (2006). A first course in structural equation modeling (2nd edition). London: Lawrence Erlbaum Associates.
- Richters, J. E. (1992). Depressed mothers as informants about their children – A critical review of the evidence for distortion. *Psychological Bulletin*, *112*, 485-499.
- Richters, J., & Pellegrini, D. (1989). Depressed mothers' judgment about their children: An examination of depression-distortion hypothesis. *Child Development*, *50*, 1068-1075.
- Roberts, G. C., Block, H., & Block, J. (1984). Continuity and change in parents' child-rearing practices. *Child Development*, *55*, 586-597.
- Salmela-Aro, K., Aunola, K., Saisto, T., Halmesmäki, E., & Nurmi, J.-E. (2006). Couples share similar changes in depressive symptoms and marital satisfaction anticipating the birth of a child. *Journal of Social and Personal Relationships*, *23*, 781-803.
- Salmela-Aro, K. & Nurmi, J.-E. (1996). *Unpublished raw data*. Helsinki: University of Helsinki.
- Sheeber, L., Hops, H., & Davis, B. (2001). Family processes in adolescent depression. *Clinical Child and Family Psychology Review*, *4*, 19-35.
- Shih, J. H., Eberhart, N. K., Hammen, C. L., & Brennan, P. A. (2006). Differential exposure and reactivity to interpersonal stress predict sex differences in adolescent depression. *Journal of Clinical Child and Adolescent Psychology*, *35*, 103-115.
- Turney, K. (2011). Labored love: Examining the link between maternal depression and parenting behaviors. *Social Science Research*, *40*, 399-415.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of Positive and Negative Affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54*, 1063-1070.
- Weinberg, M. K., Olson, K. L., Beeghly, M., & Tronick, E. Z. (2006). Making up is hard to do, especially for mothers with high levels of depressive symptoms and their infant sons. *Journal of Clinical Psychology and Psychiatry*, *47*, 670-683.

Wilson, S., & Durbin, C. E. (2010). Effects of paternal depression on fathers' parenting behaviors: A meta-analytic review. *Clinical Psychology Review, 30*, 167-180.

Footnotes

¹Bentler and Chou (1987) suggested that in order to use SEM the ratio of sample size to the number of estimated parameters should be at least 5 to 1. In the present study, the amount of estimated parameters in the tested models varied from 10 to 21, suggesting that the sample size of 118 fathers and 152 mothers of the present study can be considered as sufficient for tested models.

²These modifications were found to be theoretically reasonable suggesting, first, that teachers' evaluations of girls' distress were more consistent with parents' evaluations than teachers' evaluations of boys' distress (i.e., the latent construct 'child distress' explained smaller part of teachers' evaluations among boys than among girls and, consequently, the residual of teacher evaluated child distress was statistically significantly larger among boys than among girls). Second, the results suggested that mothers' depressive symptoms were related to the variance of their perception of their daughters' distress that was not shared with the fathers and teachers.

³These modifications were found to be theoretically reasonable suggesting, first, that teachers' evaluations of girls' distress were more consistent with parents' evaluations than teachers' evaluations of boys' distress (i.e., the latent construct 'child distress' explained smaller part of teachers' evaluations among boys than among girls) and, second, that teachers, on average, perceived boys to be more distressed than girls (i.e., the intercept of teacher evaluation was statistically significantly higher among boys than among girls).

Table 1

Means (M), Standard Deviations (SD) and Correlations Between the Observed Variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	<i>M</i>	<i>SD</i>
1. Mothers' depressive symptoms	1.00												1.96	0.64
2. Fathers' depressive symptoms	0.16	1.00											2.11	0.64
3. Child distress (mother)	0.38 ^a	0.11	1.00										1.40	0.33
4. Child distress (father)	0.35 ^a	0.24 ^c	0.45 ^a	1.00									1.37	0.33
5. Child distress (teacher)	0.20 ^c	0.01	0.13	0.35 ^a	1.00								1.33	0.35
6. Child positive emotions (mother)	-0.23 ^c	-0.01	-0.29 ^c	-0.17 ^d	0.12	1.00							3.23	0.52
7. Child positive emotions (father)	0.09	-0.09	0.00	-0.27 ^c	-0.04	0.19 ^c	1.00						3.14	0.58
8. Child positive emotions (teacher)	-0.01	-0.05	-0.06	-0.22 ^c	-0.28 ^a	-0.02	0.05	1.00					2.90	0.62
9. Mothers' affection	-0.29 ^a	0.01	-0.21 ^c	-0.15	0.04	0.34 ^b	0.03	0.03	1.00				3.96	0.54
10. Fathers' affection	-0.11	-0.09	-0.12	-0.33 ^a	-0.09	0.12	0.59 ^a	-0.03	0.16	1.00			3.54	0.64
11. Mothers' psychological control	0.21 ^b	0.20 ^c	0.57 ^a	0.28 ^b	0.16 ^d	-0.06	0.05	-0.10	0.09	-0.03	1.00		1.47	0.42

Table1 continues

12. Fathers' psychological control	0.24 ^c	0.21 ^c	0.37 ^a	0.61 ^a	0.26 ^b	-0.04	-0.01	-0.11	-0.16	-0.03	0.37 ^a	1.00	1.46	0.40
------------------------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------	-------	-------	-------	-------	-------------------	------	------	------

Note. ^a $p < .001$, ^b $p < .01$, ^c $p < .05$, ^d $p < .10$ two-tailed test.

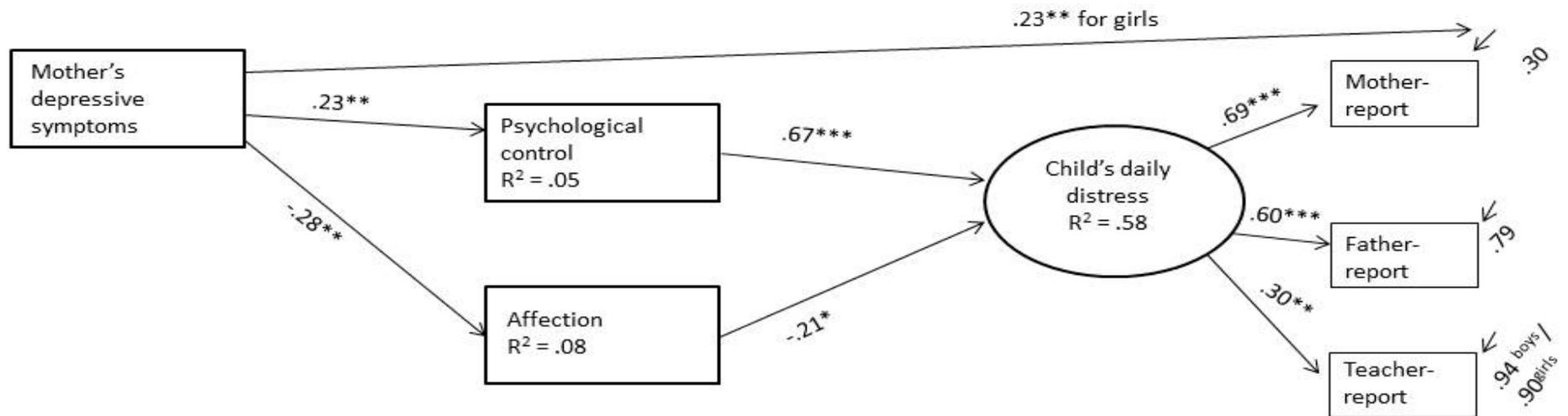


Figure 1. Results of SEM (standardized estimates for statistically significant paths) for mothers' depressive symptoms, daily parenting, and children's daily distress. Note 1. $***p < .001$, $**p < .01$, $*p < .05$.

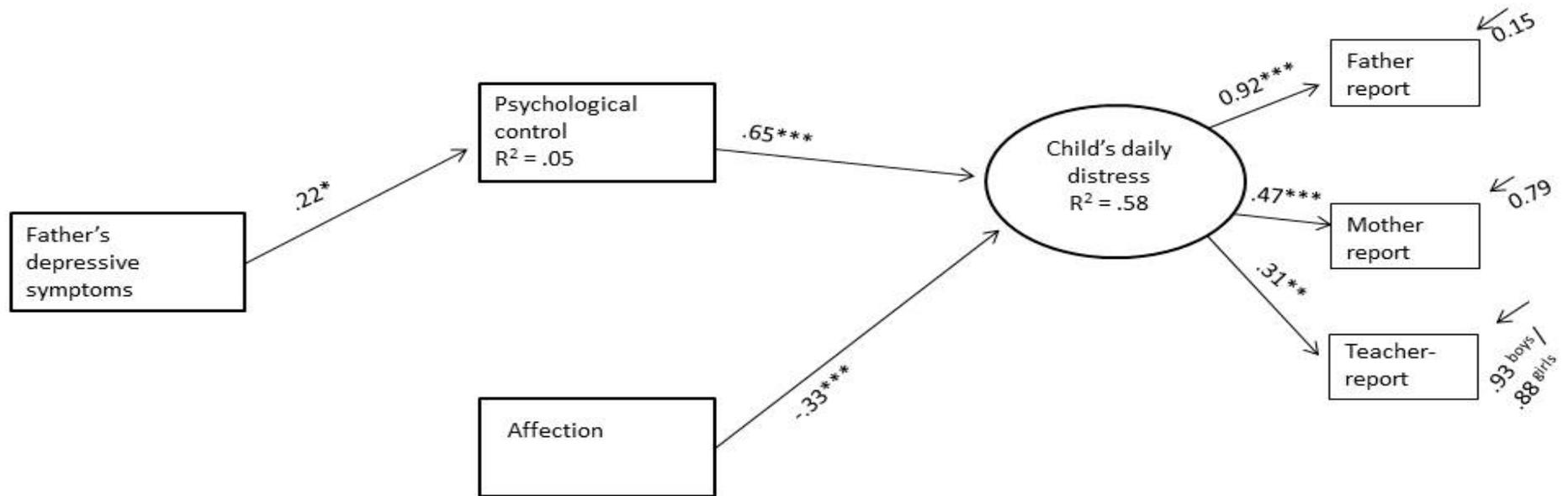


Figure 2. Results of SEM (standardized estimates for statistically significant paths) for fathers' depressive symptoms and daily parenting and children's daily distress. Note 1. $^{***}p < .001$, $^{**}p < .01$, $^*p < .05$.