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Maternal support and deviance among rural adolescents: The mediating role of self-esteem

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ABSTRACT

Introduction: Supportive mothering buffers against adolescent deviance, but the precise mechanisms underlying this relationship are poorly understood. The current investigation tested the extent to which self-esteem mediated the maternal support-deviance link and whether it varied by adolescent age and sex.

Methods: Data were collected from 911 middle and high school students in the rural South (53.6% female, *Mage* = 14.70 years). Main model tests were completed in SEM.

Results: Results indicated that maternal support and self-esteem were positively associated and negatively to deviance, and that self-esteem mediated the support-deviance link. These associations did not differ by adolescent age. However, moderating effects by sex were significant, where maternal support had a greater effect on girls' self-esteem, while self-esteem had a greater effect on boys' deviance.

Conclusions: Findings provide some evidence of how maternal support is associated with a positive self-concept that in turn decreases the likelihood of engaging in deviant behaviors.

Juvenile courts in the United States handled an estimated 1,058,500 juvenile delinquency cases in 2013, which has more than doubled since 1960 (Hockenberry & Puzzanchera, 2015). Although the total number of juvenile delinquency cases has declined since 1985, delinquency caseloads involving drug offenses increased 83%, person offenses increased 51%, and public order crimes increased 40% (Hockenberry & Puzzanchera, 2015). Considering that official statistics do not include unreported delinquency, we can reasonably assume that the actual numbers are larger, indicating great challenges for improving adolescent development; thus, we need confront and understand which factors are associated with adolescent deviance.

Among all factors, parenting accounts for the most variance in adolescent problem behaviors as compared to other explanatory variables (Hoskins, 2014). Meta-analytic and review studies have found significant links between parenting and adolescent deviance (Hoeve et al., 2009; Hoskins, 2014); more specifically, maternal parenting has been shown to have a greater influence on adolescent deviance than paternal parenting (Arbona & Power, 2003; Craig, 2016; Waizenhofer, Buchanan, & Jackson-Newsom, 2004). However, some aspects of the mothering-adolescent deviance link still require further study. For instance, does this link vary for boys versus girls (Hoeve et al., 2009), or does it change developmentally, across early versus middle adolescence? In addition, explanatory mechanisms underlying the link are rarely explored. Understanding the precise mechanisms underlying the mothering-deviance link will extend our knowledge on the specific underlying processes and will inform both clinical and prevention efforts.

To fill in the above gaps in the literature, the following research goals were developed in the present study: to test how maternal parenting, specifically maternal support, was associated with adolescent deviance; to examine one possible underlying explanatory mechanism or factor, namely self-esteem; and to test whether those links varied developmentally as well as by sex. In addition, the

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present study sought to examine these issues in a sample of youth from a rural developmental context. Although some risk factors are consistent for youth across rural or urban contexts, youth from rural areas have been found to be more likely to enter the juvenile justice system; this calls for greater attention on rural youth (Blackmon, Robison, & Rhodes, 2016).

1. Maternal support and adolescent deviance

1.1. Parental support

Supportive parenting has positive effects on adolescent development and adjustment; specifically, it can promote better school performance and social skills among adolescents and prevent depression and delinquency (Juang & Silbereisen, 1999; Wright & Cullen, 2001). Not only can supportive parenting limit adolescents' initial involvement in deviance, but it can also reduce subsequent deviant behaviors (Wright & Cullen, 2001). On the one hand, positive parental support promotes better adjustment outcomes for adolescents, while a lack of parental support predicts a variety of adolescent problem behaviors, including alcohol use, substance use, delinquency, and externalizing behaviors (e.g., Barnes & Farrell, 1992; Pereyra & Bean, 2017; White & Renk, 2012). Based on the results of a meta-analysis on the parenting-deviance link, negative aspects of parental support, such as neglect or rejection, had the strongest effects among all parenting behaviors on youth and measures of adjustment (Hoeve et al., 2009). Therefore, parental support may be one of the most important targets for interventions on preventing or reducing adolescent deviance.

1.2. Maternal support

Interestingly, although previous studies that focused on general parental support largely showed a significant relationship between parental support and adolescent delinquency (e.g., Juang & Silbereisen, 1999; White & Renk, 2012; Wright & Cullen, 2001), results for the specific maternal support-deviance link are mixed. For example, some studies found that maternal support predicted better adjustment among adolescents and was negatively related to adolescent delinquency (e.g., Barnes & Farrell, 1992; Caldwell, Silverman, Lefforge, & Silver, 2004; Deutsch, Crockett, Wolff, & Russell, 2012), while others failed to do so (e.g., Bean, Barber, & Crane, 2006; Kim & Goto, 2000). As parental support is such an important factor for adolescent deviance and maternal support may account for the majority of parental support (Caldwell et al., 2004), it seems important to further examine the influence of maternal support on deviance. By testing the maternal support-deviance link among rural youth, the present study sought to add to existing literature on understanding the association between maternal support and adolescent deviance. It was hypothesized that maternal support would be negatively associated with adolescent deviance as the majority of previous studies have found.

2. Self-esteem and adolescent deviance

Self-esteem is another factor that has been found to be related to adolescent deviance (e.g., Caldwell, Beutler, Ross, & Silver, 2006; Kort-Butler, 2010; Lee & Lee, 2012; Mason, 2001; Tzeng & Yi, 2013). The growth of self-esteem has been found to be either negatively or positively associated with deviant behaviors, possibly due to cultural differences (Lee & Lee, 2012; Mason, 2001), though this was not a focus of the current study.

The present study sought to test whether self-esteem predicted deviance. Even though Tzeng and Yi (2013) found that the relationship between self-esteem and adolescent deviance was non-linear and that high self-esteem may not be protective against adolescent deviance, self-esteem has been found to be a protective factor of deviance in a number of studies (e.g., Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005; Mason, 2001; Shek, 2005). Cross-sectionally, low levels of self-esteem are associated with higher levels of aggression, antisocial behavior, and delinquency in adolescents (Donnellan et al., 2005); longitudinally, the influence of self-esteem during childhood may influence an individual's subsequent development throughout adolescence and even into adulthood (Oshri, Carlson, Kwon, Zeichner, & Wickrama, 2017). In addition, delinquent and non-delinquent youth were found to have different levels of self-esteem, where non-delinquent youth had higher levels of self-esteem (Nair, 2000), indicating the importance of considering self-esteem in the explanation of deviance. Therefore, it was hypothesized that self-esteem would be negatively associated with deviant behaviors.

3. Supportive parenting and adolescent self-esteem

On the one hand, self-esteem is associated with deviance; on the other hand, parenting is closely associated with self-esteem and well-being. Adolescents with warm and supportive parents usually have higher levels of self-esteem (e.g., Boer & Tranent, 2013; Martínez & García, 2007; Yan, Zhang, & Cui, 2016). Even in the face of life difficulties, such as financial disadvantages, good parenting might still be able to promote positive psychological adjustment in adolescents (Shek, 2002).

3.1. Maternal support and adolescent self-esteem

Support, particularly maternal support, is an important component of positive parenting (Caldwell et al., 2004). However, findings of studies concerning the association between maternal support and adolescent self-esteem are mixed. Caldwell et al. (2004) found no relation between familial emotional support (mostly maternal emotional support) and adolescent self-esteem. Other studies found that maternal support promotes better self-esteem in adolescents (e.g., Bean, Bush, McKenry, & Wilson, 2003; Boer & Tranent,

2013). In one study, maternal support was found to be the most important social support for adolescents and have a stronger effect than paternal support on adolescent self-esteem (Hoffman, Ushpiz, & Levy-Shiff, 1988). The current study aimed to find out whether maternal support was related to self-esteem among rural youth. It was hypothesized that maternal support had a positive relation with adolescent self-esteem.

3.2. Mediation through self-esteem

While the influence of parenting on adolescent deviance may seem obvious, it may not be direct (Crosswhite & Kerpelman, 2009), which makes it necessary to look at the precise mechanisms underlying the parenting-deviance link to understand how that link works. Self-esteem has been suggested as a mediator between parenting and adolescent deviance in a number of studies (Caldwell et al., 2006; De Vries, Hoeve, Stams, & Asscher, 2015; Hunter, Barber, & Stolz, 2015; Wang et al., 2016). On the one hand, parents influence how adolescents view themselves through certain behaviors, such as support, or rejection; on the other hand, adolescents' attitudes toward themselves influence how they view and interact with the outer world, which lead to certain outcomes, such as depression or problem behaviors (Wang et al., 2016).

Studies examining the mediating role of self-esteem in the parenting-deviance link have provided mixed results. De Vries et al. (2015) tested the mediating role of individual factors including self-esteem in the relation between adolescent-parent attachment and externalizing behaviors but did not find any indirect effects by self-esteem. After testing the relationships between parental monitoring, self-esteem, and delinquency among Mexican American male youth, Caldwell et al. (2006) concluded that parental monitoring was indirectly related to adolescent delinquency, but findings did not support self-esteem as a mediator. Based on a sample of Chinese adolescents, Wang et al. (2016) found support for indirect effects of self-esteem on the parenting-depression link, but not for the parenting-problem behavior link. But other studies have shown different results. Hunter et al. (2015), for instance, examined the mediating effects of self-esteem on the relationship between parental behavior and adolescent behavior and found that self-esteem was a mediator in the parental psychological control-adolescent antisocial behavior link. Parker and Benson (2004) found that the relation between parental support and risk behaviors was not as strong as that between parental support and self-esteem. If the effects of parental support on adolescent risk behaviors were mediated by self-esteem, it would be expected that the relation between parental support and adolescent behavior was weak. The mediating role of self-esteem needs to be further investigated. No previous work has tested self-esteem as a potential mediator between maternal support and adolescent deviance.

3.3. Moderation by sex

Sex differences in adolescent self-esteem (e.g., Bachman, O'Malley, Freedman-Doan, Trzesniewski, & Donnellan, 2011; Bleidorn et al., 2015; Diseth, Meland, & Bredablik, 2014) and deviance (e.g., Church et al., 2012; Fair Worthen, 2012; Koon-Magnin, Bowers, Langhinrichsen-Rohling, & Arata, 2016) are well known. However, much less is known about sex differences in how parents influence adolescents' self-esteem and deviance.

As shown in the meta-analysis by Hoeve et al. (2009), sex of both adolescents and parents could act as a moderator in the parenting-deviance link, although relevant studies are scarce. The current study sought to examine whether maternal parenting influenced male versus female adolescents differently. Results of relevant studies are mixed. While Hoeve et al. (2009) did not find significant sex differences in the parenting-delinquency link, Church et al. (2012) found a stronger influence of maternal warmth on deviance in adolescent boys than adolescent girls. Two other results in Church et al.'s (2012) study are worth mentioning: The influence of self-worth on deviance was stronger for boys than girls, and maternal warmth had a stronger influence on self-esteem of girls than that of boys. Some studies have found that the same-sex parent may have a greater influence on adolescents, such that mothers might exert a greater influence on daughters' mental health and problem behaviors (Hoeve et al., 2009; Nielsen & Metha, 1994; Shek, 2005). But Mayhew and Lempers (1998) found that a lack of maternal support was significantly related to adolescent boys' low self-esteem, but not girls' in the context of financial strain. Because of inconclusive findings, the current study did not specify directions of effect by sex, but rather tested moderation in an exploratory manner.

3.4. Influence of age

As adolescents mature, their levels of both self-esteem and deviance change. Previous studies have found that adolescent self-esteem increased over time, and parental emotional support as well as positive parent-child relationships further reinforced this increase (Boudreault-Bouchard et al., 2013; Pan, 2015). In addition, adolescent rates of norm-violations and deviance increase, until they peak around the age of 17 (Hirschi & Gottfredson, 1983). While adolescent self-esteem and deviance continue to change, less is known about the functions of parenting and self-esteem vis-à-vis these outcomes over time. Longitudinal research on the association between self-esteem and adolescent deviance is rare, but self-esteem has been shown to have a consistent influence on an individual's behavior throughout adolescence, even into adulthood (Oshri et al., 2017). The influence of parenting on adolescent problem behaviors and deviance might also decrease over time (e.g., Bradley & Corwyn, 2013), but positive parenting should remain a consistent protective factor for both initial levels of deviance as well as subsequent developmental changes (Cho, Kim, & Moon, 2016; Yun, 2016). Given that adolescent self-esteem and deviance continue to change throughout adolescence, while functions of parenting and self-esteem for adolescent deviance appear to remain largely stable, the specific patterns of how parenting and self-esteem influence deviance among adolescents across different developmental periods remain unknown. Therefore, one of the aims of the current study was to evaluate whether the associations among parenting, self-esteem, and deviance were conditioned by age to further test for

potential developmental changes in these links.

3.5. The present study

Based on findings in previous research, the present study aimed to test the following research questions:

1. How is maternal support related to adolescent self-esteem and deviance?
2. How is self-esteem related to adolescent deviance?
3. What is the role of self-esteem in the relationship between maternal support and adolescent deviance?
4. Do the links among maternal support, self-esteem, and deviance change developmentally, across early versus middle adolescence?
5. Does sex condition the links among maternal support, self-esteem, and deviance?

And we developed the following study hypotheses:

1. Maternal support would be positively related to adolescent self-esteem and negatively to adolescent deviance.
2. Self-esteem would be negatively associated with adolescent deviance.
3. Self-esteem would mediate the relationship between maternal support and adolescent deviance.

Because moderation effects by developmental period and by sex among maternal support, self-esteem, and adolescent deviance were exploratory in nature, no directional hypotheses were developed.

4. Method

4.1. Participants

A sample of 911 youths between 10 and 17 years of age ($M = 14.70$ years, $SD = 1.76$) was recruited from two middle schools and two high schools in a rural county in the US South (Vazsonyi, Jiskrova, Kelley, & Ksinan 2016). The voluntary and anonymous study was approved by a University Institutional Review Board. Female students accounted for 53.6% of the sample. With regard to ethnic and racial composition, the sample contained 77.3% European American, 9.2% African American, 2.4% Native American, 8.0% Latino youth, and 3.1% youth who belong to other ethnic groups. The rural county where the sample was selected had a low population density (69.0 persons per square mile), and households in that area had relatively low median household incomes (\$40,933 versus \$53,046 at the national median level); a smaller proportion of its population were found to be college graduates (15.8%) compared to national figures (22.8%); and 17.2% of the county population lived below the poverty line (U.S. Census Bureau, 2015). Data in the present study were collected using both paper and pencil and online surveys, with the online method used only with one of the middle schools. To test whether there were any differences between the two administration methods, an analysis of covariance (ANCOVA) was completed with the three main focal variables (maternal support, self-esteem, and deviance) as the dependent measures, the method of data collection as the independent variable, and age as the covariate. Results provided evidence that there were no differences for maternal support: $F(1, 873) = 0.083, p = .774$, and self-esteem: $F(1, 867) = 0.952, p = .329$, across the two administration methods, controlling for age. However, a difference was found for deviance: $F(1, 886) = 6.917, p = .009$, across the two administration methods after controlling for age. Thus, to address this analytically, administration method was added as a control variable for all analyses. However, it did not emerge as a significant predictor of deviance in any of the structural models tested. Consent was obtained from both the students and their parents before the students filled out the surveys.

4.2. Measures

4.2.1. Demographics

Participants were asked to indicate their sex (coded *male* [0] or *female* [1]). Age was recorded as birth month and year. Seven options were provided for reporting family structure, which was then recoded into a dichotomous variable indicating whether they lived in a two-parent (biological parents or other types of parents) household (1) or other types of household (0). Socioeconomic status (SES) was calculated by averaging a standardized form of parental education as well as self-reported family income. Parental education was computed by taking the mean of maternal and paternal education. Family income was an ordered categorical variable with the following response options: (1) \$20 000 or less, (2) \$20 000 to \$35 000, (3) \$35 000 to \$60 000, (4) \$60 000 to \$100 000, and (5) \$100 000 or more.

4.2.2. Type of school

This variable refers to the school type the data was collected. It was dummy-coded so that *middle school* = 0 and *high school* = 1. There were 319 students from middle school (35.0%) and 592 high school students (65.0%).

4.2.3. Survey administration

Coded as *paper-pencil* = 0 (77.5% of the sample) and *online survey* = 1 (22.5% of the sample).

4.2.4. Maternal support

The 4-item maternal support subscale of the maternal version of Adolescent Family Process Measure (Vazsonyi, Hibbert, & Snider, 2003) was used to assess perceived support from their residential mother, stepmother, or female caretaker. The 4 items asked youth to rate agreement with statements, such as “My mother sometimes puts me down in front of other people”, with 5-point Likert-type response options ranging from *strongly disagree* (1) to *strongly agree* (5). Response scores were recoded and averaged across the 4 items, where higher scores indicated higher levels of perceived maternal support. The scale was internally consistent ($\alpha = 0.80$).

4.2.5. Low self-esteem

The 3-item low self-esteem subscale of the Weinberger Adjustment Inventory–Short Form (Weinberger, 1990) was used. Participants rated their agreement with 3 statements, such as whether they liked themselves, on a 5-point Likert-type scale ranging from *false* (1) to *true* (5). Responses were reverse scored and averaged across the 3 items so that a higher score indicated a higher level of self-esteem. The scale was internally consistent ($\alpha = 0.90$).

4.2.6. Deviance

A 10-item short form of the Normative Deviance Scale (Vazsonyi, Pickering, Junger, & Hessing, 2001), NDS-SF10 was used to assess adolescent deviant behaviors. It included at least one item from each of the seven subscales of the original scale. Participants were asked whether they engaged in deviant behaviors, including alcohol/drug use, vandalism, theft, or assault. In the current study, one item had to be dropped due to an administration error across the two modes of administration. The items were rated on a 5-point Likert-type scale ranging from *no/never* (1) to *6 or more times* (5). Response scores were averaged across the 9 items, for a total possible range 9–45; higher scores indicated greater deviance. The scale was internally consistent ($\alpha = 0.85$).

4.3. Plan of analysis

First, to test the validity of the scales, confirmatory factor analyses (CFAs) were completed on both the maternal support subscale as well as the deviance short-form, the latter of which has not been tested in a CFA and was developed based on face validity considerations; self-esteem was not tested as it was based on 3 items. Then, descriptive statistics concerning participants' sex, age, family structure, SES, type of school, administration type, self-esteem, maternal support, and deviance and correlations among these variables were computed. Further, item-level measurement models were also used in the full structural equation model, where maternal support predicted self-esteem and deviance and self-esteem predicted deviance, thus positing self-esteem as a mediator between maternal support and deviance. Fig. 1 shows the model.

Next, to test for potential developmental differences, the paths of interest (i.e., self-esteem predicted by maternal support, deviance predicted by self-esteem) were tested for variability based on age by introducing a latent interaction term (using XWITH command) of age*support and age*self-esteem and having age*support regressed on self-esteem and both age*support and age*self-esteem regressed on deviance. To assess potential sex differences, the model was estimated for boys and girls separately in a multigroup model.

To estimate the indirect effect of support on deviance through self-esteem, a bootstrapping method with 5000 resamples was used. All models controlled for participants' age, family structure, type of school, administration method, and SES. The main model controlled for sex as well. Lastly, to assess whether the hypothesized indirect relationship between maternal support, self-esteem, and deviance differed between boys and girls, the focal relationships (maternal support → self-esteem = *a* path; self-esteem → deviance = *b* path) were constrained to equality across the groups and the Satorra-Bentler corrected chi-square difference tests were completed by comparing the constrained model to the unconstrained model. The descriptive statistics and correlations were computed in IBM SPSS v23, while the remaining analyses were conducted in *Mplus* 8.0, using full information maximum likelihood (FIML) to estimate missing data with robust standard errors (MLR; Muthén & Muthén, 1998–2017).

5. Results

Findings from confirmatory factor analyses showed that both the scales were valid and consistent, based on model fit - maternal

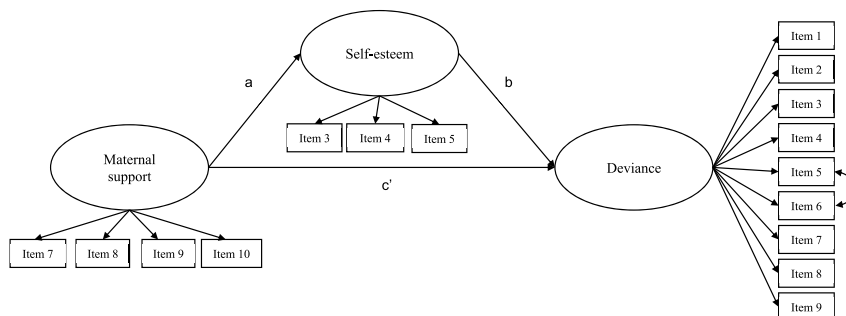


Fig. 1. The hypothesized full structural model (age, SES, family structure, sex, administration type, and school type not shown).

Table 1
Descriptive Statistics on Respondent Demographics.

	<i>n</i>	<i>M</i>	<i>SD</i>	Percentage
Sex				
Female	488			53.60
Male	422			46.40
Age	911	14.70	1.76	
Ethnicity				
White	699			77.30
Black	83			9.20
Latino	72			8.00
Native American	22			2.40
Other	28			3.10
Family Structure				
Two Parents	614			68.10
Other	287			31.90
Type of school				
Middle school	319			35.00
High school	592			65.00
Survey administration				
Paper-pencil	699			76.70
online	212			23.30
SES	887	0.00	0.86	
Family Income				
\$20K or less	167			20.80
\$20K–\$35K	163			20.30
\$35K–\$60K	223			27.70
\$60K–\$100K	157			19.50
\$100K or more	94			11.70
Mother Education				
College & Above	325			36.50
Below College	566			63.50
Father Education				
College & Above	204			23.00
Below College	682			77.00

Note. *M* = mean; *SD* = standard deviation. SES was used as a standardized variable. *N* = 911.

support: $\chi^2(2) = 7.833, p = .019, CFI = 0.992, RMSEA = 0.058, 90\% RMSEA CI [0.020, 0.103], RMSEA p\ close = .311$; deviance: $\chi^2(26) = 78.561, p < .001, CFI = 0.942, RMSEA = 0.048, 90\% RMSEA CI [0.036, 0.060], RMSEA p\ close = .602$. One item-level covariation was added to the deviance CFA model, covarying items 5 (“Have you ever been drunk/high at a concert?”) and item 6 (“Have you ever gone drunk/high to school?”) as they both pertained to being drunk/high in social environments. Then, these latent factors were used in the full structural equations model.

Descriptive statistics concerning the proportion of female and male adolescents, their family structure, age, SES, proportion of adolescents by school type, and administration methods were computed along with descriptive statistics and reliability estimated of the main study constructs (low self-esteem, maternal support, and deviance). Sample's basic demographics are provided in Table 1. We also examined bivariate correlations between the study variables in the sample, shown in Table 2. Consistent with study hypotheses, maternal support was positively related to level of self-esteem, $r = 0.32, p < .01$, and negatively related to deviance ($r = -0.20, p < .01$). Moreover, self-esteem was negatively related to deviance, $r = -0.22, p < .01$. Girls reported lower maternal support,

Table 2
Descriptive Statistics of and Correlations among the Study Variables.

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. Age	14.70	1.76	–								
2. Sex ¹			.04	–							
3. Family Structure ²			-.06	-.09**	–						
4. SES	0.00	0.86	.06	-.05	.30**	–					
5. School type ³			.79**	.05	-.01	.09*	–				
6. Administration type ⁴			-.69**	-.04	.05	-.03	-.75**	–			
7. Maternal Support	3.58	1.06	-.13**	-.07*	.12**	.03	-.12**	.10**	–		
8. Self-Esteem	3.77	1.36	-.10**	-.25**	.18**	.14**	-.11**	.11**	.32**	–	
9. Deviance	1.36	0.60	.20**	-.10**	-.11**	-.08*	.17**	-.16**	-.30**	-.22**	–
Cronbach's alpha								.80	.90	.85	

Note. * $p < .05$. ** $p < .01$. ¹male = 0, female = 1; ²two-parent family = 1, other family type = 0. ³middle school = 0, high school = 1. ⁴paper-pencil = 0, online = 1.

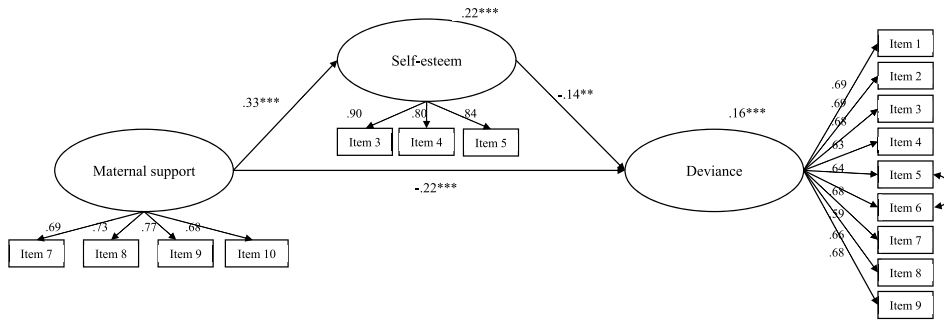


Fig. 2. The full structural model with standardized estimates. Model fit: $\chi^2(178) = 442.383, p < .001, CFI = 0.938, RMSEA = 0.040, 90\% RMSEA CI [0.036, 0.045], RMSEA p\ close = 1.00$. Note. Age, SES, sex, school type, administration type, and family structure were covaried with maternal support and regressed on self-esteem and deviance (not shown). * $p < .05, ** p < .01, *** p < .001$. All item loadings significant at $p < .001$.

$r = -0.07, p < .05$. Girls also reported lower self-esteem, $r = -0.25, p < .01$. Boys reported higher levels of deviance, $r = 0.10, p < .01$.

In the next step, a full structural model was estimated. The results from these analyses are presented in Fig. 2. The model fit was adequate, $\chi^2(178) = 442.383, p < .001, CFI = 0.938, RMSEA = 0.040, 90\% RMSEA CI [0.036, 0.045], RMSEA p\ close = 1.00$. The results indicated that maternal support was positively predictive of self-esteem, $\beta = 0.33, p < .001$. Similarly, higher levels of self-esteem predicted lower levels of deviance, $\beta = -0.22, p < .001$. Maternal support was a direct predictor of deviance $\beta = -0.14, p = .001$. As expected based on bivariate correlation analyses, girls showed lower levels of self-esteem ($\beta = -0.22, p < .001$) as well as lower levels of deviance, $\beta = -0.19, p < .001$. Age was significantly related to higher levels of deviance, $\beta = 0.14, p = .026$, and lower levels of support, $r = -0.14, p < .001$. No effect of administration method was found on levels of deviance, $\beta = -0.02, p = .562$. The results from bootstrapping analyses showed support for a significant indirect effect of maternal support on deviance through self-esteem, $\beta = -0.07, 95\% BcCI [-0.11, -0.05]$.

Following, we tested whether the associations of interest in our study significantly differed developmentally by adding the latent interaction terms of age*support and age*self-esteem and regressing the first term on self-esteem and both the first and the second term on deviance. The results did not show a significant variation by age for the association of maternal support and self-esteem, $B = 0.001, p = .963$. Similarly, the association of self-esteem and deviance did not vary as a function of age, $B = -0.006, p = .364$, suggesting that the associations of interest in the current study were not developmentally different.

Given that the mediation model was not conditioned based on age, we moved to testing differences by sex in a multigroup test (Fig. 3). Model fit was adequate, $\chi^2(330) = 612.143, p < .001, CFI = 0.931, RMSEA = 0.043, 90\% RMSEA CI [0.037, 0.048], RMSEA p\ close = .988$. The results showed that maternal support significantly and positively predicted self-esteem for boys, $\beta = 0.26, p < .001$, and girls, $\beta = 0.41, p < .001$. Furthermore, the direct effect of self-esteem on deviance was significant both for boys, $\beta = -0.32, p < .001$, and girls, $\beta = -0.13, p = .010$. The direct effect of support on deviance (c') was significant for boys, $\beta = -0.12, p = .041$ as well as for girls, $\beta = -0.16, p = .007$. The results from bootstrapping confirmed that there was a significantly negative indirect effect of maternal support on deviance via self-esteem for boys, $\beta = -0.08, 95\% BcCI [-0.15, -0.04]$ as well as for girls, $\beta = -0.06, 95\% BcCI [-0.11, -0.02]$. The indirect effect was not significantly different by sex, $difference = -0.026, 95\% BcCI [-0.078, 0.011]$. However, the indirect effect as a product of $a*b$ path in fact masks the differences that might exist for both paths separately. For girls, the association between maternal support and self-esteem ($\beta = 0.41$) was significantly stronger than for

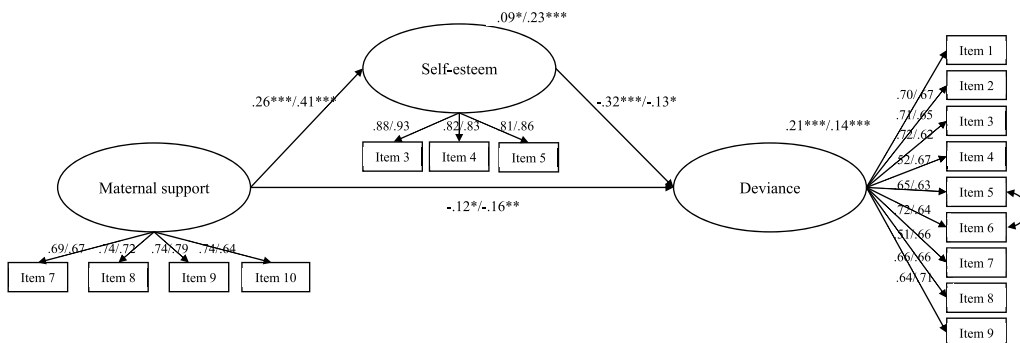


Fig. 3. The full structural model with standardized estimates for boys/girls reported separately. Model fit: $\chi^2(330) = 609.042, p < .001, CFI = 0.933, RMSEA = 0.043, 90\% RMSEA CI [0.038, 0.048], RMSEA p\ close = .986$. Note. Age, SES, school type, administration type, and family structure were covaried with maternal support and regressed on self-esteem and deviance (not shown). * $p < .05, ** p < .01, *** p < .001$. All item loadings significant at $p < .001$.

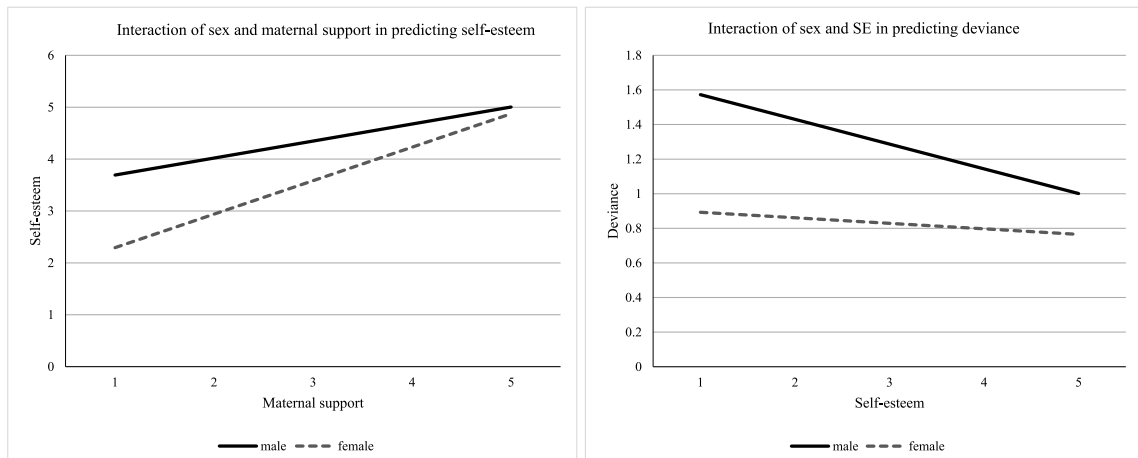


Fig. 4. The moderating effect of sex on the association between maternal support and self-esteem and self-esteem and deviance.

boys ($\beta = 0.26$), $S\text{-}B \Delta\chi^2(1) = 5.520$, $p = .019$. On the other hand, the association between self-esteem and deviance was significantly stronger for boys ($\beta = -0.32$), than for girls ($\beta = -0.13$), $S\text{-}B \Delta\chi^2(1) = 14.632$, $p < .001$. As the a path was significantly stronger for girls than for boys and the b path was significantly stronger for girls than for boys, their product (indirect effect $a*b$) was quite similar, in effect masking a moderating effect of sex on both the association between maternal support and self-esteem as well as on self-esteem and deviance. Fig. 4 graphically plots the observed moderation effect by sex on the links between maternal support and self-esteem, and the one between self-esteem and deviance, respectively.

6. Discussion

The current study investigated relationships among maternal support, self-esteem, and deviance in a sample of rural youth. The purpose was to test whether there were indirect effects of self-esteem on the maternal support-deviance link, and whether this link varied by sex and changed developmentally across adolescence. Study hypotheses were mostly supported and results are summarized in the following manner.

First, findings show that girls reported lower maternal support, lower self-esteem, and lower deviance, as compared to boys. Why girls reported lower maternal support is unclear; however, the latter two findings are consistent with previous work (e.g., Bachman, O'Malley, Freedman-Doan, Trzesniewski, & Donnellan, 2011; Bleidorn et al., 2015; Church et al., 2012; Fair Worthen, 2012; Koon-Magnin et al., 2016).

Second, maternal support was found to be positively associated with adolescent self-esteem and negatively associated with adolescent deviance. In addition, self-esteem was negatively predictive of adolescent deviance, indicating that maternal support is an important predictor for developing better attitudes toward the self, and that both more support from the mother and higher self-esteem are helpful in developing more positive behaviors in adolescents. These results are consistent with findings of previous studies (e.g., Mason, 2001; Bean et al., 2003; Boer & Tranent, 2013; Caldwell et al., 2004; Donnellan et al., 2005; Mason, 2001; Shek, 2005); they further contribute to the literature on the relationships between maternal support, self-esteem, and adolescent deviance.

Third, findings from path models show that the relationship between maternal support and adolescent deviance was mediated by self-esteem; as argued by Wang et al. (2016), supportive parenting generates better feelings of "the self" as well as improved psychological well-being, which in turn helps adolescents interact with the world and promotes better behaviors. This is also consistent with previous studies that have shown an indirect relationship between parenting and adolescent deviance (e.g., Crosswhite & Kerpelman, 2009) and those that have proposed self-esteem as a mediator (Caldwell et al., 2006; De Vries et al., 2015; Hunter et al., 2015; Wang et al., 2016). The current study is the first to test the mediating role of self-esteem in the maternal support-deviance link, which further contributes to our knowledge and understanding of the influence by maternal parenting on youth.

Fourth, in contrast to Hoeve et al.'s (2009) findings, sex differences were found in the maternal support-deviance link. Although there was no sex difference with regard to indirect effects through self-esteem, a significant sex difference was found in the maternal support-self-esteem link, as well as the self-esteem-deviance link. Maternal support had a stronger influence on girls' self-esteem, especially when maternal support was low, and self-esteem had a stronger influence on boys' deviance, especially when self-esteem was low (see Fig. 4); this latter finding is consistent with work by Church et al. (2012). Thus, while positive maternal parenting may have a larger influence on girls' attitudes about themselves, boys' feelings about themselves may be more important for their choice of behaviors. Why self-esteem a greater influence on boys' behaviors is unclear. In addition, direct effects of maternal support were slightly larger for girls' deviance than for boys' after accounting for the indirect effects of self-esteem. This is different from findings by Church et al. (2012) that maternal warmth had a stronger influence on deviance in boys than girls; however, this result, together with the result that maternal support influenced girls' self-esteem to a greater extent, is consistent with previous findings, suggesting that the same-sex parent may have a greater influence on adolescents' mental health and problem behaviors as they tend to identify more

with the same-sex parent (Hoeve et al., 2009; Nielsen & Metha, 1994; Shek, 2005).

Finally, no developmental changes in the links among maternal support, self-esteem, and adolescent deviance were found. These null findings indicate that maternal support and self-esteem maintained consistent protective effects for deviance across early and middle adolescence; in addition, maternal support also appeared equally important for understanding variability in self-esteem for both early and middle adolescents. Findings regarding maternal support are consistent with previous studies that suggest protective effects of positive parenting on adolescent deviance (Cho et al., 2016; Yun, 2016). Therefore, based on results of the present study, the influence by specific parental behaviors might be maintained developmentally, and thus, may not decline over time as indicated in some previous work (e.g., Bradley & Corwyn, 2013). Particularly, influence of maternal support may remain stable across early and middle adolescence.

6.1. Limitations and future research

One important limitation of the current study is its cross-sectional nature, thus causality cannot be inferred. For example, changes in self-esteem may also be a consequence of deviant behaviors (Lee & Lee, 2012; Mason, 2001), or conversely, deviant behaviors might influence parental behaviors. Perhaps for related reasons, the current study might be unable to detect individual developmental changes in the associations among maternal support, self-esteem, and adolescent deviance. Therefore, future longitudinal research will be informative to further clarify the direction of effects for maternal support, self-esteem, and deviance as well as document developmental changes, if any. Second, this study only focused on how maternal support influences adolescents' mental health and behaviors, which makes it impossible to compare maternal parenting against paternal parenting. Data collected from fathers would enable us to make such comparisons and to investigate potential similarities or differences. Finally, more data from other rural areas are needed to make generalizations about rural developmental contexts in general. Of course, we were unable to directly test contextual effects against data collected in urban areas, for instance, which would greatly enhance our conclusions about the salience of context.

7. Conclusions

As parenting is key in adolescents' mental health and behaviors, it is important to further understand how the specific links and mechanisms work. Based on a sample of rural youth, the current study found that maternal support was positively associated with self-esteem among rural youth, which in turn was negatively associated with deviant behaviors. No developmental differences across age were found in the above links. In addition, the relationships between maternal support and self-esteem and self-esteem and deviance were found to work differently for boys and girls with maternal support having more influence on girls' self-esteem and self-esteem having more influence on boys' deviance. This study indicates that positive parenting, such as parental support, remains important for promoting a good sense of self-esteem and for decreasing the likelihood of deviant behaviors in both early and middle adolescents. It also indicates that in dealing with adolescents' self-esteem issues and deviant behaviors, practitioners and parents need to pay more close attention to relevant sex differences.

Declarations of interest

None.

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