



**Explaining the relationship between parental depressive symptoms and adolescent delinquent behavior: examining the mediating role of parental monitoring and testing differences between genders.**

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**Abstract**

**Introduction.** Prior studies show a relationship between parental depressive symptoms and adolescent delinquent behavior. Depressive symptoms might decrease parental monitoring, and this could provide more opportunities for the adolescent to perform delinquent behavior. This current study focused on the role of parental depressive symptoms in predicting adolescent delinquent behavior, while taking parental monitoring and gender into account.

**Methods.** This study was part of the longitudinal TRAILS study. The sample consisted of Dutch adolescents and their parents. Hierarchical regression analyses were conducted to analyze whether parental depressive symptoms influenced adolescent delinquent behavior, when taking parental monitoring and gender into account. **Results.** No significant relationship between parental depressive symptoms and adolescent delinquent behavior was found. There was a significant relationship with parental monitoring. Indicating that more depressive symptoms decreased parental monitoring and less monitoring increased adolescent delinquent behavior. Additionally, boys reported more delinquent behavior, compared to girls.

**Conclusions.** These findings demonstrated the importance of the influence of parental monitoring on adolescent delinquent behavior, especially when parents suffer from depressive symptoms. The results demonstrated that boys reported more delinquent behavior. The results stressed the importance to further investigate the gender differences, concerning parental monitoring.

*Keywords:* adolescents, parental depressive symptoms, adolescent delinquent behavior, parental monitoring, gender.

## Samenvatting

**Introductie.** Voorgaande onderzoeken tonen een relatie aan tussen ouderlijke depressieve klachten en delinquent gedrag van adolescenten. Depressieve klachten kunnen ervoor zorgen dat ouderlijke monitoring van hun kind vermindert en dat door deze vermindering in monitoring er kansen ontstaan om delinquent gedrag te vertonen. Dit onderzoek richt zich daarom op de relatie tussen ouderlijke depressieve klachten en delinquent gedrag en neemt hierin de mogelijke invloed van ouderlijke monitoring en sekse van het kind mee. **Methoden.** Dit onderzoek is onderdeel van de longitudinale TRAILS-studie. De data is opgehaald bij Nederlandse adolescenten en hun ouders. Hiërarchische regressie analyses zijn gebruikt om te onderzoeken of ouderlijke depressieve klachten invloed hebben op het delinquent gedrag van adolescenten en of ouderlijke monitoring en sekse van het kind ook in verband staan met deze relatie. **Resultaten.** Er is geen significante relatie tussen ouderlijke depressieve klachten en delinquent gedrag van adolescenten gevonden. Er is wel een significante relatie met ouderlijke monitoring, die erop duidt dat meer depressieve klachten kunnen leiden tot minder monitoring en minder monitoring tot meer delinquent gedrag van adolescenten. Daarnaast bleken jongens meer delinquent gedrag te rapporteren in vergelijking tot meisjes. **Conclusie.** Concluderend, tonen de resultaten het belang aan van ouderlijke monitoring op delinquent gedrag van adolescenten, vooral wanneer ouders last hebben van depressieve klachten. Gezien jongens meer delinquent gedrag rapporteerden dan meisjes, wordt het belang benadrukt om deze sekseverschillen verder te onderzoeken met betrekking tot ouderlijke monitoring.

*Steekwoorden:* adolescenten, ouderlijke depressieve klachten, delinquent gedrag van adolescenten, ouderlijke monitoring, sekse.

## **Introduction**

Adolescence is a period of rapid change; adolescents start to move away from parents to develop a more autonomous role (Harris-McKoy & Cui, 2012). The role of parents becomes less influential during adolescence, but remains of influence with respect to certain behaviors, and in particular delinquent behavior (Steinberg, 2020). Delinquent behavior is described as criminal behavior, illegal acts, committed by adolescents (Steinberg, 2020). Adolescent delinquent behavior culminates in various negative outcomes, including unemployment or less productive job searches later in life (Carter, 2018). A study by Kim et al. (2020), suggests that adolescent delinquent behavior has a relationship with negative physical, and mental health outcomes in adulthood such as higher risk of cardiovascular disease and depression. Other negative outcomes of adolescent delinquent behavior are that it decreases the likelihood of graduating from high school or college (Ward & Williams, 2015). Delinquent behavior is associated with negative mental health outcomes, problems with substance use, and financial problems (Moffitt et al., 2002)

The relationship between parents and adolescents' delinquent behavior is investigated in detail by various studies. There is a relationship between parent practices and adolescent delinquent behavior, where parental control, warmth, and involvement are related to less adolescent externalizing problems, including delinquent behavior (Deutsch et al., 2012). Due to the negative outcomes of adolescent delinquent behavior and the possible role with parent practices this study will investigate the relationship between parental depressive symptoms and adolescent delinquent behavior.

### **Parental depressive symptoms and adolescent delinquent behavior**

Adolescents from parents with depressive symptoms are at greater risk for developing delinquent behavior than adolescents with parents without such depressive symptoms (Reising et al., 2012). A cross-sectional study investigated the relationship between parental depression and internalizing and externalizing problems in their children. The participants consisted of 180 children (age 9-15), and their parents with a past or current history of depressive symptoms (Reising et al., 2012). However, the results also showed that it could be possible that the influence of parental depressive symptoms on adolescent externalizing behavior could be explained by disrupted parenting. Additionally, other empirical studies illustrate that depressive symptoms in parents are related to adolescent externalizing problems. More specifically, parents' depressive symptoms might predict an increase in adolescents' delinquent behavior (England & Sim, 2009; Jaser et al., 2010; Parent et al., 2010). These findings are supported by investigating the cross-sectional relationship between

parental depression and adolescents' externalizing behavior (Jaser et al., 2010; Parent et al., 2010). The meta review summarizing both cross-sectional and longitudinal findings reported similar results supporting the relationship between parental depressive symptoms and adolescent delinquent behavior (England & Sim, 2009).

Based on previous studies, it is hypothesized that parental depressive symptoms are a risk for the development of adolescents' delinquent behavior. A new longitudinal study can add on the previous outcomes and the longitudinal design provides to state about causal relationships, which gives more insight in the relationship.

### **Parental monitoring**

During the period of adolescence, adolescents start to move away from home, therefore there is less parental supervision and monitoring. Less parental monitoring and supervision might provide opportunities for delinquent behavior (Steinberg, 2020). One of the main risk factors for adolescent delinquent behavior is poor parenting, including a lack of parental monitoring and control (Steinberg, 2020; Harris-McKoy & Cui, 2012). In addition, peers become increasingly important, and adolescents start to spend more time with their peers. This leisure time is mostly unsupervised by parents and provides opportunities to engage in delinquent behavior (Moffitt, 1993; Steinberg, 2020). Parents with depressive symptoms might monitor their children less and this lack of parental monitoring may provide opportunities for the adolescent to engage in delinquent behavior. Withdrawn parenting, referring to a lack of involvement and responsiveness to their child, is more common in parents with depressive symptoms (Gruhn et al., 2016; Jaser et al., 2010). In addition, a lack of parental control increases the possibility that adolescents engage in delinquent behavior (Harris-McKoy & Cui, 2012). Disrupted parenting was also related to adolescent externalizing problem behavior, such as delinquent behavior (Reising et al., 2012). Thus, a lack of parental monitoring as a result of parental depressive symptoms may increase the risk of adolescents' delinquent behavior.

Other research indicates that parental monitoring is related to adolescents' delinquent behavior, with less parental monitoring resulting in more delinquent behavior (Barnes et al., 2006; Cheng & Li, 2017; Steinberg, 2020). More precisely, a lack of parental monitoring is negatively related to adolescent delinquent behavior (Barnes et al., 2006; Cheng & Li, 2017; Steinberg, 2020). In contrast, some studies, suggest no relationship between parental monitoring and adolescent delinquent behavior (McKee et al., 2008). These inconsistencies may be explained by a finding by Keijsers (2016), who found that the link between parental

monitoring and adolescent delinquency, might be explained by other confounding factors, such as adolescent disclosure or other problem behaviors.

Based on the results that parental depressive symptoms lead to parental withdrawal it is hypothesized that parental depressive symptoms might decrease parental monitoring (Gruhn et al., 2016; Jaser et al., 2010). This lack of parental monitoring may in turn increase delinquent behavior of the adolescent.

### **Gender**

Boys engage more often in delinquent behavior, compared to girls (Canter, 1982; Kim & Kim, 2005; Moffitt & Caspi, 2001). However, the effects of parental depression on delinquent behavior may be different for boys and girls. Girls may be more sensitive to stress and negative interactions with parents that are associated with parental depressive symptoms (Hankin et al., 2007), and as result the girls might engage in delinquent behavior. It is however noteworthy that findings are inconsistent. For instance, Gruhn et al. (2016) added that particularly girls are at risk for developing delinquent behavior as a consequence of parental depression. In contrast to earlier findings (Gruhn et al., 2016), some studies suggest there are no gender differences in the impact of parental depressive symptoms on delinquent behavior (Goodman et al., 2011). This discrepancy might be due to one study reporting results from a meta-analysis (Goodman et al., 2011), whereas the other study reports cross-sectional results (Gruhn et al., 2016). The review possibly reflects the trend more because it reflects on multiple studies, whereas the cross-sectional study is just one study. However, in the review it is stated that not many studies explicitly report gender specific results, which is necessary to develop gender specific models (Goodman et al., 2011).

When taking parental monitoring into account, one study suggested that parental practices differ between girls and boys. Where parental monitoring practices seems to be more common for girls (Kristjánsson & Sigfúsdóttir, 2009). The effects of parental monitoring seems to be stronger for adolescent young girls compared to young boys, indicating a vital influence of monitoring on particularly girls' behavior (Jacobson & Crockett, 2000).

Although findings are inconsistent, it is possible that the effects of parental depressive symptoms on delinquent is stronger for girls than for boys. It is therefore hypothesized that sex is a moderator in this relationship (Goodman et al., 2011; Gruhn et al., 2016). The results of this study will add to the previous findings and are in line with the recommendation about gender specific results. It might help with developing gender specific models, concerning the

relationship between parental depressive symptoms, parental monitoring, and delinquent outcomes.

**Research question and explanatory model**

Based on recent findings (Reising et al., 2012), it is hypothesized that parental depressive symptoms predict adolescents’ delinquent behavior. This relationship may be explained by reduced parental monitoring (Barnes et al., 2006; Cheng & Li, 2017; Steinberg, 2020) among parents who experience depressive symptoms (Gruhn et al., 2016; Jaser et al., 2010). It is also hypothesized that this relationship might be stronger for girls than boys (Kristjánsson & Sigfúsdóttir, 2009).

The central research question is as follows: *What is the relationship between parents’ depressive symptoms and adolescent delinquent behavior and is this relationship mediated by parental monitoring? Are there differences in this relationship when taking gender into consideration?* The hypothesized relationships are described above and can be found in the research model (see Figure 1). The relationship will be controlled for parent SES, ethnicity of the parent and gender of the parent.

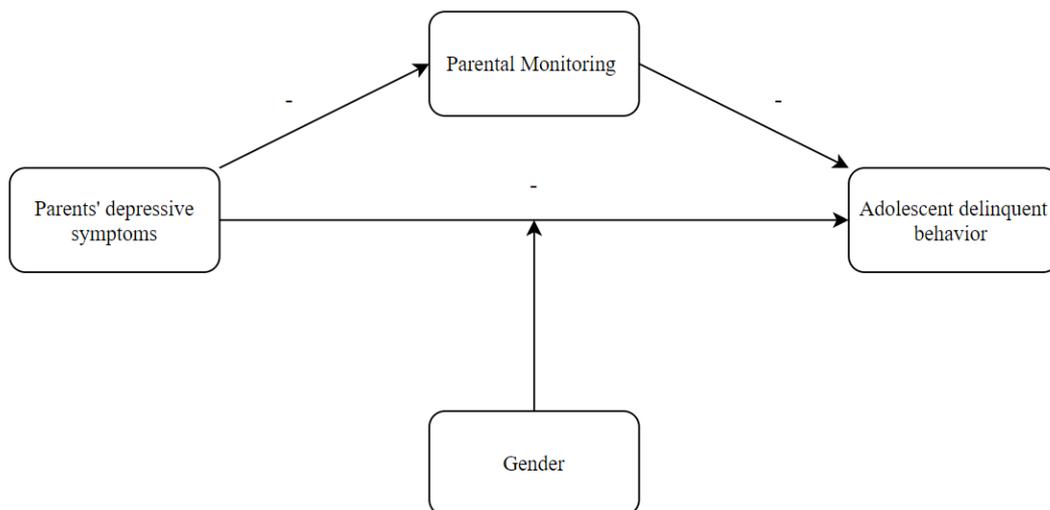


Figure 1. Explanatory model

**Method**

**Participants**

This study used data from the TRacking Adolescents' Individual Lives Survey (TRAILS), which is a longitudinal study. This study used data from 3 waves T1, T2 and T3, starting in 2001/2002. Participants consisted of Dutch male and female pre-adolescents and their parents (De Winter et al., 2005). The sample of this study consisted of 1528 participants. At T1 2230 participants (mean age = 11.1, 51% girls) enrolled in the study, at T2 in the sample consisted of 2149 participants (mean age = 13.6, 51% girls) and during the last assessment 1816 participants (mean age = 16.3, 51% girls) enrolled (Peeters et al., 2019). The adolescents that participated in the TRAILS study were and are still enrolled in the study until adulthood (Oldehinkel et al., 2015). The attrition analysis showed no significant differences ( $p > .05$ ) in drop-outs at T3 on adolescent delinquent behavior and parental depressive symptoms, compared with adolescents who remained in the study. However, there were significant differences in age, ethnicity, and SES. Drop-outs were slightly older ( $t(2227) = -3.48, p < .01$ ), drop-outs were more likely non-Western ( $t(2227) = 5.97, p < .01$ ), and drop-outs were more likely from a lower SES ( $t(2185) = 10.09, p < .01$ ).

### **Procedure**

The sample selection involved two stages. Firstly, five municipalities in the Netherlands provided information about the citizens that were born between 1989 and 1990. After this primary schools, including schools for special education received more information about the study. Of the 135 school that were approached, 13 refused to participate in the study (De Winter et al., 2005). Secondly, adolescents and parents received a letter with detailed information about TRAILS. After the participants were recruited, and detailed information had been provided, parents needed to provide with informed consent. When parents and adolescents agreed to participate, they completed the questionnaires under the guidance of a trained research assistant. The adolescents did this at school, and the parents at home (De Winter et al., 2005).

The TRAILS study was approved by the medical ethical committee (De Winter et al., 2005).

### **Materials**

#### ***Parents' depressive symptoms (T1)***

The independent variable parents' depressive symptoms was measured with the subscale "depression" of the Depression Anxiety Stress Scales (DASS), using 7 items (Lovibond & Lovibond, 1995). Participants needed to choose from a 4-point Likert Scale, which suited their situation best, with answers from never (0), sometimes (1), often (2) and most of the time (3). The questionnaire consists of statements such as: "I feel worthless". The

items were combined using the mean scores, where a higher score indicated more depressive symptoms. The internal consistency of this scale was good, with a Cronbach's alpha of .83.

### ***Parental monitoring (T3)***

Parental monitoring was measured at T3 with a questionnaire developed by TRAILS, including 15 items. The subscales were called: parental control, parental disclosure, and parental solicitation. Children filled out these questions referring to mother and fathers. The child needed to fill out how often they experienced what is described in the statements. All items were measured using a 4-point Likert Scale (0= never, 1= rarely, 2= sometimes, 3= often, 4= (almost) always). The questionnaire consisted of statements such as: "If you have been out late at night, does your mother / father want you to explain what you did and who you were with?". High scores reflected more parental monitoring. The internal consistency was good with a Cronbach's alpha of .81.

### ***Adolescent delinquent behavior (T1 and T3)***

The dependent variable adolescent delinquent behavior was measured at T1 and T3 with the Youth Self Report (YSR), using 15 items (Achenbach & Rescorla, 2001). This scale involved statements such as: "I steal". A 3-point Likert Scale is used to measure the items (0= never, 1= sometimes, 2= often). Higher scores reflected more delinquent behavior. The Cronbach's of this scale at T1 was .64. And the Cronbach's alpha of the scale at T3 was .76, which implies that the internal consistency was good.

### ***Control variables (T1)***

Analyses were controlled for family SES, which is composed of educational level from the parents, work of the parents and income of the parents, for ethnicity of the parents and for parental sex. Research implies fathers from some ethnicities minorities monitor their children less (Hofferth, 2003). The variable of ethnicity was recoded into Western and Non-Western background. A lower SES might have also been associated with less monitoring (Hofferth, 2003). Additionally, having a low SES increases the risk for adolescent delinquent behavior (Devenish et al., 2017).

### ***Analyzing strategy***

The data was analyzed using IBM SPSS Statistics 26. Before conducting the hierarchical regression analysis, the descriptive statistics and correlations between the variables were analyzed. Also an attrition analysis was conducted. Hereafter the assumptions for regression analyses were checked: linearity, no multicollinearity, the values of the residuals were independent, homoscedasticity, the values of the residuals were normally distributed and lastly there were no influential cases in the models. The assumption of

linearity was met for the dependent and independent variables. Secondly, there was no multicollinearity. The VIF scores were below 10, and the tolerance scores above 0.2. The values of the residuals were independent, as the obtained Durbin-Watson values were all close to 2. Next, the variance of residuals was constant. The scatterplots showed no signs of funneling. Fifth, not all residuals were normally distributed. The P-P plot showed violation for some residuals, but not for parental monitoring and adolescent delinquent behavior T3, and for parental depressive symptoms and parental monitoring.

To investigate the main effect of parental depressive symptoms on adolescent delinquent behavior and whether this relationship was mediated by parental monitoring a hierarchical regression analysis was conducted, using the Baron and Kenny Method (Baron & Kenny, 1986). Four regression analysis were conducted, the first examined the main effect of parents' depressive symptoms on adolescent delinquent behavior. The second examined the relationship of parents' depressive symptoms on the mediation variable, parental monitoring. The third, examined the effect of parental monitoring on adolescent delinquent behavior. And the last, examined the relationship of both parents' depressive symptoms and parental monitoring on adolescent delinquent behavior. The first step constantly analyzed the confounding effects, where in the second step the main effects were added.

To examine whether the relationship was stronger for girls than boys, another hierarchical regression analysis was conducted. The first step analyzed the confounding effects, then the main effects were added (parental depressive symptoms and gender), and as a last step the interaction variable between parental depressive symptoms and gender was added. Before the interaction variable was created, both parents' depressive symptoms and gender were centered.

## Results

### Descriptive statistics

In total 2040 parents participated in the study, of which 87.5% were female. In the total of 2229 adolescent participants, 50.7% were female. The majority of the participants, 89.4% had a Western background. In Table 1, the descriptive statistics are presented.

**Table 1**

*Descriptive statistics: from the independent and dependent variables (N = 1528).*

	<b>N</b>	<b>Min.</b>	<b>Max.</b>	<b>Mean</b>	<b>Std. Dev.</b>
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<b>Adolescent delinquent behavior T1</b>	2187	.00	1.27	.23	.17
<b>Socio-Economic Status Family T1</b>	2187	-1.94	1.73	-.05	.80
<b>Parental sex</b>	2040	1	2	1.96	.21
<b>Ethnicity</b>	2229	.00	1.00	.89	.31
<b>Gender</b>	2229	0	1	.49	.50
<b>Parental depressive symptoms T1</b>	2038	.00	2.43	.26	.34
<b>Parental monitoring T3</b>	1654	.03	3.90	2.18	.63
<b>Adolescent delinquent behavior T3</b>	1660	.00	1.40	.32	.24
<b>Valid N (Listwise)</b>	1518				

### Correlation statistics

A Pearson correlation was performed to check the relationship between parental depressive symptoms and adolescent delinquent behavior (Table 2). A positive significant relationship was found between parental depressive symptoms and adolescent delinquent behavior ( $r = .06, p < .05$ ), indicating that more parental depressive symptoms predicted more adolescent delinquent behavior. Gender ( $r = .14, p < .01$ ), was also positively significantly related to adolescent delinquent behavior. Indicating that boys were more delinquent. Parental monitoring ( $r = -.33, p < .01$ ), and socio-economic status family ( $r = -.07, p < .01$ ) were negatively significantly related to adolescent delinquent behavior. Indicating that less parental monitoring and having a lower SES resulted in more adolescent delinquent behavior at T3.

**Table 2**

*Correlation Matrix between all study variables*

		1	2	3	4	5	6	7	8
<b>1</b>	<b>Adolescent delinquent behavior T1</b>	-	-	-	-	-	-	-	-

PARENTAL DEPRESSIVE SYMPTOMS AND ADOLESCENT DELINQUENT BEHAVIOR

2	<b>Socio-Economic Status</b>	-.05*	-	-	-	-	-	-	-
3	<b>Parental sex</b>	.01	.04	-	-	-	-	-	-
4	<b>Ethnicity</b>	.02	.17**	.06**	-	-	-	-	-
5	<b>Gender</b>	.21**	-.03	-.04	.01	-	-	-	-
6	<b>Parental monitoring</b>	-.16**	.23**	.04	-.05*	-.26**	-	-	-
7	<b>Parental depressive symptoms T1</b>	.08**	-.12**	-.04*	-.13**	.01	-.08**	-	-
8	<b>Adolescent delinquent behavior T3</b>	.32**	-.07**	.03	-.01	.14**	-.33**	.06*	-

Note: \*\* =  $p < .01$ ; \* =  $p < .05$ .

### Analyses

#### *Relationship between parental depressive symptoms and adolescent delinquent behavior*

It was hypothesized that parental depressive symptoms were a risk for the development of adolescents' delinquent behavior. In a first step the main effect was tested using a hierarchical regression analysis. The effect of parental depressive symptoms on adolescent delinquent behavior was assessed while controlling for adolescent delinquent behavior T1, SES of the family, sex of the parent, and ethnicity (Table 3). The results showed no significant effect between parental depressive symptoms and adolescent delinquent behavior ( $B = .02, p = .24$ ). Only the control variables adolescent delinquent behavior T1 ( $B = .44, p < .01$ ) and SES family ( $B = -.02, p < .01$ ) were significantly related to adolescent delinquent behavior.

### Table 3

*Linear regression from parental depressive symptoms, on adolescent delinquent behavior T3 with control variables adolescent delinquent behavior T1, SES family, parental sex, and ethnicity*

	Model		
	<i>B</i>	<i>SE</i>	<i>t</i>
<b>Adolescent delinquent behavior T1</b>	.44**	.03	12.78
<b>Socio-Economic Status Family T1</b>	-.02**	.01	-2.46
<b>Parental sex</b>	.04	.03	1.35
<b>Ethnicity</b>	-.02	.02	-.83
<b>Parental depressive symptoms T1</b>	.02	.02	1.17
<b>R<sup>2</sup></b>	.11		
<b>N</b>	1528		

*Note: Dependent variable: adolescent delinquent behavior T3; \*\* =  $p < .01$ ; \* =  $p < .05$ .*

*Control variables were measured separately from the independent variable parental depressive symptoms.*

### ***Parental monitoring as a mediator***

It was hypothesized that parental depressive symptoms decreased parental monitoring, and that this decrease in parental monitoring may increase adolescent delinquent behavior. In a second step the mediating effect of parental monitoring was evaluated by using the Baron and Kenny Method (Baron & Kenny, 1986). A hierarchical linear regression analysis had been conducted to analyze the relationship between parental depressive symptoms and parental monitoring. The results showed that parental depressive symptoms had a negative small, though significant effect on parental monitoring, which was also expected ( $B = -.10$ ,  $p = .03$ ,  $SE = .05$ ). The variance explained by this model about 6% ( $R^2 = .06$ ,  $F = 24.66$ ,  $p < .01$ ).

For the second part of this hypothesis a hierarchical linear regression analysis was conducted to analyze the relationship between parental monitoring and adolescent delinquent behavior. The results showed that parental monitoring had a negative significant effect on adolescent delinquent behavior ( $B = -.12$ ,  $p < .01$ ,  $SE = .01$ ). This result indicated that more parental monitoring was associated with less delinquent behavior. The variance explained by this model was 19% ( $R^2 = .19$ ,  $F = 70.31$ ,  $p < .01$ ).

The last step tested whether the association of the main effect, the relationship between parental depressive symptoms and adolescent delinquent behavior, reduced after adding parental monitoring. Both parental depressive symptoms and parental monitoring were included as predictors of delinquent behavior. Only parental monitoring had a negative significant effect on adolescent delinquent behavior ( $B = -.12$ ,  $p < .01$ ,  $SE = .01$ ). The non-

significant main effect remained non-significant, and therefore there was no support for a mediation effect of parental monitoring. However, parental monitoring did predict fewer adolescent delinquent behavior. The effect size showed that about 19% of the variance was explained by this model ( $R^2 = .19, F = 58.67, p < .01$ ). Figure 2 also shows the results described above.

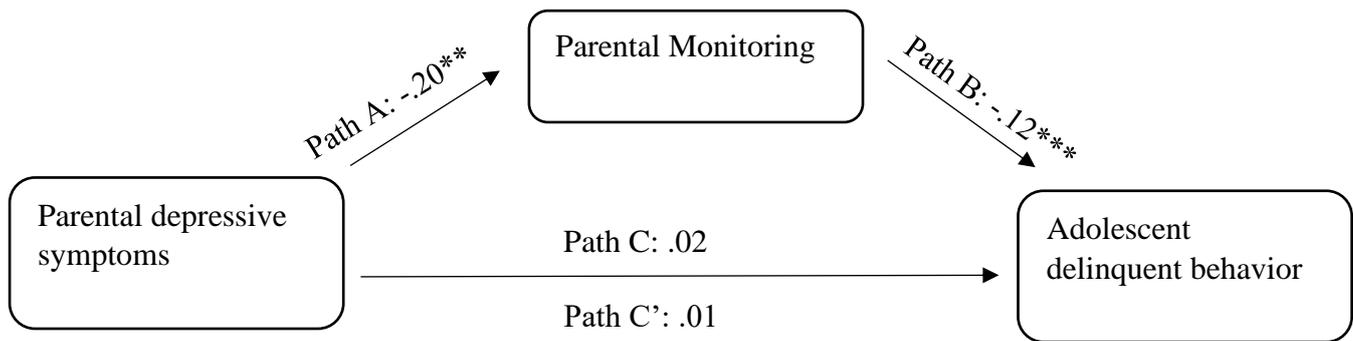


Figure 2. Mediation model with effects.

**Gender as a moderator**

It was hypothesized that sex was a moderator in the relationship between parental depressive symptoms and adolescent delinquent behavior, and that this relationship might be stronger for girls. To test this hypothesis a hierarchical linear regression analysis was conducted (Table 4). The results showed no moderation effect, as the interaction variable was not significantly related to adolescent delinquent behavior. The effect of parental depressive symptoms did not relate differently for boys and girls on adolescent delinquent behavior. Gender however, had a positive significant effect on adolescent delinquent behavior ( $B = .036, p < .01$ ), which indicated that boys were more delinquent.

**Table 4**

*Linear regression from parental depressive symptoms, sex, and interaction variable on adolescent delinquent behavior T3 with control variables adolescent delinquent behavior T1, SES family, parental sex, and ethnicity*

	Model		
	<i>B</i>	<i>SE</i>	<i>t</i>
<b>Adolescent delinquent behavior T1</b>	.42**	.04	11.89
<b>Socio-Economic Status Family T1</b>	-.02*	.01	-2.52

<b>Parental sex</b>	.04	.03	1.41
<b>Ethnicity</b>	-.02	.02	-.92
<b>Parental depressive symptoms</b>	.02	.02	1.13
<b>Gender</b>	.04**	.01	3.06
<b>ParentdepXGender</b>	-.02	.03	-.71
<b>R<sup>2</sup></b>	.11		
<b>N</b>	1528		

*Note: Dependent variable: adolescent Delinquent behavior T3; \*\* =  $p < .01$ ; \* =  $p < .05$ . All results were analyzed separately.*

### Discussion

The current study examined whether parental depressive symptoms predicted adolescents' delinquent behavior, and whether this relationship was mediated by parental monitoring. It was also investigated whether this relationship was different for boys and girls. The results from the analyses showed no main effect between parental depressive symptoms and adolescent delinquent behavior. Although parental monitoring did not function as a mediator, due to the absence of a main effect, further analyses revealed that a higher level of parental depressive symptoms resulted in less parental monitoring. In addition, less monitoring was related to more adolescent delinquent behavior. Although gender was not a moderator between parental depressive symptoms and adolescents' delinquent behavior, gender was significantly related to adolescent delinquent behavior, indicating more delinquent behavior among boys compared with girls.

Inconsistent with previous research (England & Sim, 2009; Jaser et al., 2010; Parent et al., 2010; Reising et al., 2012) parental depressive symptoms did not predict more adolescent delinquent behavior. This finding was not in line with the first hypothesis. A possible explanation for this outcome might be due to two confounding factors that were significantly related in the relationship between parental depressive symptoms and adolescent delinquent behavior. There was a strong significant relationship between previous and current delinquent behavior. The change in delinquent behavior was minimal and therefore, perhaps parental depressive symptoms did not predict change in adolescents' delinquent behavior. Additionally, parental depressive symptoms were associated with delinquent behavior, as was supported by the significant correlation between parental depressive symptoms and adolescents' delinquent behavior T3. The control variable socioeconomic status (SES) was negatively related to adolescent delinquent behavior, which indicated that having a higher

SES could protect against adolescent delinquent behavior. Perhaps another explanation for this contrast, might be that this study made use of a larger sample. Previous studies included around the 100-200 participants, while this study included 1528 participants. Controlling for parental SES could explain differences in findings. In this study, similar as to the study from Parent et al. (2010), SES was significantly related to adolescent delinquent behavior. Depressive symptoms could be stronger among lower SES, and as such this could explain some of the variance in delinquent behavior. This assumption was supported by a negative correlation between SES and parental depressive symptoms, with more depressive symptoms among the lower SES. However, when controlling for parental SES, Parent et al. (2010) still found a significant relationship between parental depressive symptoms and delinquent outcomes. Therefore, future research could further investigate the relationship between parental depressive symptoms, SES, and adolescent delinquent behavior.

Due to the insignificant main effect between parental depressive symptoms and adolescent delinquent behavior it was not possible to explore the mediating role of parental monitoring. Earlier research suggested that parental depressive symptoms can result in withdrawn parenting (Gruhn et al., 2016; Jaser et al., 2010), and that withdrawn parenting and a lack of parental monitoring increase the possibility of adolescent delinquent behavior (Barnes et L., 2006; Cheng & Li, 2017; Harris-McKoy & Cui, 2012; Reising et al., 2012; Steinberg, 2020). In line with previous studies, this study found that parental depressive symptoms were negatively related to parental monitoring, and parental monitoring was negatively related to adolescent delinquent behavior. Though no mediation was found due to the absence of a significant relationship between parental depressive symptoms and adolescent delinquent behavior, it is noteworthy that the results indicated independent relationships between parental depressive symptoms, parental monitoring, and adolescent delinquent behavior. Which supported that they are related to one another.

The findings that parental depressive symptoms, parental monitoring, and adolescent delinquent behavior were related was supported by findings of Reising et al. (2012), who found that the relationship between parental depressive symptoms and adolescent delinquent behavior might account on disruptive parenting behavior, such as withdrawn parenting. The current results indicated that when parents reported more depressive symptoms, this led to less parental monitoring. In turn experiencing less parental monitoring increased the risk for adolescent delinquent behavior. It therefore seems valuable to do follow-up research on the role of parental monitoring in the relationship between parental depressive symptoms and adolescent delinquent behavior.

Lastly, gender did not function as a moderator between parental depressive symptoms and adolescent delinquent behavior, the effects were not stronger for girls. This could be explained by the fact that there was no relationship between parental depressive symptoms and delinquent behavior in the first place. Previous results were inconsistent about whether the influence of parental depressive symptoms on adolescent delinquent behavior were different for boys and girls (Goodman et al., 2011; Gruhn et al., 2016). One study found that there were no gender differences in the impact of parental depressive symptoms on adolescent delinquent behavior (Goodman et al., 2011). Whereas other findings indicated that girls were at greater risk of developing delinquent behavior when parents experienced depressive symptoms (Gruhn et al., 2016), due to sensitivity to stressors related to parental depressive symptoms (Hankin et al., 2007). Additionally, girls seemed to be more susceptible to parental monitoring than boys (Jacobson & Crockett, 2000; Kristjánsson & Sigfúsdóttir, 2009). There was a negative significant correlation between parental monitoring and gender, which indicated that more monitoring was connected to being a girl. This could explain why boys reported more delinquent behavior, compared with girls, because monitoring decreased the opportunities for delinquent behavior (Steinberg, 2020). The results showed that boys reported more delinquent behavior in general, and a higher increase in delinquent behavior compared with girls, was however in line with earlier research (Canter, 1982; Kim & Kim, 2005; Moffitt & Caspi, 2001). Other studies could further investigate the relationship between parental monitoring and gender, in relationship to adolescent delinquent behavior.

### **Strengths and limitations**

A strength of this study was the large representative sample, which facilitated the generalizability of the results and facilitated to find results. Another strength was that this study was longitudinal, and due to the longitudinal data, the direction of the effects could be found. The study needs to be seen in light of the limitations as well. First, self-reports were used, which could lead to biases. However, previous findings indicated that the use of diaries, e.g., self-reports, are a reliable method to assess delinquent behavior among adolescents (Koning et al., 2010). Another limitation is the drop-out over the years. Although, the attrition analysis showed no significant differences in drop-outs at T3 on adolescent delinquent behavior, there were however significant differences in drop-outs at T3 on age, and SES, and ethnicity, which indicated that drop-outs were older, more likely non-western, and had a lower SES background. This could have led to biases. It could be possible that adolescents who dropped-out of the study would report more delinquent behavior, which might have

resulted in a significant main effect between parental depressive symptoms and adolescent delinquent behavior.

### **Conclusion and implications**

In conclusion, this current study provided more insight in the relationship between parental depressive symptoms, and adolescent delinquent behavior, and evaluated the impact of parental monitoring and gender within this relationship. The results showed no relationship between parental depressive symptoms and adolescent delinquent behavior. However, results indicated that parental depressive symptoms negatively impacted parental monitoring. Additionally, parental monitoring was negatively related to adolescent delinquent behavior, thus less parental monitoring could result in more adolescent delinquent behavior.

Interventions could focus on the role of parental depressive symptoms and parental monitoring in developing their approaches aimed at decreasing adolescent delinquent behavior. Because of the negative outcomes of adolescent delinquent behavior such as unemployment, negative physical health problems, mental health problems (depression), financial problems and the decrease in likelihood to graduate high school or college (Carter, 2018; Kim et al., 2020; Moffitt et al., 2002; Ward & Williams, 2015). The findings implicated that these interventions should focus more on the role of parental monitoring and take depressive symptoms among parents into account. Moreover, this knowledge can be used to develop further intervention strategies. Especially the relationship between parental depressive symptoms and adolescent delinquent behavior needs further examination, as there were possible confounding factors that played an important role in this relationship, such as family SES. Additionally, the findings of this study revealed that family SES had a consistent relationship with adolescent delinquent behavior. Future research could unravel the influence of SES of adolescent delinquent behavior in more detail to increase understanding of the origin of, as well as of a way to reduce adolescent delinquent behavior.

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