Addressing Adolescents' Depressive Symptoms and Risky Behavior: The Role of Perceived Parents' and Teachers' Social Support

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Socializer-driven processes were analyzed by investigating effects of perceived mothers', fathers', and teachers' social support on adolescents' depressive symptoms and risky behavior across each academic year in high school. Furthermore, we analyzed the co-development of parents' and teachers' social support and adolescents' depressive symptoms and risky behavior using data from 402 adolescents from the Childhood and Beyond Study. Perceived mothers' social support protected adolescents from depressive symptoms from 9th to 11th grade. Gender-specific associations were identified. Teachers' social support predicted declines in depressive symptoms only for females. Perceived fathers' social support predicted an increase in depressive symptoms for their sons only.

Keywords: adolescence, depressive symptoms, risky behavior, parents, social support, stage-environment-fit theory, teacher

INTRODUCTION

On average, the prevalence of problem behavior increases across the high school years (Gutman, Peck, Malanchuk, Sameroff, & Eccles, 2017a; Maughan, Collishaw, & Stringaris, 2013), and rates of depression are also unacceptably high in this age group. Both depressive symptoms and problematic risky behavior put adolescents at risk not only for lower levels of motivation and academic achievement in school but also for higher levels of social loneliness and perceived peer rejection (Boyer, 2006; Maurizi, Grogan-Kaylor, Granillo, & Delva, 2013). In addition to individual resources, such as adolescents' self-

esteem, social competencies, or problem-solving coping strategies (Loukas & Prelow, 2004; Nolen-Hoeksema & Aldao, 2011; Sowislo & Orth, 2013), their social environment can be an important factor that protects against depressive feelings, depression, and risky behavior. A substantial body of empirical work shows the protective effects of perceived parents' and teachers' social support on adolescents' negative psychological development, e.g., their problem behavior (Colarossi & Eccles, 2003; Gutman, Joshi, & Schoon, 2019; Jia et al., 2009; Smetana, Campione-Barr, & Daddis, 2004). Previous researchers have drawn on these trends to identify changing links between socializers and adolescents (Rueger, Chen, Jenkins, & Choe, 2014) but have focused less on the effects of different socializers on the problem behavior of adolescents across the entire high school period.

Furthermore, many existing studies fail to take bidirectional influences between various socializers and adolescents into account despite Bell's 1979 paper encouraging us to study bidirectional relationships (Bell, 1979). To fill these gaps, in this study, we compared the age-specific effects of social support from parents and teachers for adolescent problem behavior across high school and investigated the bidirectional processes between parents' and teachers' social support and adolescent problem behavior in high school.

In addition, research has demonstrated the essential role of gender in these longitudinal dynamics. First, there are gender differences in the development of problem behavior across adolescence (Gutman et al., 2017a; Hankin, Mermelstein, & Roesch, 2007). Second, research has documented noteworthy gender-specific relationships between parents and their children (Gniewosz & Noack, 2012; Leaper, 2002). However, little is known about gender-specific bidirectional processes. In order to fill this gap in the present study, we assessed the moderating role of both parents' and adolescents' gender in analyzing the bidirectional associations between perceived mothers', fathers', and teachers' social support and male and female adolescents' depressive symptoms and risky behaviors across high school.

Depressive Symptoms and Risky Behavior in Adolescence

Adolescence is characterized by numerous biological, psychological, and social changes (DiClemente, Brown, & Davis, 2013). As part of these changes, adolescents are faced with a multitude of developmental tasks, such as forming their own identity and independence from their parents and building deeper relationships with other social agents, like teachers and peers (Wigfield, Byrnes, & Eccles, 2006). Although the majority of adolescents deal with these challenges successfully, some struggle, leading to maladaptive development and a decrease in well-being (Bongers, Koot, van der Ende, & Verhulst, 2004; DiClemente, Santelli, & Crosby, 2009; Walker, Sabuwalla, & Huot, 2004).

Furthermore, although testing boundaries is part of the process of establishing one's own identity and independence in adolescence, it can have more long-term negative consequences for some youth, particularly if they get caught up in negative peer groups and risky patterns of behavior (Gutman, Peck, Malanchuk, Sameroff, & Eccles, 2017b; Laursen, Hafen, Kerr, & Stattin, 2012; Martínez-Ferrer & Stattin, 2019; Moffitt, 1993). However, the social support of parents and teachers has been identified as a protective factor in the development of both depression and engagement in risky problem behaviors (Joyce & Early, 2014; La Greca & Harrison, 2005; O'Donohue, Benuto, & Woodward Tolle, 2013; Sheeber, Davis, Leve, Hops, & Tildesley, 2007; Wang, Brinkworth, & Eccles, 2013).

Different Socializers as Protective Factors

A substantial body of research has shown that the perceived social support of parents is related to a decrease in adolescent depression (Chu, Saucier, & Hafner, 2010; Jia et al., 2009; Rueger, Malecki, & Demaray, 2010; Rueger, Malecki, Pyun, Aycock, & Coyle, 2016) and a decrease in adolescent engagement in risky behavior, such as smoking, drinking alcohol, or using drugs (Gutman et al., 2019; Kerr, Stattin, & Özdemir, 2012; Piko & Kovács, 2010; Smetana et al., 2004). Similar associations are seen in research findings on teachers' perceived social support (Colarossi & Eccles, 2003; Demaray & Malecki, 2002; Jia et al., 2009; Rueger et al., 2014; Yu, Li, Wang, & Zhang, 2016).

In accordance with stage-environment fit theory (Eccles et al., 1993, 1998), problem behavior in youth may result from the mismatch of the optimal levels of socializers' support and also from the changing needs of adolescents. Adolescents increasingly desire greater autonomy from authority figures

as they mature, particularly concerning decision making (Daddis & Smetana, 2005; Gutman, Eccles, Peck, & Malanchuk, 2011; Smetana, Metzger, Gettman, & Campione-Barr, 2006). Adolescents reject authority; for example, while parents continue to react to their children's behavior, children do not take parents' reactions into account to the same extent when they grow older (Gutman et al., 2011; Lansford et al., 2018). Nevertheless, adolescents continue to need and want emotional support from their parents and other authority figures, such as teachers (Gutman et al., 2011; Malecki & Demary, 2003). Contrary to adolescents' needs, researchers have documented declines in adolescents' perceptions of social support from their parents and teachers as they move through the secondary and high school years (Fernández-Zabala, Goñi, Camino, & Zulaika, 2016) and declines in the protective effects of socializers on adolescent depression (Rueger et al., 2014). However, only a few studies have examined the age-specific associations of parents' and teachers' social support with the emergence of adolescents' depressive symptoms and risky behavior. Furthermore, knowing that adolescents rate their parents' emotional support as more important than their teachers' emotional support (Bokhorst, Sumter, & Westenberg, 2010; Malecki & Demaray, 2003), it is a much-needed step to compare parents' and teachers' impact on adolescents' problem behavior with each other across this developmental stage.

Bidirectional Processes Between Adolescents and Socializers

Based on transactional models, we assume a reciprocal relationship between adolescents and their social environments (Bell, 1979; Pardini, 2008). In reference to Kerr et al. (2010), we name these processes as socializer-driven (socializers → youth) and youth-driven (youth → socializer). As previously described, a substantial body of research has provided evidence about the association of socializer-driven processes related to adolescent depression and engagement in risky behavior (Gutman et al., 2019; Jia et al., 2009; Kerr et al., 2012; Rueger et al., 2014; Rueger et al., 2016). However, only a few studies have investigated youth-driven processes related to adolescent problem behavior. For example, previous findings have indicated that adolescent problem behavior can have consequences for their perception of parental support, with more deviant or depressed adolescents perceiving higher parental control or lower emotional closeness (Demaray & Malecki, 2002; Lansford et al., 2018; Pinquart, 2017; Sheeber et al., 2007; Wang & Kenny, 2014) and lower teacher support (Lätsch, 2018). Consequently, perceived levels of parents' and teachers' social support might encourage adolescents' well-being, such as decreasing depressive symptoms and risky behavior, which, in turn, could elicit more positive perceptions of parents and teachers' social support. Nevertheless, more research is needed that investigates such bidirectional relationships between perceived social support from multiple social agents and youth problem behavior in adolescence.

The Impact of Parents' and Adolescents' Gender

A substantial body of literature suggests that both adolescents' and parents' gender can influence the dynamics between adolescents and their social networks (Gniewosz & Noack, 2012; Hankin et al., 2007). First, females report higher levels of depressive symptoms (Gutman et al., 2017a; Hankin et al., 2007) and lower levels of risky behavior than males throughout adolescence (Gutman et al., 2017). Furthermore, female adolescents report greater closeness with their parents than male adolescents, whereas the opposite is true in perceived support for adolescents' independence (Leaper, 2002). In contrast, Kerr et al. (2010) found that parents turn away from daughters but not from sons when their children show a higher rate of problematic behavior.

Research on gender differences in the protective effects of parents' social support on adolescent problem behavior has produced inconclusive results. Some studies have found that both mothers' and fathers' social support is protective for adolescents' problem behavior (Jia et al., 2009; Milevsky, Schlechter, Netter, & Keehn, 2007; Minzi, 2010; Rueger et al., 2014; Sheeber et al., 2007). Other studies have reported that only mothers' support is protective for adolescent depression (Colarossi & Eccles, 2003; Desjardins & Leadbeater, 2011) or only fathers' support is protective for adolescent problem behavior (Fosco, Stormshak, Dishion, & Winter, 2012; Plunkett, Henry, Robinson, Behnke, & Falcon, 2007).

There may also be an interaction between the gender of the parent and the gender of the child (Gniewosz & Noack, 2012). Empirical studies have found gender differences in the associations of parental support and youth problem behavior. As an example of same-sex associations, perceiving higher social support from fathers was more effective in decreasing males' depressive symptoms; in contrast, perceiving more social support from mothers was more effective in reducing depressive symptoms in females (Colarossi & Eccles, 2003; Leinonen, Solantaus & Punamäki, 2003). Other research has found that the perceived support of both the father and mother predicts lower depression for both male and female adolescents, but these associations weaken across adolescence (Meadows, Brown, & Elder, 2006; Rueger et al., 2014). Research that indicated gender-specific associations for the father's support found that boys have lower levels of depression when there is a lower level of perceived control by their fathers, whereas girls reported lower depression with more perceived warmth from their fathers (Plunkett et al., 2007). Relatively few studies have examined these gender-specific associations for adolescent risky behavior. The existing research has shown that the non-involvement of same-sex parents was related to increased adolescent substance consumption (Leinoden et al., 2003). Thus, although there is clear evidence of gender differences in regards to problem behavior (Gutman, Peck, Malanchuk & Eccles, 2017; Hankin et al., 2007) and for the association of socializers' support with student problem behavior (Colarossi & Eccles, 2003; Fanti, Henrich, Brookmeyer, & Kuperminc, 2008; Fernández-Zabala et al., 2016; Hankin et al., 2007; Rueger et al., 2014), only a few studies have addressed gender differences related to the bidirectional associations between parents' and teachers' social support and adolescent depressive symptoms and risky behavior across high school.

THE CURRENT STUDY

In order to expand existing research on the protective effects of important socializers' support on adolescent problem behavior (Bokhorst et al., 2010; Malecki & Demaray, 2003; Rueger et al., 2014), our first aim in the present study was to investigate the associations of parents' and teachers' social support with changes in adolescent depressive symptoms and risky behavior from 9th to 12th grade. It is worth noting that we not only investigated the protective effect of fathers', mothers', and teachers' social support in comparison with each other, but we also examined the assumed change of the protective effect of different socializers separately for each grade in high school.

Our second aim was to address the gap in research on differential reciprocal associations of perceived social support from parents and teachers with adolescents' depressive symptoms and risky behavior. Previous research allows the hypothesis that these associations vary due to the gender of the parents and adolescents (Colarossi & Eccles, 2003; Gutman et al., 2017a; Hankin et al., 2015). Therefore, we focused on the bidirectional relations between perceived mothers', fathers', and teachers' social support and males' and females' depressive symptoms and risky behavior from 9th to 12th grade. We examined the following research questions:

(RQ 1) What are the predictive associations of perceived social support from mothers, fathers, and teachers with changes over time in adolescents' self-reported depressive symptoms and risky behavior during the high school years?

Based on previous research (Colarossi & Eccles, 2003; Fanti et al., 2008; Rueger et al., 2014), we hypothesized that higher levels of adolescents' perceived mothers', fathers', and teachers' social support would predict reduced levels of both depressive symptoms and risky behavior across an academic year. In essence, this finding would suggest that perceived social support from mothers, fathers, and teachers acts as a buffer in typically occurring increases in adolescent problematic behavior over time. However, since previous studies have demonstrated that adolescents perceive lower support from parents and teachers and that protective effects become weaker across adolescence (Bokhorst et al., 2010; Malecki & Demaray, 2003; Rueger et al., 2014), we assume decreasing effects from 9th to 12th grade.

(RQ 2) What are the reciprocal associations of perceived social support from mothers, fathers, teachers, and males' and females' depressive symptoms and risky behavior over the high school years?

FIGURE 1
CONCEPTUAL MODEL EXPLAINING STUDENTS' DEPRESSIVE SYMPTOMS AND RISKY BEHAVIOR (RESEARCH QUESTION 1)
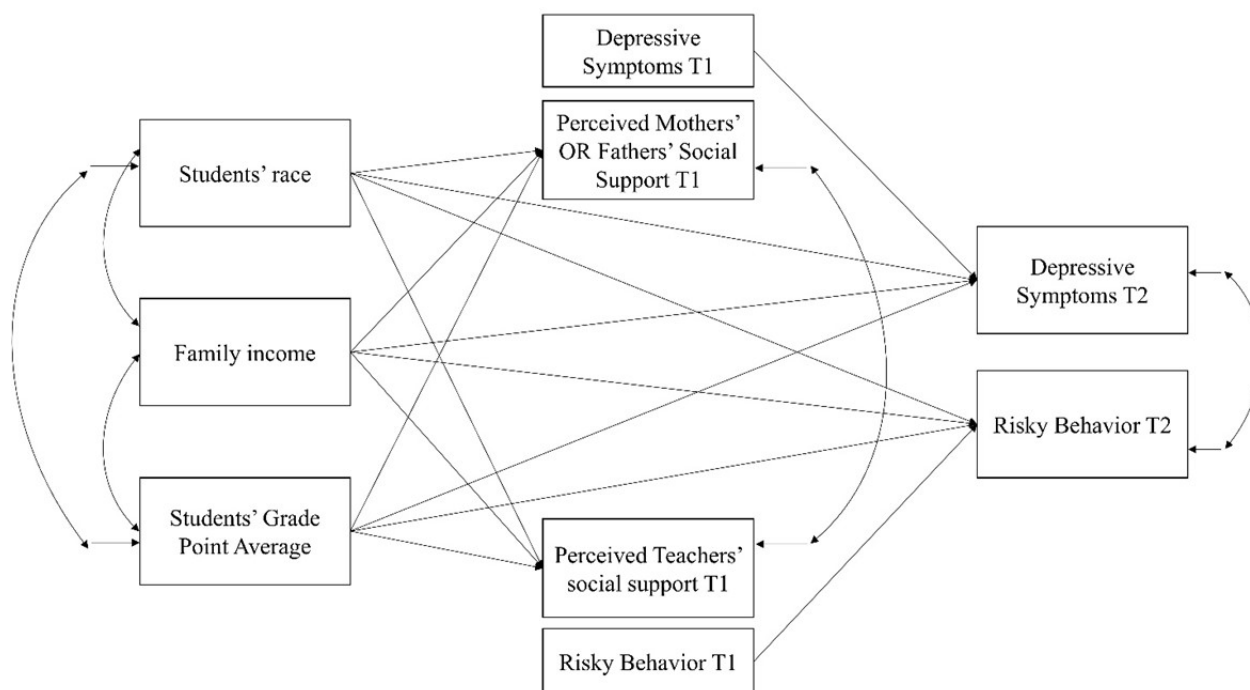
Based on the theoretical bidirectional interaction described between socializers and adolescents (Bell, 1979) and empirical results (Lansford et al., 2018; Wang & Kenny, 2014), we hypothesized both socializer-driven processes and youth-driven processes. Due to differential parenting patterns (Craig, 2004, 2006) and gender of parent by gender of child interactions (Meadows et al., 2006; Rueger et al., 2014), we hypothesized differential socializer-driven effects. In particular, we predicted that the perceived social support from mothers would be more strongly associated with changes in daughters' and sons' depressive symptoms (Colarossi & Eccles, 2003; Desjardins & Leadbeater, 2011; Rueger et al., 2014), whereas fathers' social support would be especially essential for sons' problem behavior (Colarossi & Eccles, 2003; Plunkett et al., 2007). Due to the existence of only a few studies about the gender-specific influences of teachers on male and female problem behavior, we assumed a significant longitudinal effect for both males' and females' depressive symptoms and risky behavior because teachers' support has been identified as a protective source for male and female adolescent problem behavior (Rueger et al., 2014). For youth-driven processes (Lansford et al., 2018; Sheeber et al., 2007; Wang & Kenny, 2014), we hypothesized that adolescents with higher levels of depressive symptoms and risky behavior at Time 1 would subsequently perceive lower social support of teachers and parents at Time 2 after controlling for Time 1 levels.

METHOD

Participants

We used a subset of the longitudinal Childhood and Beyond Study (CAB, http://garp.education.uci.edu/cab.html) from 12 public schools in four districts in Southeastern Michigan (Eccles, Harold & Wigfield, 1993). In this cohort-sequential design, three cohorts of children (youngest,

middle, and oldest) were surveyed over nine waves, ranging from kindergarten until two years after high school. Thus, this longitudinal study makes it possible to investigate developmental processes over an extended period of time. Because we are interested in longitudinal bidirectional associations during the high school years, we used a subsample of youth from the middle and oldest cohort that took part in the study during their high school years (9th–12th grade). All cases that participated for a minimum of two consecutive measurement points were included in our subsample.

In the *middle cohort* (m-cohort), we used data from N=169 youth (55.6 % girls; 9th grade: M_{age} = 14.35, SD = 0.38). These data were collected when participants were in 9th (Wave 6 in 1994/1995) and 10th grade (Wave 7 in 1995/1996). A mean grade point average (GPA) of M = 1.69 (SD = 0.60, ranging from 1 = A's to 5 = E's or F's) was reported at the end of the 8th grade. Of these respondents, approximately 96% were European American. Participants in this subsample were from diverse socioeconomic backgrounds with family incomes ranging from $29,999 or less (12.0%) to $70,000 or more (18.0%) at the time of the assessment.

In the *oldest cohort* (o-cohort), we used data from N=303 youth (53.1% girls; 10th grade: M_{age} = 15.31, SD = 0.33). These data were collected when participants were in 10th (Wave 5 in 1993/1994), 11th (Wave 6 in 1994/1995), and 12th grade (Wave 7 in 1995/1996). A mean GPA of M = 1.79 (SD = 0.64, 1 =A's, 5 = E's or F's) was reported at the end of the 9th grade. Of these respondents, approximately 92% were European American. Participants in this cohort were from diverse socioeconomic backgrounds with an annual income ranging from $29,999 or less (7.2%) to $70,000 or more (22.4%).

Measures

Data collection was conducted in schools using a survey questionnaire. All measures used in the current study were assessed in each wave and cohort. All items are listed in Table A1 of the Appendix.

Depressive Symptoms

Depressive symptoms were assessed with the Symptom Checklist-Revised (SLC-90_R) based on Derogatis' and Melisaratos' (1983) research that measured youth' self-reported depressive affect with five items. Participants were asked how often during the last month they had experienced certain types of affect (including items like "felt hopeless" or "had thoughts of ending your life"). The response scale ranged from 1 (almost never) to 7 (almost always). This measure demonstrated good internal consistency (α = .79 to .82 in the m-cohort and α = .81 to .85 in the o-cohort).

Risky Behavior

To measure adolescent risky behavior, a 12-item measure capturing deviant, risky, and problematic behavior was used (Center for Human Resource Research, 2008; Johnston & O'Malley, 1986). Participants reported the frequency of certain risky behaviors on a scale ranging from 0 (never) to 7 (7 times or more). Example items include "skip a day of school," "get drunk," or "get into a fistfight with another kid." The scores were summed (range: 0–54) with a high score indicating a higher level of risky behavior. This measure demonstrated good internal consistency[2] (α = .76 to .89 in the m-cohort and α = .74 to .92 in the o-cohort).

Perceived Social Support of Parents

The perceived social support of parents was assessed separately for mothers and fathers using four items from the Iowa Youth and Families Inventory (Conger, Brainerd, Birch, Friedberg, & Navarro, 1986). Sample items are as follows: "How often did your (mom/dad) listen carefully to your point of view?" or "How often did your (mom/dad) let you know she/he really cared?" Participants rated the items on a scale from 1 (never) to 5 (almost every day). This measure demonstrated good internal consistency for both mothers and fathers[2] (mother: α = .80 to .84 in the m-cohort; α = .84 to .87 in the o-cohort; father: α = .86 to .88 in the m-cohort; α = .86 to .89 in the o-cohort).

Perceived Social Support of Teachers

The perceived social support of teachers at school was measured with four items (Eccles & Harold, 1993). Sample items were as follows: "How many of your teachers treat you like a grown-up?" or "How

many of the teachers in your school value and listen to students' ideas?" Participants rated items on a scale from 1 (none) to 7 (all). This measure demonstrated good internal consistency ($\alpha = .80$ to $.80$ in the m-cohort and $\alpha = .81$ to $.83$ in the o-cohort).

Covariates

Self-reported youth gender (0 = male, 1 = female) was used as a covariate and to test for potential gender differences in the associations of perceived social support on adolescents' depressive symptoms and risky behavior. In addition, we controlled for parent-reported family income ranging from 1 = under $10,000 to 9 = over $80,000. Lastly, we controlled for adolescents' achievement, which is associated with perceived social support and the prevalence of depressive symptoms and risky behavior (Crosnoe, Glasgow Erickson, & Dornbusch, 2002). Adolescent achievement was measured using the GPA, which was calculated by using the mean of all reported grades in their previous semester (ranging from 1 = A's to 5 = E's or F's).

Statistical Procedures

To test the longitudinal relationships between the perceived social support of fathers, mothers, and teachers and self-reported depressive symptoms and risky behavior in adolescents, we first established measurement invariance (a) across cohorts and time and (b) across gender and time for all measures except risky behavior, which was assessed using a sum score. The measurement invariance was tested stepwise for configural, metric, and scalar invariance (for a detailed explanation, see Marsh, Parker, & Morin, 2015). For the comparison of two models, we used a cut-off of a $\leq .1$ decrease in fit for the comparative fit index (CFI) and a $\leq .015$ decrease in the root mean square error of approximation (RMSEA) (Chen, 2007). For all invariance tests, the included scales were at least partially metric invariant allowing for group comparisons in subsequent analyses (see Tables A2 and A3 in the Appendix).

In the first step, we looked at correlations and mean differences of our independent and dependent variables in both cohorts from 9th to 10th grade (m-cohort) and from 10th to 12th grade (o-cohort). To investigate our first research question, we tested manifest-path models. The theoretically assumed model is illustrated in Figure 1. More specifically, we tested whether relevant control variables (GPA, family income, gender) could predict the perceived support of fathers, mothers, and teachers and also whether the perceived support of the three socialization agents was significantly related to a change in depressive symptoms and risky behavior. Separate models were run from 9th to 10th grade (m-cohort), from 10th to 11th grade (o-cohort), and from 11th to 12th grade (o-cohort). As perceived support of mothers and fathers were correlated strongly (Tables 1 and 2), we used two strategies to deal with multicollinearity: estimated separate models for (A) the perceived social support of mothers and teachers and (B) the perceived social support of fathers and teachers. For all analyses, we used manifest constructs due to the small sample size (Marsh et al., 2009).

To answer our second research question about reciprocal effects, we ran cross-lagged panel models from 9th to 10th grade (m-cohort) and from 10th to 12th grade (o-cohort). Given the sample size, we did not have the statistical power to investigate cross-lagged panel models, including all relevant variables simultaneously. Instead, we tested six separate models investigating the bidirectional influences of one of the outcomes (i.e., depressive symptoms or risky behavior) and perceived social support from one of the socializers (i.e., mother, father, or teacher) separately. For example, we tested whether the perceived support of mothers and adolescents' self-reported depressive symptoms and incidence of risky behavior were reciprocally interrelated but did not include the perceived teacher or father support in this model. To investigate differential effects for girls and boys, we ran separate models for girls and boys using multi-group, cross-lagged panel models. Using the Wald chi-square test of parameter equalities (Kodde & Palm, 1986), we tested whether gender-specific associations were significantly different from each other. When the Wald chi-square tests (Kodde & Palm, 1986) indicated no significant differences, we constrained the effects between males and females to be equal. If the tests did not identify significant differences between males and females (Table A4 in the Appendix), the paths were set to equal in our final models (Figures 2– 7).

TABLE 1
MEANS, STANDARD DEVIATIONS, AND CORRELATIONS AMONG KEY VARIABLES IN THE M-COHORT FROM 9th TO 10th GRADE (N= 169)

		1	2	3	4	5	6	7	8	9	10	11	12	13
1	Income	1.00												
2	GPA	-.24***	1.00											
3	Sex (female)	.14	.03	1.00										
4	risk9	-.17*	.16**	.00	1.00									
5	risk10	-.17**	.09	.03	.77***	1.00								
6	Dep9	-.01	.02	.21**	.19**	.12	1.00							
7	Dep10	-.07	-.03	.19*	.42***	.42***	.55***	1.00						
8	Teach9	.15	-.04	-.02	-.42***	-.23**	-.20**	-.36***	1.00					
9	Teach10	.02	-.02	-.14*	-.35***	-.32***	-.13	-.28***	.57***	1.00				
10	Dad9	.31***	-.07	-.08	-.17**	-.08	-.21*	-.16*	.19**	.18**	1.00			
11	Dad10	.24**	-.01	-.02	-.18**	-.09	-.11	-.20**	.22**	.19**	.74***	1.00		
12	Mom9	.12	-.15**	.02	-.16*	-.12	-.24**	-.34***	.17*	.11	.47***	.33***	1.00	
13	Mom10	.16*	-.09	.03	-.24**	-.15*	-.14	-.31***	.16*	.15*	.33***	.56***	.69***	1.00
	Mean (SD)	-	-	-	21.70	23.29	2.42	2.42	5.11	4.96	2.80	2.75	3.30	3.36
	SD	-	-	-	102.68	116.14	1.36	1.37	1.13	1.28	1.13	1.06	0.80	0.99

Note. Income = family income, GPA = Grade point average, risk = risky behavior, dep = depressive symptoms, teach = perceived teachers' social support, dad = perceived fathers' social support, mom = perceived mothers' social support, 9 = grade 9, 10 = grade 10. $*p < .10$, $**p < .05$, $***p < .001$.
[1]Female adolescents as reference group (gender).

TABLE 2
MEANS, STANDARD DEVIATIONS, AND CORRELATIONS AMONG KEY VARIABLES IN THE O-COHORT FROM 10th TO 12th GRADE (N= 303)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 Income	1.00																	
2 GPA	-.10	1.00																
3 Sex (female)	.03	-.09	1.00															
4 Risk10	-.06	.37***	-.21***	1.00														
5 Risk11	-.06	.35***	-.16*	.65***	1.00													
6 Risk12	-.03	.31***	-.16*	.64***	.68***	1.00												
7 Dep10	-.03	.15**	.09	.26***	.06	.22***	1.00											
8 Dep11	-.18*	.11	.16*	.23***	.33***	.32***	.54***	1.00										
9 Dep12	-.03	.04	.19**	.16**	.12	.21**	.35***	.52***	1.00									
10 Teach10	-.04	-.21***	-.01	-.22***	-.22***	-.31***	-.32***	-.16*	-.17**	1.00								
11 Teach11	.13	-.21**	-.56	-.19**	-.18*	-.19**	-.20**	-.07	-.14	.57***	1.00							
12 Teach12	.10	-.18**	-.01	-.28***	-.30***	-.35***	-.19**	-.18*	-.20**	.59***	.57***	1.00						
13 Dad10	.06	-.22***	-.03	-.11	.00	-.04	-.26***	-.18**	-.17*	.25***	.19**	.15*	1.00					
14 Dad11	-.00	-.09	-.10	-.11	-.05	-.13	-.27***	-.22***	-.18**	.29***	.32***	.15*	.70***	1.00				
15 Dad12	.07	-.12	-.03	.04	.01	-.10	-.26***	-.25***	-.28***	.28***	.29***	.27***	.65***	.70***	1.00			
16 Mom10	.00	-.19***	.10	-.20**	-.10	-.08	-.22***	-.24***	-.19**	.25***	.26***	.16*	.50***	.36***	.40***	1.00		
17 Mom11	-.01	-.11	-.05	-.05	-.19***	-.02	-.09	-.26***	-.09	.11	.15*	.14	.29***	.44***	.33***	.62***	1.00	
18 Mom12	.01	-.10	.02	-.05	-.10	-.04	-.13*	-.20**	-.20**	.14*	.20**	.20**	.30***	.32***	.48***	.60***	.75***	1.00
Mean	-	-	-	22.81	23.53	25.42	2.67	2.49	2.32	4.48	4.85	4.97	2.80	2.72	2.80	3.10	3.16	3.25
SD	-	-	-	168.66	114.86	108.35	1.83	1.35	1.16	1.26	1.15	1.28	1.22	1.15	1.10	1.12	1.14	0.97

Note. Income = family income, GPA = Grade point average, female adolescents as reference group (gender), risk = risky behavior, dep = depressive symptoms, teach = perceived teachers' social support, dad = perceived fathers' social support, mom = perceived mothers' social support, 10 = grade 10, 11 = grade 11, 12 = grade 12. $*p < .10, **p < .05, ***p < .001$.
[1]Female adolescents as reference group (gender).

For all models, the goodness of model fit was evaluated by using chi-square likelihood ratio statistic, root mean square error of approximation (RMSEA), comparative fit index (CFI), Tucker and Lewis index (TLI), and the standardized root mean residual (SRMR). TLI and CFI values higher than .95, and RMSEA and SRMR values lower than .06 (Hu & Bentler, 1999) are accepted as indicators of a good model fit. SPSS, version 25, and *Mplus* 8.1 were used for all analyses (Muthén & Muthén, 1998-2017). Furthermore, we decided to report the p-value < .10 for the statistical significance to check for type II error (Banerjee, Chitnis, Jadhav, Bhawalkar, & Chaudhury, 2009).

Missing rates for the m-cohort and o-cohort across measurement points were 17% and 29%, respectively. To account for missing values, we included all used variables and gender as a covariate for each cohort. An adjusted Little's Test of Missing Completely at Random indicated that missing values were completely at random (m-cohort: χ^2 (78) = 90.50, p =.16; o-cohort: χ^2 (391) = 428.64, p = .09). Thus, we used the full information maximum likelihood algorithm (FIML) to handle the missing data (Schafer & Graham, 2002).

RESULTS

Descriptive Analyses

Descriptive statistics for relevant variables are shown separately for the m-cohort in Table 1 and the o-cohort in Table 2.

First, we tested possible mean differences in the reported level of problem behavior variables across time via dependent t-tests in the m-cohort. Adolescent-reported risky behavior and depressive symptoms did not change significantly from 9th to 10th grade (depressive symptoms: t(113) = 1.324, p > 0.05, d_{Cohen} = -.12, risky behavior: t(110) = -1.094, p > 0.05, d_{Cohen} = -.07)[1] and were almost moderately associated (.12 $\geq r \leq$ .42*). In addition, perceived social support did not change from 9th to 10th grade (teachers' social support: t(112) = 1.124, p > 0.05, d_{Cohen} = 0.11; mothers' social support: t(111) = -1.198, d_{Cohen} = -0.12; p > 0.05; fathers' social support: t(105) = 0.586, p > 0.05, d_{Cohen} = 0.06). Correlations in the m-cohort indicated that the perceived support of teachers, fathers, and mothers in 9th and 10th grade were almost significantly associated with adolescent depressive symptoms and risky behavior in 9th and 10th grade, respectively (-.42* $\geq r \leq$ -.14).

In the o-cohort, mean differences tested via one-way ANOVA of depressive symptoms and risky behavior from 10th to 12th grade emerged. The results of a repeated-measures ANOVA with a Greenhouse-Geisser correction indicated that depressive symptoms decreased (F(1.90, 472.13) = 8.542, p < .001, partial η^2 = . 03) and risky behavior increased from 10th to 12th grade (F(1.96, 462.92) = 13.84, p < .001, partial η^2 = . 06)[1]. Furthermore, depressive symptoms and risky behavior showed moderate to strong associations (.06 $\geq r \leq$ .32*). The perceived support of teachers increased (F(1, 138) = 27.766, p < 0.05, d_{Cohen} = 0.90) from 10th to 12th grade, while the perceived social support of fathers (F(1, 131) = 1.123, p > 0.05, d_{Cohen} = 0.19) and mothers (F (1, 136) = 0.430, p > 0.05, d_{Cohen} = -0.11) did not change over time. The perceived support of teachers, fathers, and mothers in 10th to 12th grade were almost significantly associated with adolescents' depressive symptoms and risky behavior in 9th and 10th grade, respectively (-.35* $\geq r \leq$ .04).

Research Question 1: Associations of Perceived Parents' and Teachers' Social Support Withhanges in Adolescents' Depressive Symptoms and Risky Behavior

To investigate the differential predictive effects of perceived social support from parents and teachers on changes in adolescents' depressive symptoms and risky behavior, we ran manifest-path analyses (RQ 1; Tables 3 and 4). In the following section, findings for the perceived mothers' social support, fathers' social support, and teachers' social support are described, followed by results regarding covariates.

The perceived social support of the mother in 9th grade predicted a decrease in adolescent depressive symptoms from 9th to 10th grade, but not for risky behavior (Table 3, Model 1). From 10th to 11th grade (data from o-cohort, Table 3, Model 2), mothers' social support predicted a decrease in adolescents' depressive symptoms. No significant predictive effect was found for risky behavior. Using data from the

o-cohort, from 11th to 12th grade (Table 3, Model 3), higher levels of perceived social support of mothers predicted an increase in the number of adolescents reporting risky behavior but not depressive symptoms. The perceived social support of mothers was related to GPA, as those adolescents with a higher GPA perceived more social support from their mothers.

Perceived fathers' social support predicted neither a change in adolescents' depressive symptoms nor in risky behavior across all time points (Table 4, Models 1–3). However, youth from families with higher incomes reported a greater level of perceived social support from their fathers.

For perceived teacher social support, the results indicated only one significant effect. From 11th to 12th grade (Tables 3 and 4, Model 3), high levels of perceived teacher support significantly predicted a decline in adolescents' depressive symptoms.

In all grades (Tables 3 and 4), students with higher GPAs perceived higher social support from their mothers, and in 10th grade, those with a higher GPA reported greater social support from their teachers. Adolescents' GPAs and family income were also associated with adolescent outcomes. Specifically, adolescents with a higher GPA showed a decrease in depressive symptoms from 9th to 10th grade in cohort m (Tables 3 and 4, Model 1). From 11th to 12th grade (Tables 3, 4, and 5, Model 3), adolescents with a higher GPA in 11th grade showed a growth in risky behavior and a decline in reported depressive symptoms. In 9th grade, adolescents from high-income families perceived a higher level of social support from their fathers and showed a decline in depressive symptoms from 10th to 11th grade.

Research Question 2: Reciprocal Effects for Male and Female Adolescents

To answer our second research question, we tested the longitudinal associations of perceived social support of fathers, mothers, and teachers and males' and females' depressive symptoms and risky behavior in cross-lagged panel models. All cross-lagged-path models showed good model fits, according to Hu and Bentler (1999) (Table 5). In the following section, we first discuss findings regarding the perceived social support of mothers followed by fathers and teachers. For all models, the results indicated gender- and grade-specific cross-lagged-effects.

Perceived Mothers' Social Support

For males and females, the level of perceived mothers' social support was significantly associated with a change in depressive symptoms from 9th to 10th grade and from 10th to 11th grade (Figures 2 and 3). Higher perceived social support of mothers led to a decrease in males' and females' depressive symptoms from 9th to 10th grade and from 10th to 11th grade. No significant associations were found for perceived mothers' social support and depressive symptoms for females and males in 11th and 12th grade (Figure 3). Only males showed any evidence of either depressive symptoms or risky behavior predicting changes in perceived support from mothers. Males who reported high levels of risky behavior in 9th grade also demonstrated a decrease in perceived social support of their mother from 9th to 10th grade.

Perceived Social Support of Fathers

For male and female adolescents, 11th-grade depressive symptoms predicted reduced levels of perceived fathers' social support from 11th to 12th grade (Figure 5). In males only, higher levels of perceived social support from fathers led to a decrease in depressive symptoms from 9th to 10th grade (Figure 4). Contrary to our prediction, the results indicated that higher levels of perceived fathers' social support predicted an increase in males' depressive symptoms from 11th to 12th grade (Figure 5). In addition, males who perceived higher social support from their fathers in 9th grade showed an increase in risky behavior from 9th to 10th grade. Males who reported high levels of risky behavior in 9th grade also showed a decline in their perceived social support from their fathers from 9th to 10th grade. We found only one female-specific effect. Females with higher levels of risky behavior in 10th grade showed a decrease in perceived fathers' social support from 10th to 11th grade.

TABLE 3

RESULTS FROM PATH MODEL ANALYSES THAT FOCUSED ON THE PERCEIVED MOTHERS' SOCIAL SUPPORT

	Model 1: 9th to 10th grade (m-cohort)				Model 2: 10th to 11th grade (o-cohort)				Model 3: 11th to 12th grade (o-cohort)			
	Mom9	Teacher9	Dep10	Risk10	Mom10	Teacher10	Dep11	Risk11	Mom11	Teacher11	Dep12	Risk12
Female[1]	.00	-.03	.11*	.05	.08	-.03	.21***	.02	-.05	-.04	.09	-.05
Income	.12	.18*	-.01	-.03	-.03	-.08	-.19**	-.05	-.03	.12	.05	.04
GPA	-.14*	.01	-.13**	-.06	-.19***	-.22***	-.06	.09	-.13**	-.10	-.10*	.13**
Mom[2]			-.22**	-.06			-.14**	.06			-.03	.14**
Teacher[2]			-.11	-.09			.05	-.09			-.14**	-.07
Dep[2]			.41***	-.04			.46***	-.14**			.51***	.17**
Risk[2]			.28***	.81***			.18***	.66***			-.01	.60***
R[2]	.04	.03	.48***	.61***	.05	.05*	.38***	.46***	.02	.03	.31***	.51***

Note. Income = family income, GPA = Grade point average, risk = risky behavior, dep = depressive symptoms, teach = perceived teachers' social support, mom = perceived mothers' social support, 1 = wave 5, 2 = wave 6, 3 = wave 7. *p < .10, **p < .05, ***p < .001.
[1] Female adolescents as reference group (gender).
[2] Predictors from first measurement point were used in each model (e.g., the second model used predictors measured in 10th grade).

TABLE 4

RESULTS FROM PATH MODEL ANALYSES THAT FOCUSED ON THE PERCEIVED FATHERS' SOCIAL SUPPORT

	Model 1: 9th to 10th grade (m-cohort)				Model 2: 10th to 11th grade (o-cohort)				Model 3: 11th to 12th grade (o-cohort)			
	Dad9	Teacher9	Dep10	Risk10	Dad10	Teacher10	Dep11	Risk11	Dad11	Teacher11	Dep12	Risk12
Female[1]	-.08	-.03	.10	.05	-.05	-.03	.20**	.03	-.04	-.04	.09	-.04
Income	.38***	.16	-.06	-.06	.02	-.08	-.18**	-.06	-.04	.12	.06	.02
GPA	.03	.00	-.11*	-.06	-.23***	-.22***	-.06	.10	-.06	-.10	-.10*	.12**
Dad[2]			.08	.03			-.04	.07			-.05	-.06
Teacher[2]			-.14	.08			.03	-.09			-.14**	-.03
Dep[2]			.45***	-.03			.46***	-.13**			.51***	.12*
Risk[2]			.30***	.82***			.21**	.64***			-.01	.59***
R[2]	.14*	.02	.44***	.61***	.06**	.05*	.37***	.47***	.01	.03	.32***	.50***

Note. Income = family income, GPA = Grade point average, risk = risky behavior, dep = depressive symptoms, teach = perceived teachers' social support, dad = perceived fathers' social support, 9 = grade 9, 10 = grade 10, 11 = grade 11, 12 = grade 12. *p < .10, **p < .05, ***p < .001.
[1] Female adolescents as reference group (gender).
[2] Predictors from first measurement point were used in each model (e.g., the second model used predictors measured in 10th grade).

Perceived Teachers' Social Support

For both males and females, high levels of risky behavior in 9th grade were significantly associated with a change in the perceived level of social support from their teachers from 9th to 10th grade (Figure 6). For males and females, a higher level of risky behavior was associated with a decrease in the amount of perceived teachers' social support. The associations were also significant from 11th to 12th grade (Figure 7). The perceived 10th grade teachers' amount of social support was not predictive of changes in depressive symptoms from 10th to 11th grade for males or females and perceived teacher support was not linked to changes in risky behavior from 9th to 12th grade. In females, however, higher levels of perceived social support from teachers in 9th grade predicted a decrease in depressive symptoms from 9th to 10th grade.

Taken together, we identified similar as well as different patterns for females and males on a descriptive level. In order to reduce depressive symptoms during adolescence, mothers need to be perceived as socially supportive. Along with perceived mothers' social support, perceived fathers' social support also led to lower depressive symptoms for male adolescents at the beginning of high school. In females alone, our results suggested the importance of teachers' social support in reducing depressive symptoms at the beginning of high school. Contrary to what we predicted, the perceived social support of fathers did not predict either a change in their son's risky behavior at the beginning of high school or decreases in depressive symptoms at the end of high school. Interestingly, adolescent risky behavior predicted declines in their perceptions of their fathers' and teachers' social support.

DISCUSSION

We examined the extent to which adolescent-reported supportive behaviors by different social agents were associated with changes in adolescent depressive symptoms and engagement in risky behaviors while also accounting for the adolescents' and parents' genders. We also examined the bidirectional nature of these associations. By addressing these issues, the current study makes an essential contribution to the gap in the contemporary literature that has rarely examined gender differences in associations between perceived social support of different social agents and adolescent adjustment.

Perceived Social Support and Adolescent Depressive Symptoms: Age and Gender-Specific Effects

Our results partially supported our hypothesis that perceived social support from mothers, fathers, and teachers would predict declines in depressive symptoms during adolescence over time (socializer-driven processes). In the regression analysis, the statistical significance of these associations varied across socializers and age, with the strongest associations for mothers from 9th to 10th grade and teachers from 11th to 12th grade. No significant effects for fathers were found. In the cross-lagged models, perceived support from mothers also predicted a decrease in both sons' and daughters' depressive symptoms at the beginning of high school (Desjardins & Leadbeater, 2011; Rueger et al., 2014). In contrast to the results of the regression analysis, the cross-lagged analysis showed that perceived fathers' social support predicted declines in depressive symptoms only for sons (see Plunkett et al., 2007; Rueger et al., 2014) and that perceived teachers' support was only relevant for females, who showed a decreased rate of depressive symptoms from 9th to 10th grade.

This pattern of results furthers our understanding of the development of males and females during adolescence. Our findings suggest that perceived support from fathers, mothers, and teachers can contribute to a decline in both male and female adolescent depressive symptoms during the first two years of high school but not in the final two years: mothers for both, fathers for sons, and teachers for females (see Meadow, 2006). The transition to high school in 9th grade could be a relevant explanatory factor for these findings. At the beginning of high school, adolescents will have had very little time to establish an intimate relationship with classmates in their new school environment.

FIGURE 2
CROSS-LAGGED PANEL MODEL FOR MOTHERS' SOCIAL SUPPORT
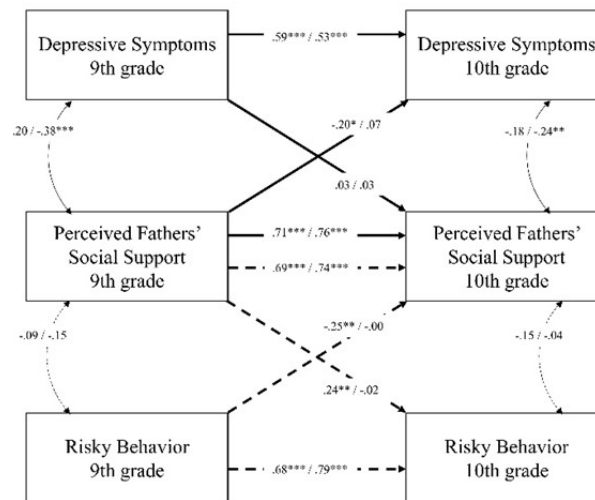## FROM 9th TO 10th GRADE
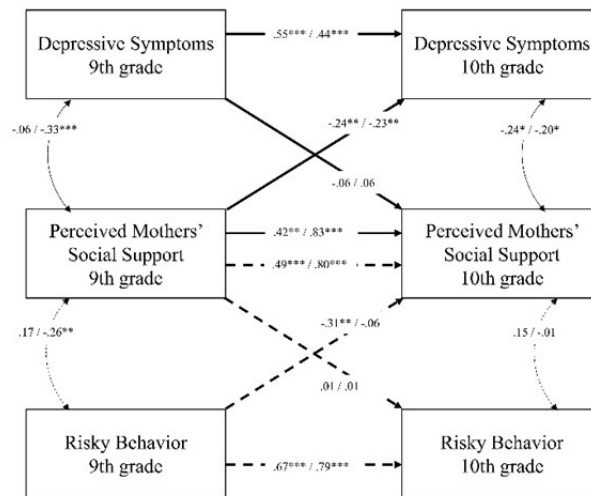
Note. Results for depressive symptoms (solid lines) and risk behavior (dotted lines) for boys (before the slash) and girls (after the slash). Means of all constructs for male and female adolescents are displayed in Table A4 in the Appendix. * $p \le .10$, ** $p \le .05$, *** $p \le .001$.

FIGURE 3
CROSS-LAGGED PANEL MODEL FOR MOTHERS' SOCIAL SUPPORT
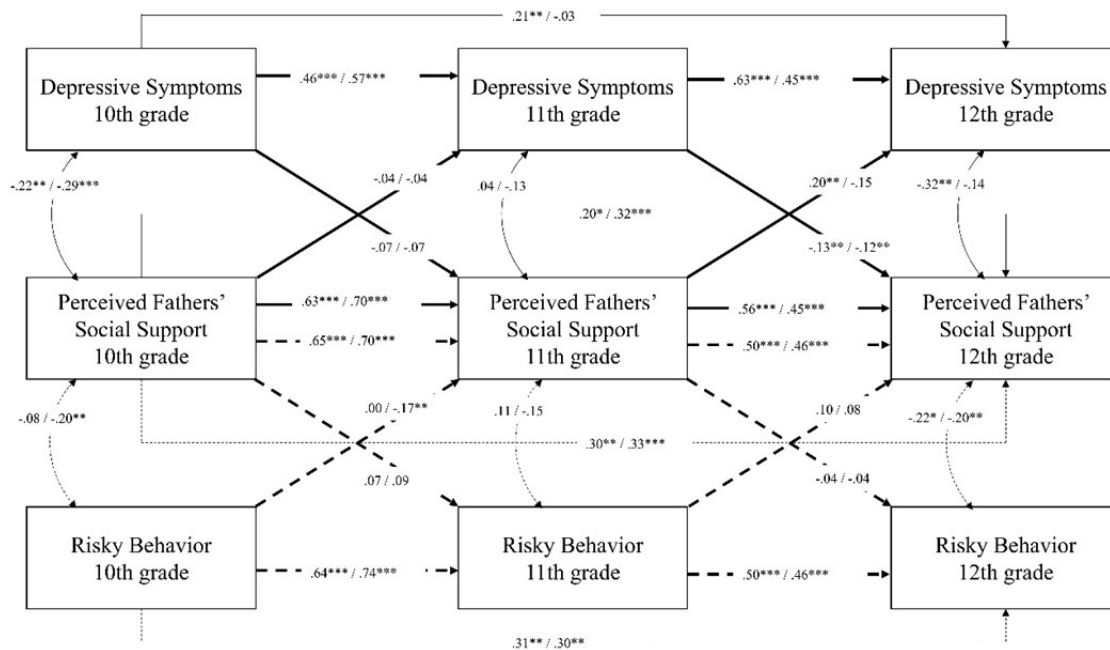## FROM 10th TO 12th GRADE
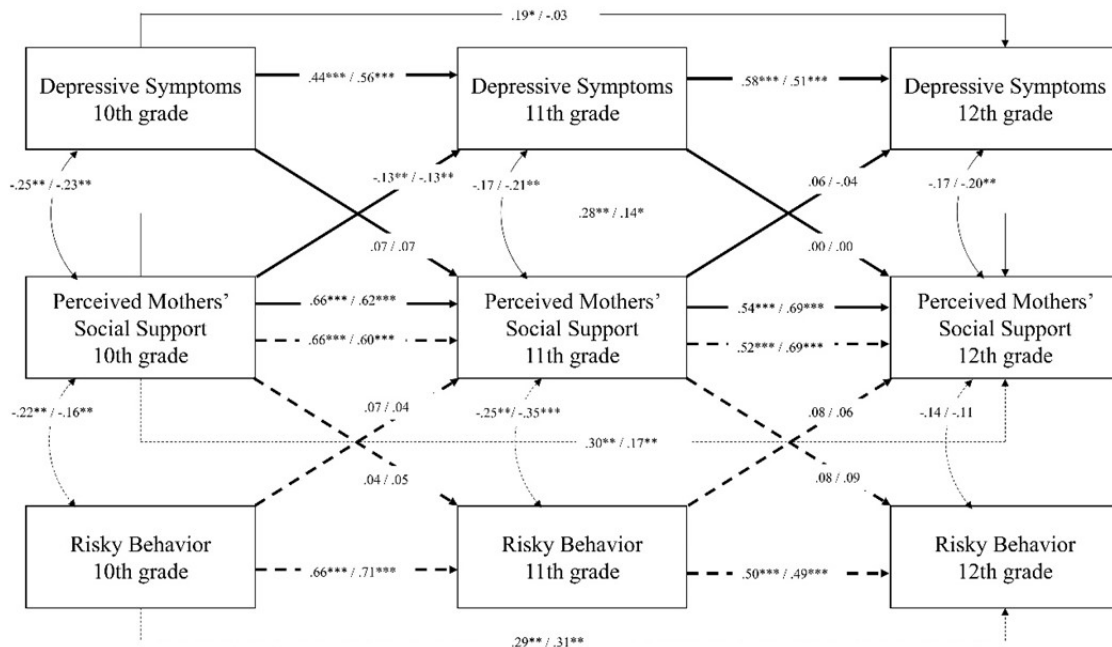
Note. Results for depressive symptoms (solid lines) and risky behavior (dotted lines) for boys (before the slash) and girls (after the slash). Means of all constructs for male and female adolescents are displayed in Table A4 in the Appendix. * p ≤ .10, ** p ≤ .05, *** p ≤ .001.

FIGURE 4
CROSS-LAGGED PANEL MODEL FOR FATHERS' SOCIAL SUPPORT
FROM 9th TO 10th GRADE

Note. Results for depressive symptoms (solid lines) and risky behavior (dotted lines) for boys (before the slash) and girls (after the slash). Means of all constructs for male and female adolescents are displayed in Table A4 in the Appendix. * $p \le .10$, ** $p \le .05$, *** $p \le .001$.

FIGURE 5
CROSS-LAGGED PANEL MODEL FOR FATHERS' SOCIAL SUPPORT
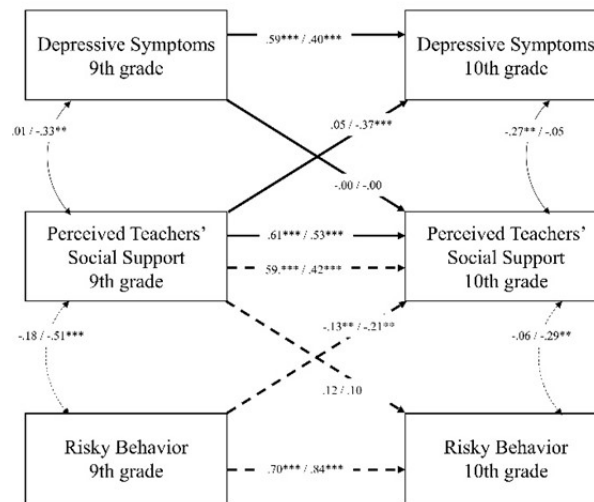**FROM 10th TO 12th GRADE**

Note. Results for depressive symptoms (solid lines) and risky behavior (dotted lines) for boys (before the slash) and girls (after the slash). Means of all constructs for male and female adolescents are displayed in Table A4 in the Appendix. * p ≤ .10, ** p ≤ .05, *** p ≤ .001.

FIGURE 6
CROSS-LAGGED PANEL MODEL FOR TEACHERS' SOCIAL SUPPORT
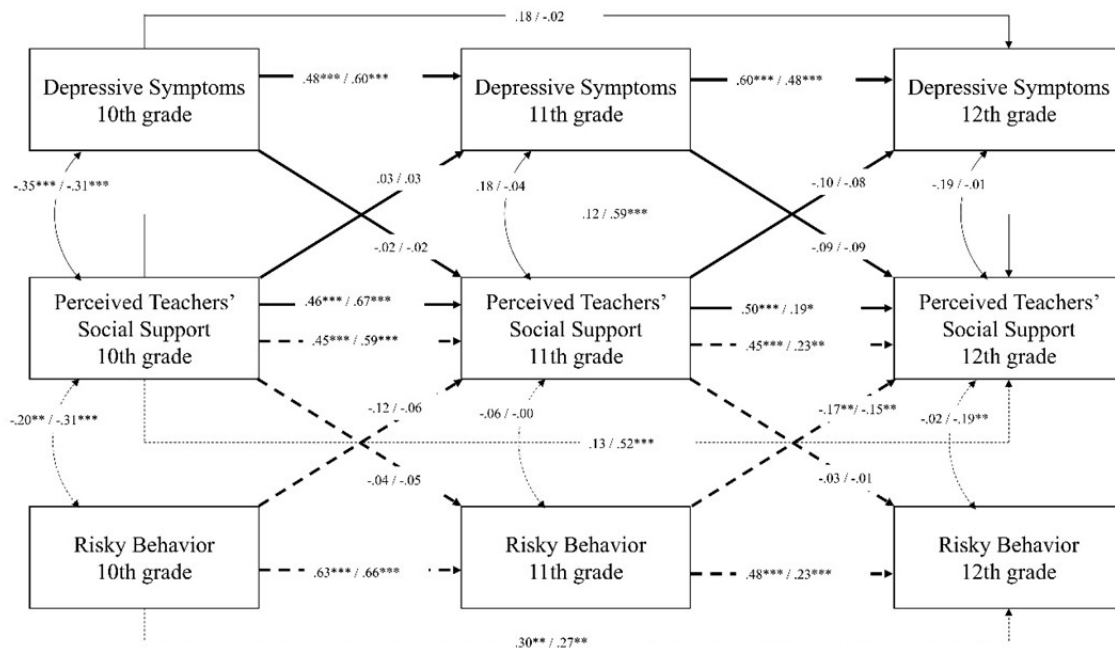**FROM 9th TO 10th GRADE**

Note. Results for depressive symptoms (solid lines) and risky behavior (dotted lines) for boys (before the slash) and girls (after the slash). Means of all constructs for male and female adolescents are displayed in Table A4 in the Appendix. * $p \le .10$, ** $p \le .05$, *** $p \le .001$.

FIGURE 7
CROSS-LAGGED PANEL MODEL FOR TEACHERS' SOCIAL SUPPORT
FROM 10th TO 12th GRADE

Note. Results for depressive symptoms (solid lines) and risky behavior (dotted lines) for boys (before the slash) and girls (after the slash). Means of all constructs for male and female adolescents are displayed in Table A4 in the Appendix. * $p \le .10$, ** $p \le .05$, *** $p \le .001$

Therefore, parents as stable caregivers and teachers as essential socializers in school are likely to have a substantial impact on adolescents at the beginning of high school. As Meadow and colleagues (2006) and Ma and Huebner (2008) suggested, relationship patterns for adolescents change in high school, with friends or classmates becoming more relevant for adolescent development as they move through high school. This developmental shift could explain why perceptions of adult support become non-significant in the last two years of high school. It may also be that friends and classmates become more relevant for adolescents' well-being after 11th grade, and the perceived social support of peers might be a more influential protective factor for adolescent problem behavior (Chang, Yuan, & Chen, 2018; Rueger et al., 2010). Nevertheless, during the early high school years, adult socializers can be a positive resource for adolescent mental health (Chang et al., 2018; Colarossi & Eccles, 2003; Rueger et al., 2014; Rueger et al., 2016).

Our findings also suggested gender-specific patterns, as perceived paternal social support could be described as a protective factor for male adolescents' psychological health at the beginning of high school. For girls, perceived mothers' and teachers' social support predicted decreases in depressive symptoms in adolescence, but only in the early high school years; the same developmental pattern is true for perceived maternal support for sons (see also Colarossi & Eccles, 2003). Unlike Leaper (2002) and Landman-Peeters et al. (2005), our results did not suggest that females benefit more from parents' social support than males. In keeping with this finding, Colarossi and Eccles (2003) argued that role models have a substantial impact on adolescent development. Mash and Barkley (2014) confirmed the relevance of role models as protective factors for adolescent problem behavior. It could be possible that females not only identify their parents but also their teachers as role models, particularly since most high school teachers are female.

Alternatively, females may be more open to receiving greater amounts of support from outside of their own family compared to males. Previous research has indicated that females use more internalized coping strategies, such as active reflection of their problems, and seek more social support to solve their problems. In contrast, males may show more avoidance behavior and not ask others outside of the family for help (Eschenbeck, Kohlmann, & Lohaus, 2007). Further research should examine protective factors for students' depressive symptoms on a deeper level. We strongly recommend that future researchers consider different styles of social support, diverse role models, and coping strategies to explore the relative importance of socializers' behavior and students' coping strategies for students' problem behavior.

The fact that perceived mothers' social support contributes to a decrease in both males' and females' depressive symptoms, whereas perceived fathers' social support is only predictive of a decline in males' depressive symptoms, suggests that these adolescents had a closer and more intense relationship with their mothers than their fathers (see also Craig, 2006; Craig & Mullan, 2011). Additional analyses also showed that adolescents perceived a greater amount of support from their mothers than from their fathers (Tables A6 and A7 in the Appendix). Finally, this pattern of findings for mothers versus fathers is consistent with the reports of other studies (Colarossi & Eccles, 2003; Piko, Kovacs, & Fitzpatrick, 2009). However, this difference might also reflect the different patterns of support provided by mothers and fathers. Our social support measure assessed adolescents' perceptions of their parents' verbal support. We know from previous research that family communication is a cause of a higher perceived level of social support from parents (Fulkerson et al., 2006; Piko et al., 2009). Craig (2006) showed that mothers are more responsible for conversations with and emotional care for their children than fathers. The parental behavior of fathers tends to focus on the body and physical activities (Craig, 2006). Perhaps mothers are more likely than fathers to provide the specific types of emotional support and communication about difficult situations needed to help their adolescent children cope with experiences linked to the development of depressive symptoms. However, future research should focus on different styles of support given by mothers and fathers. One research focus could be to analyze if there are distinct impacts from different styles of perceived parental support for males' and females' depressive symptoms.

Perceived Social Support and Adolescent Risky Behavior: Only Youth-Driven Processes

An essential contribution of this study to the literature is the analysis of bidirectional effects between perceived socializers' support and student problem behavior between 9th and 12th grade. Compared to the results for students' depressive symptoms, our analyses of bidirectional associations revealed that student risky behavior predicted lower perceived support from fathers, mothers, and teachers, but not vice versa. One possible explanation for this finding could be that those social agents, like parents or teachers, distance themselves when adolescents demonstrate risky behavior. This behavior could result from a lack of knowledge about dealing with teenage risky behavior and also the resulting burden for the social agents themselves. Kunkel and Burleson (1999) showed a tendency to use dismissive or critical practices rather than empathetic ones in fathers. For teachers, Hamre and colleagues (2007) demonstrated that students with higher levels of risky behavior report more conflict with their teachers. Appropriate handling of students exhibiting risky behavior might be influenced by parents' and teachers' self-efficacy (Sela-Shayovitz, 2009). Socializer's beliefs about their self-efficacy might also moderate their efficiency in providing social support to these students.

In contrast, students who engage in risky behavior might also change their perception of their surroundings, including parents' and teachers' supportive behavior. Zimmermann et al. (2015) demonstrated that adolescents are particularly sensitive. They are more likely than younger children to feel emotionally hurt and unsupported by others. When paired with actual changes in levels of support due to increases in rates of risky behavior, this oversensitivity to negative feedback could lead to an even lower level of perceived support from the important adults in their lives. Based on these explanations, further research should examine why students with higher levels of risky behavior perceived lower social support from their parents and teachers. One approach could be to use parents' and teachers' data to compare the associations of perceived social support with the levels of social support reported by socializers.

TABLE 5
MODEL FITS OF ALL TESTED CROSS-LAGGED MODELS

	χ^2			CFI	TLI	RMSEA	SRMR
	Value	df	p				
Model for fathers' social support							
... on depressive symptoms (m-cohort)	0.10	1	.75	1.00	1.08	.00	.01
... on depressive symptoms (o-cohort)	3.94	1	.78	1.00	1.03	.00	.02
... on risk behavior (m-cohort)	0.00	0	.00	1.00	1.00	.00	.00
... on risk behavior (o-cohort)	7.79	7	.35	1.00	0.99	.03	.03
Model for mothers' social support							
... on depressive symptoms (m-cohort)	2.51	2	.29	1.00	0.98	.06	.04
... on depressive symptoms (o-cohort)	9.72	8	.29	1.00	0.98	.04	.04
... on risk behavior (m-cohort)	0.04	1	.84	1.00	1.06	.00	.01
... on risk behavior (o-cohort)	12.00	8	.15	0.99	0.97	.06	.04
Model for teachers' social support							
... on depressive symptoms (m-cohort)	0.15	1	.69	1.00	1.108	.00	.01
... on depressive symptoms (o-cohort)	3.28	8	.92	1.00	1.06	.00	.02
... on risk behavior (m-cohort)	0.94	2	.62	1.00	1.04	.00	.02
... on risk behavior (o-cohort)	9.79	8	.28	1.00	0.99	.04	.03

For males and females alike, the perceived social support of adult socializers did not lead to a decrease in student risky behavior. In accordance with the stage-environment fit theory (Eccles & Midgley, 1989; Eccles et al., 1993), we assumed that the mismatch of the optimal levels of socializers' support and the changing needs of adolescents may be different for specific kinds of behavior. To decrease adolescents' depressive symptoms, a substantial body of research has indicated the importance of a stable, emotionally supportive environment as a need of adolescents (Jia et al., 2009; Malecki & Demaray, 2003; Rueger et al., 2016). A change in risky behavior is also associated with control, autonomy support, or parents' warmth (Pinquart, 2017). Previous research that found significant effects of perceived parents' support behavior on student risky behavior assessed parents' protective behavior in other ways. For example, Lansford and colleagues (2018) indicated that parents' warmth is a factor in reducing student risky behavior. Using a Latino sample, Loukas and Prelow (2004) reported that protective factors for risky behavior differed between males and females. For females, the crucial elements were family routines, maternal monitoring, and socio-emotional competencies, but not the mother-child relationship. For males, only their socio-emotional competence acted as a protective factor.

A higher level of autonomy is also associated with more problem behavior (van Petegem, Beyers, Vansteenkiste, & Soenens, 2012). Thus, the mismatch between the need to be autonomous from parents and the actual level of autonomy may put adolescents under pressure and cause them to engage in oppositional and norm-breaking behavior (Brehm, 1966; van Petegem et al., 2012). After comparing these findings to our study's results, we suggest that different types of socializers' support as well as students' level of autonomy, coping strategies, and socio-emotional competencies have significant influences on their problem behavior. However, it remains unclear how these factors and socializers' social support are related.

Interestingly, the level of perceived mothers' social support had a significant positive effect on the change in adolescent risky behavior from 11th to 12th grade. Future research should focus in more detail on the relationship between perceived mothers' social support and adolescent risky behavior at the end of high school. Previous research (Gutman et al., 2011) and our findings show that, in particular, the risky behaviors of skipping school, smoking cigarettes, and drinking alcohol increase at the end of high school. Perhaps the significant positive effect illustrates the process of rejecting authority; the reactions of parents are not taken into account, and adolescents even tend to react in the opposite way to what parents support (Gutman et al., 2011; Lansford et al., 2018; van Petegem et al., 2012). Future research should investigate these associations separately for specific types of risky behavior to account for the level of autonomy and decision-making of adolescents.

Theoretical Implications

Given these findings, we cannot conclude that evidence exists for bidirectional transactional pathways between parents' and teachers' social support and student problem behavior in our data. We could not identify indirect longitudinal effects from perceived social support on student problem behavior and back to their perceived social support. Since we found both socializer-driven processes and youth-driven processes, we expect some mechanisms to mediate these relationships (Dumont & Provost, 1999). Auerbach et al. (2011) pointed out that student stress mediated the relationship between social support and depressive symptoms. Another explanatory mechanism could be students' coping strategies or emotional regulation (Eschenbeck et al., 2007; Loukas & Prelow, 2004) or students' level of autonomy and their motives (van Petegem et al., 2012).

As a conclusion for the stage-environment fit theory (Eccles & Midgley, 1989; Eccles et al., 1993), we argue that the mismatch between socializers' behavior and adolescents' needs is inter-individually different depending on adolescents' problem behavior. We would like to emphasize that different types of problem behavior are associated with different needs; therefore, there is a demand to analyze adolescents' needs based on their problem behavior and how socializers adapt their own behavior to reduce any mismatch. This finding also implies that there is no "ideal" behavior of socializers in adolescence, but that their support must be adapted to youth's individual needs.

Strengths, Limitations, and Future Research

Our study has several significant advantages. By comparing the relevance of the perceived social support of diverse socializers across adolescence, age-specific patterns were identified. At the same time, our analyses indicated gender differences in the significant associations between social agents and adolescent problem behavior.

However, some limitations need to be considered. First, the study was based on data obtained only from the students' perspective. To gain a deeper understanding of the processes at play, it is important to also consider reports from the socializers themselves. By collecting data from parents and teachers, future research will be able to investigate how much of the reciprocal interactions between problem behavior and social support are driven by students' perception of provided social support or by changes in the provision of social support. Such research would allow for further valuable empirical validation of the expectancy-value-model (see Eccles et al., 1983).

The current study used a sample from the longitudinal CAB Study. In this sample, traditional family structures still predominated, so the father spent less time with his children than the mother due to employment. It remains to be seen whether different patterns might emerge in less traditional families. However, recent studies have shown the same descriptive patterns as found in the current study (Craig & Mullan, 2011; Desjardins & Leadbeater, 2011). It is interesting that Chu et al.'s (2010) meta-analysis found that the effect size of social support on students' well-being has increased significantly over the years. In other words, we can assume that social support has a high impact on students' well-being. Rueger et al. (2016) also showed that associations were stable between studies from 1983–2014, indicating the general importance of social support from parents and teachers.

Our sample size created a limitation for analyzing gender differences. The Wald tests identified some gender differences, although different trends of the effects often became apparent even when insignificant differences were present. In addition, any differences were often marginally significant, although their effects showed clear tendencies of gender differences. Replication of our findings in larger samples will be needed to confirm our results. Overall, larger sample sizes would also allow for more advanced latent modeling and more precise estimates.

Classmates and peers should also be considered by future studies as further important socializers alongside parents and teachers. We know from previous studies from La Greca and Harrison (2005) and Oberle et al. (2011) that peer support has a significant influence on students' psychological well-being that can also explain student risky behavior. Colarossi and Eccles (2003) demonstrated that after mothers' and teachers' support, peer support can lead to a decrease in depressive symptoms in adolescence.

In the current study, we measured social support with a focus on communication between socializers and students. However, we know that other kinds of social support are also significantly related to students' problem behavior. In order to foster students' development and reduce student problem behavior, previous studies also demonstrated the importance of emotional care (Pössel et al., 2018) and receiving privileges, such as extended curfews (Love & Buriel, 2007). At the same time, giving students responsibilities and more structure in their daily life or implementing stronger parental monitoring was positively associated with a decrease in student problem behavior (Loukas & Prelow, 2004; Love & Buriel, 2007; van Petegam et al., 2012). These various types of socializers' support behaviors may have differential effects on males' and females' depressive symptoms and risky behavior across adolescence. Future studies should explore this angle using differentiated measures of social support.

CONCLUSIONS

Taken together, our findings suggest the following conclusions. First, we showed the relevance of socializers for student development throughout adolescence. This finding is in accordance with the assumption that different socializers affect student development in different ways during adolescence.

Second, we identified essential gender differences. These patterns depended on the gender of the socializer and the students; fathers influenced sons. In contrast, mothers were relevant to both sons and daughters. This difference suggests essential gender-dependent developmental structures.

Third, we found no evidence that social support, which was assessed as support through communication, leads to a reduction in risky behavior. We, therefore, concluded that different types of problem behavior imply different needs of adolescents, and it is, therefore, advisable to treat them in different ways.

Lastly, we identified both socializer-driven and youth-driven processes. Students with higher levels of risky behavior perceived lower amounts of social support from their mothers, fathers, and also teachers. These findings underscore the complexity of social interactions at play.

ENDNOTE

1. The same patterns of the stability of depressive symptoms and risky behavior from 9th to 10th grade were found separately for males and females (Table A5 in the Appendix).

REFERENCES

Banerjee, A., Chitnis, U. B., Jadhav, S.L., Bhawalkar, J.S., & Chaudhury, S. (2009). Hypothesis testing, type I and type II errors. *Industrial Psychiatry Journal, 18*(2), 127–131. https://doi.org/10.4103/0972-6748.62274

Bell, R.Q. (1979). Parent, child, and reciprocal influences. *American Psychologist, 34*(10), 821–826. https://doi.org/10.1037/0003-066X.34.10.821

Bokhorst, C.L., Sumter, S.R., & Westenberg, P.M. (2010). Social Support from Parents, Friends, Classmates, and Teachers in Children and Adolescents Aged 9 to 18 Years: Who Is Perceived as Most Supportive? *Social Development, 19*(2), 417–426. https://doi.org/10.1111/j.1467-9507.2009.00540.x

Bongers, I.L., Koot, H.M., van der Ende, J., & Verhulst, F.C. (2004). Developmental trajectories of externalizing behaviors in childhood and adolescence. *Child Development, 75*(5), 1523–1537. https://doi.org/10.1111/j.1467-8624.2004.00755.x

Boyer, T. (2006). The development of risk-taking: A multi-perspective review. *Developmental Review, 26*(3), 291–345. https://doi.org/10.1016/j.dr.2006.05.002

Brehm, J.W. (1966). *A Theory of Psychological Reactance*: Academic Press.

Center for Human Resource Research. (2008). *NLSY79 User's Guide: A Guide to the 1979-2006 National Longitudinal Survey of Youth Data*. Sponsored by Bureau of Labor Statistics, U.S. Department of Labor. Columbus, OH.

Chang, C-W., Yuan, R., & Chen, J-K. (2018). Social support and depression among Chinese adolescents: The mediating roles of self-esteem and self-efficacy. *Children and Youth Services Review, 88*, 128–134. https://doi.org/10.1016/j.childyouth.2018.03.001

Chu, P.S., Saucier, D.A., & Hafner, E. (2010). Meta-Analysis of the Relationships Between Social Support and Well-Being in Children and Adolescents. *Journal of Social and Clinical Psychology, 29*(6), 624–645. https://doi.org/10.1521/jscp.2010.29.6.624

Colarossi, L.G., & Eccles, J.S. (2003). Differential effects of support providers on adolescents' mental health. *Social Work Research, 27*(1), 19–30. https://doi.org/10.1093/swr/27.1.19

Conger, R.D., Brainerd, D.W., Birch, L.L., Friedberg, P.J., & Navarro, L.A. (1986). Assessing the Quality of Family Observations: A Comparative Analysis. *Journal of Marriage and the Family, 48*(2), 361. https://doi.org/10.2307/352403

Crosnoe, R., Glasgow Erickson, K., & Dornbusch, S.M. (2002). Protective Functions of Family Relationships and School Factors on the Deviant Behavior of Adolescent Boys and Girls. *Youth & Society, 33*(4), 515–544. https://doi.org/10.1177/0044118X02033004002

Daddis, C., & Smetana, J. (2005). Middle-class African American families' expectations for adolescents' behavioural autonomy. *International Journal of Behavioral Development, 29*(5), 371–381. https://doi.org/10.1177/01650250500167053

Demaray, M.K., & Malecki, C.K. (2002). The relationship between perceived social support and maladjustment for students at risk. *Psychology in the Schools, 39*(3), 305–316. https://doi.org/10.1002/pits.10018

Derogatis, L.R., & Melisaratos, N. (1983). The Brief Symptom Inventory: an introductory report. *Psychological Medicine, 13*(3), 595–605. https://doi.org/10.1017/S0033291700048017

Desjardins, T.L., & Leadbeater, B.J. (2011). Relational victimization and depressive symptoms in adolescence: Moderating effects of mother, father, and peer emotional support. *Journal of Youth and Adolescence, 40*(5), 531–544. https://doi.org/10.1007/s10964-010-9562-1

DiClemente, R.J., Brown, J.L., & Davis, T.L. (2013). Determinants of Health-Related Behaviors in Adolescence. In W.T. O'Donohue, L.T. Benuto, & L. Woodward Tolle (Eds.), *Handbook of Adolescent Health Psychology* (pp. 107–127). New York, NY: Springer New York. https://doi.org/10.1007/978-1-4614-6633-8_8

DiClemente, R.J., Santelli, J.S., & Crosby, R.A. (2009). *Adolescent health: Understanding and preventing risk behaviors* (1st ed.). San Francisco, Calif: Jossey-Bass. Retrieved from http://lib.myilibrary.com/detail.asp?ID=211368

Eccles, J.S., & Harold, R.D. (1993). Parent.school involvement during the early adolescent years. *Teachers College Record, 94*(3), 568–587.

Eccles, J.S., Midgley, C., Wigfield, A., Buchanan, C.M., Reuman, D., Flanagan, C., & Mac Iver, D. (1993). Development during adolescence: The impact of stage-environment fit on young adolescents' experiences in schools and in families. *American Psychologist, 48*(2), 90–101. https://doi.org/10.1037/0003-066X.48.2.90

Eccles, J.S., Midgley, C., Wigfield, A., Buchanan, C.M., Reuman, D., Flanagan, C., & Mac Iver, D. (1998). Development during adolescence: The impact of stage–environment fit on young adolescents' experiences in schools and in families. In J. M. Notterman (Ed.), *The evolution of psychology: Fifty years of the American psychologist* (1st ed., pp. 475–501). Washington, DC: American Psychological Assoc. https://doi.org/10.1037/10254-034

Fanti, K.A., Henrich, C.C., Brookmeyer, K.A., & Kuperminc, G.P. (2008). Toward a Transactional Model of Parent-Adolescent Relationship Quality and Adolescent Psychological Adjustment. *The Journal of Early Adolescence, 28*(2), 252–276. https://doi.org/10.1177/0272431607312766

Fernández-Zabala, A., Goñi, E., Camino, I., & Zulaika, L.M. (2016). Family and school context in school engagement. *European Journal of Education and Psychology, 9*(2), 47–55. https://doi.org/10.1016/j.ejeps.2015.09.001

Fosco, G.M., Stormshak, E.A., Dishion, T.J., & Winter, C.E. (2012). Family relationships and parental monitoring during middle school as predictors of early adolescent problem behavior. *Journal of Clinical Child and Adolescent Psychology : The Official Journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53, 41*(2), 202–213. https://doi.org/10.1080/15374416.2012.651989

Gniewosz, B., & Noack, P. (2012). Mamakind or papakind? [Mom's child or Dad's child]: Parent-specific patterns in early adolescents' intergenerational academic value transmission. *Learning and Individual Differences, 22*(4), 544–548. https://doi.org/10.1016/j.lindif.2012.03.003

Gutman, L.M., Eccles, J.S., Peck, S.C., & Malanchuk, O. (2011). The influence of family relations on trajectories of cigarette and alcohol use from early to late adolescence. *Journal of Adolescence, 34*(1), 119–128. https://doi.org/10.1016/j.adolescence.2010.01.005

Gutman, L.M., Joshi, H., & Schoon, I. (2019). Developmental Trajectories of Conduct Problems and Cumulative Risk from Early Childhood to Adolescence. *Journal of Youth and Adolescence, 48*(2), 181–198. https://doi.org/10.1007/s10964-018-0971-x

Gutman, L.M., Peck, S.C., Malanchuk, O., Sameroff, A.J., & Eccles, J.S. (2017a). Chapter 7 Problem Behaviors. In L. M. Gutman, S. C. Peck, O. Malanchuk, A. J. Sameroff, & J. S. Eccles (Eds.), *Monographs of the Society for Research in Child Development: serial no. 327 = vol. 82, no. 4. Moving through adolescence: Developmental trajectories of African American and European American youth* (pp. 106–113). Boston, Massachusetts: Wiley.

Gutman, L.M., Peck, S.C., Malanchuk, O., Sameroff, A.J., & Eccles, J.S. (Eds.). (2017b). *Monographs of the Society for Research in Child Development: serial no. 327 = vol. 82, no. 4. Moving through adolescence: Developmental trajectories of African American and European American youth.* Boston, Massachusetts: Wiley.

Hankin, B.L., Mermelstein, R., & Roesch, L. (2007). Sex differences in adolescent depression: Stress exposure and reactivity models. *Child Development, 78*(1), 279–295. https://doi.org/10.1111/j.1467-8624.2007.00997.x

Hankin, B.L., Young, J.F., Abela, J.R.Z., Smolen, A., Jenness, J.L., Gulley, L.D., . . . Oppenheimer, C.W. (2015). Depression from childhood into late adolescence: Influence of gender, development, genetic susceptibility, and peer stress. *Journal of Abnormal Psychology, 124*(4), 803–816. https://doi.org/10.1037/abn0000089

Jia, Y., Way, N., Ling, G., Yoshikawa, H., Chen, X., Hughes, D., . . . Lu, Z. (2009). The influence of student perceptions of school climate on socioemotional and academic adjustment: A comparison of chinese and american adolescents. *Child Development, 80*(5), 1514–1530. https://doi.org/10.1111/j.1467-8624.2009.01348.x.

Johnston, L.D., & O'Malley, P.M. (1986). Why Do the Nation's Students Use Drugs and Alcohol? Self-Reported Reasons from Nine National Surveys. *Journal of Drug Issues, 16*(1), 29–66. https://doi.org/10.1177/002204268601600103

Joyce, H.D., & Early, T.J. (2014). The Impact of School Connectedness and Teacher Support on Depressive Symptoms in Adolescents: A Multilevel Analysis. *Children and Youth Services Review, 39*, 101–107. https://doi.org/10.1016/j.childyouth.2014.02.005

Kerr, M., Stattin, H., & Burk, W.J. (2010). A Reinterpretation of Parental Monitoring in Longitudinal Perspective. *Journal of Research on Adolescence, 20*(1), 39–64. https://doi.org/10.1111/j.1532-7795.2009.00623.x

Kerr, M., Stattin, H., & Özdemir, M. (2012). Perceived parenting style and adolescent adjustment: Revisiting directions of effects and the role of parental knowledge. *Developmental Psychology, 48*(6), 1540–1553. https://doi.org/10.1037/a0027720

La Greca, A.M., & Harrison, H.M. (2005). Adolescent peer relations, friendships, and romantic relationships: Do they predict social anxiety and depression? *Journal of Clinical Child and Adolescent Psychology : The Official Journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53, 34*(1), 49–61. https://doi.org/10.1207/s15374424jccp3401_5

Lansford, J.E., Rothenberg, W.A., Jensen, T.M., Lippold, M.A., Bacchini, D., Bornstein, M.H., . . . Al-Hassan, S.M. (2018). Bidirectional Relations Between Parenting and Behavior Problems From Age 8 to 13 in Nine Countries. *Journal of Research on Adolescence : The Official Journal of the Society for Research on Adolescence, 28*(3), 571–590. https://doi.org/10.1111/jora.12381

Lätsch, A. (2018). The Interplay of Emotional Instability and Socio-Environmental Aspects of Schools during Adolescence. *European Journal of Educational Research, 7*(2), 281–293. https://doi.org/10.12973/eu-jer.7.2.281

Laursen, B., Hafen, C.A., Kerr, M., & Stattin, H. (2012). Friend influence over adolescent problem behaviors as a function of relative peer acceptance: To be liked is to be emulated. *Journal of Abnormal Psychology, 121*(1), 88–94. https://doi.org/10.1037/a0024707

Leaper, C. (2002). Parenting Girls and Boys. In M. H. Bornstein (Ed.), *Handbook of Parenting* (2nd ed., pp. 189–226). Mahwah: Taylor & Francis.

Loukas, A., & Prelow, H.M. (2004). Externalizing and Internalizing Problems in Low-Income Latino Early Adolescents. *The Journal of Early Adolescence, 24*(3), 250–273. https://doi.org/10.1177/0272431604265675

Malecki, C.K., & Demaray, M.K. (2003). What Type of Support Do They Need?: Investigating Student Adjustment as Related to Emotional, Informational, Appraisal, and Instrumental Support. *School Psychology Quarterly, 18*(3), 231–252. https://doi.org/10.1521/scpq.18.3.231.22576

Marsh, H.W., Lüdtke, O., Robitzsch, A., Trautwein, U., Asparouhov, T., Muthen, B., & Nagengast, B. (2009). Doubly-Latent Models of School Contextual Effects: Integrating Multilevel and Structural Equation Approaches to Control Measurement and Sampling Error. *Multivariate Behavioral Research*, *44*(6), 764–802. https://doi.org/10.1080/00273170903333665

Marsh, H.W., Parker, P.D., & Morin, A.J.S. (2015). Invariance Testing Across Samples and Time: Cohort-sequence Analysis of Perceived Body Composition. In N. Ntoumanis & N.D. Myers (Eds.), *An Introduction to Intermediate and Advanced Statistical Analyses for Sport and Exercise Scientists* (pp. 101–130). s.l.: Wiley.

Martínez-Ferrer, B., & Stattin, H. (2019). Self-harm, depressive mood, and belonging to a subculture in adolescence. *Journal of Adolescence*, *76*, 12–19. https://doi.org/10.1016/j.adolescence.2019.08.003

Maughan, B., Collishaw, S., & Stringaris, A. (2013). Depression in Childhood and Adolescence. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, *22*(1), 35–40.

Maurizi, L.K., Grogan-Kaylor, A., Granillo, M.T., & Delva, J. (2013). The Role of Social Relationships in the Association between Adolescents' Depressive Symptoms and Academic Achievement. *Children and Youth Services Review*, *35*(4), 618–625. https://doi.org/10.1016/j.childyouth.2013.01.006

Meadows, S.O., Brown, J.S., & Elder, G.H. (2006). Depressive Symptoms, Stress, and Support: Gendered Trajectories From Adolescence to Young Adulthood. *Journal of Youth and Adolescence*, *35*(1), 89–99. https://doi.org/10.1007/s10964-005-9021-6

Milevsky, A., Schlechter, M., Netter, S., & Keehn, D. (2007). Maternal and Paternal Parenting Styles in Adolescents: Associations with Self-Esteem, Depression and Life-Satisfaction. *Journal of Child and Family Studies*, *16*(1), 39–47. https://doi.org/10.1007/s10826-006-9066-5

Minzi, M.C.R. (2010). Gender and cultural patterns of mothers' and fathers' attachment and links with children's self-competence, depression and loneliness in middle and late childhood. *Early Child Development and Care*, *180*(1-2), 193–209. https://doi.org/10.1080/03004430903415056

Moffitt, T.E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review*, *100*(4), 674–701.

Muthén, L.K., & Muthén, B.O. (1998-2017). *Mplus User's Guide* (Eighth Edition). Los Angeles, CA: Muthén & Muthén.

Nolen-Hoeksema, S., & Aldao, A. (2011). Gender and age differences in emotion regulation strategies and their relationship to depressive symptoms. *Personality and Individual Differences*, *51*(6), 704–708. https://doi.org/10.1016/j.paid.2011.06.012

O'Donohue, W.T., Benuto, L.T., & Woodward Tolle, L. (Eds.). (2013). *Handbook of Adolescent Health Psychology*. New York, NY: Springer New York. https://doi.org/10.1007/978-1-4614-6633-8

Pardini, D.A. (2008). Novel insights into longstanding theories of bidirectional parent-child influences: Introduction to the special section. *Journal of Abnormal Child Psychology*, *36*(5), 627–631. https://doi.org/10.1007/s10802-008-9231-y

Piko, B.F., & Kovács, E. (2010). Do parents and school matter? Protective factors for adolescent substance use. *Addictive Behaviors*, *35*(1), 53–56. https://doi.org/10.1016/j.addbeh.2009.08.004

Pinquart, M. (2017). Associations of parenting dimensions and styles with externalizing problems of children and adolescents: An updated meta-analysis. *Developmental Psychology*, *53*(5), 873–932. https://doi.org/10.1037/dev0000295

Plunkett, S.W., Henry, C.S., Robinson, L.C., Behnke, A., & Falcon, P.C. (2007). Adolescent Perceptions of Parental Behaviors, Adolescent Self-Esteem, and Adolescent Depressed Mood. *Journal of Child and Family Studies*, *16*(6), 760–772. https://doi.org/10.1007/s10826-006-9123-0

Rueger, S.Y., Chen, P., Jenkins, L.N., & Choe, H.J. (2014). Effects of perceived support from mothers, fathers, and teachers on depressive symptoms during the transition to middle school. *Journal of Youth and Adolescence*, *43*(4), 655–670. https://doi.org/10.1007/s10964-013-0039-x

Rueger, S.Y., Malecki, C.K., & Demaray, M.K. (2010). Relationship between multiple sources of perceived social support and psychological and academic adjustment in early adolescence:

Comparisons across gender. *Journal of Youth and Adolescence, 39*(1), 47–61. https://doi.org/10.1007/s10964-008-9368-6

Rueger, S.Y., Malecki, C.K., Pyun, Y., Aycock, C., & Coyle, S. (2016). A meta-analytic review of the association between perceived social support and depression in childhood and adolescence. *Psychological Bulletin, 142*(10), 1017–1067. https://doi.org/10.1037/bul0000058

Sela-Shayovitz, R. (2009). Dealing with school violence: The effect of school violence prevention training on teachers' perceived self-efficacy in dealing with violent events. *Teaching and Teacher Education, 25*(8), 1061–1066. https://doi.org/10.1016/j.tate.2009.04.010

Sheeber, L.B., Davis, B., Leve, C., Hops, H., & Tildesley, E. (2007). Adolescents' relationships with their mothers and fathers: Associations with depressive disorder and subdiagnostic symptomatology. *Journal of Abnormal Psychology, 116*(1), 144–154. https://doi.org/10.1037/0021-843X.116.1.144

Smetana, J.G., Campione-Barr, N., & Daddis, C. (2004). Longitudinal development of family decision making: Defining healthy behavioral autonomy for middle-class African American adolescents. *Child Development, 75*(5), 1418–1434. https://doi.org/10.1111/j.1467-8624.2004.00749.x

Smetana, J.G., Metzger, A., Gettman, D.C., & Campione-Barr, N. (2006). Disclosure and secrecy in adolescent-parent relationships. *Child Development, 77*(1), 201–217. https://doi.org/10.1111/j.1467-8624.2006.00865.x

Sowislo, J.F., & Orth, U. (2013). Does low self-esteem predict depression and anxiety? A meta-analysis of longitudinal studies. *Psychological Bulletin, 139*(1), 213–240. https://doi.org/10.1037/a0028931

Van Petegem, S., Beyers, W., Vansteenkiste, M., & Soenens, B. (2012). On the association between adolescent autonomy and psychosocial functioning: Examining decisional independence from a self-determination theory perspective. *Developmental Psychology, 48*(1), 76–88. https://doi.org/10.1037/a0025307

Walker, E.F., Sabuwalla, Z., & Huot, R. (2004). Pubertal neuromaturation, stress sensitivity, and psychopathology. *Development and Psychopathology, 16*(4), 807–824.

Wang, M-T., Brinkworth, M., & Eccles, J.S. (2013). Moderating effects of teacher-student relationship in adolescent trajectories of emotional and behavioral adjustment. *Developmental Psychology, 49*(4), 690–705. https://doi.org/10.1037/a0027916

Wang, M-T., & Kenny, S. (2014). Longitudinal links between fathers' and mothers' harsh verbal discipline and adolescents' conduct problems and depressive symptoms. *Child Development, 85*(3), 908–923. https://doi.org/10.1111/cdev.12143

Wigfield, A., Byrnes, J.P., & Eccles, J.S. (2006). Development During Early and Middle Adolescence. In P. A. Alexander & P. H. Winne (Eds.), *Handbook of educational psychology* (2nd ed., pp. 87–113). Mahwah, NJ: Erlbaum.

Yu, C., Li, X., Wang, S., & Zhang, W. (2016). Teacher autonomy support reduces adolescent anxiety and depression: An 18-month longitudinal study. *Journal of Adolescence, 49*, 115–123. https://doi.org/10.1016/j.adolescence.2016.03.001

Zimmermann, P., Iwanski, A., & Çelik, F. (2015). Emotionsregulation und emotionale Verletzungssensitivität bei Jugendlichen mit Angststörungen [Emotion Regulation and Emotional Vulnerability in Adolescents with Anxiety Disorders]. *Praxis der Kinderpsychologie und Kinderpsychiatrie, 64*(7), 527–544. https://doi.org/10.13109/prkk.2015.64.7.527

APPENDIX

TABLE A1
OVERVIEW OF ALL USED ITEMS

Scales and Items

Depressive Symptoms

During the last month (including today) how often have you ...
... felt hopeless?
... felt like you don't care anymore?
... felt depressed?
... felt really unhappy because it seemed like nobody wanted you as a friend?
... had thoughts of ending your life?

Risky behavior

In the last 6 months, how often did you do the things listed below?
... skip a day of school?
... do something you knew was dangerous just for the thrill of it?
... have contact with the police for something you did or that they thought you did?
... damage public or private property?
... get drunk?
... get suspended from school?
... disobey your parents on an important issue?
... do some pretty risky things because it was a real kick?
... lie to your parents about something important?
... get into a fist fight with another kid?
... drink alcohol?
... get sent to the principal's office or assistant principal's office?

Teacher support

How many teachers in your school value and listen to students' ideas?
How many teachers at this school treat students with respect?
How many of your teachers treat you like a grown-up?
How many of your teachers believe all students can learn?

Parent social support

How often did your (mom/dad) listen carefully to your point of view?
How often did your (mom/dad) help you do something that was important to you?
How often did your (mom/dad) let you know she really cared?
How often did your (mom/dad) tell you she is proud of the things you do?

TABLE A2
MODEL FITS INDICES OF THE STEPWISE PROCEDURE TO TEST MEASUREMENT INVARIANCE ACROSS TIME AND COHORTS

	χ^2 Value	df	p	RMSEA	CFI	TLI	SRMR
Students' depressive symptoms							
Configural invariance							
1a	183.08	144	.02	.03	.98	.97	.06
Metric measure invariance							
2a	214.07	163	.01	.04	.97	.97	.07
Scalar measure invariance							
3a	246.47	179	.00	.04	.97	.96	.07
3b	265.01	185	.00	.04	.96	.95	.07
Fathers' social support							
Configural invariance							
1a	121.07	78	.00	.05	.98	.97	.04
Metric measure invariance							
2a	138.63	91	.00	.05	.98	.97	.05
Scalar measure invariance							
3a	178.57	103	.00	.06	.97	.96	.05
3b	186.53	107	.00	.06	.97	.96	.06
Mothers' social support							
Configural invariance							
1a	102.71	78	.03	.04	.99	.98	.04
Metric measure invariance							
2a	123.64	90	.01	.04	.98	.98	.05
Scalar measure invariance							
3a	159.36	101	.00	.05	.97	.96	.06
3b	171.24	105	.00	.05	.97	.96	.07
Teachers' social support							
Configural invariance							
1a	109.26	78	.01	.04	.98	.97	.05
Metric measure invariance							
2a	126.78	90	.01	.04	.98	.97	.06
Scalar measure invariance							
3a	152.80	100	.00	.05	.97	.96	.06
3b	181.15	105	.00	.05	.96	.94	.08

Note. 1a = no parameters constrained to be invariant, 2a = Factor loadings and factor variance-covariances constrained to be invariant, 3a = + intercept constrained to be invariant, 3b = + factor variance-covariances constrained to be invariant.

TABLE A3
MODEL FIT INDICES OF THE STEPWISE PROCEDURE TO TEST MEASUREMENT INVARIANCE ACROSS TIME AND GENDER

| | χ^2 | | | | | | |
	Value	df	p	RMSEA	CFI	TLI	SRMR
Students' depressive symptoms							
Configural invariance							
1a	203.25	144	.00	.04	.97	.96	.06
Metric measure invariance							
2a	241.91	163	.00	.04	.96	.95	.08
Scalar measure invariance							
3a	280.48	180	.00	.05	.95	.94	.08
3b	284.70	184	.00	.05	.95	.94	.08
Fathers' social support							
Configural invariance							
1a	128.39	78	.00	.05	.98	.96	.04
Metric measure invariance							
2a	145.81	91	.00	.05	.98	.97	.05
Scalar measure invariance							
3a	176.76	103	.00	.05	.96	.96	.05
3b	193.26	106	.00	.06	.96	.95	.06
Mothers' social support							
Configural invariance							
1a	91.57	78	.14	0.03	.99	.99	.04
Metric measure invariance							
2a	103.26	90	.16	.02	.99	.99	.05
Scalar measure invariance							
3a	136.02	102	.01	.04	.98	.98	.05
3b	145.87	105	.01	.04	.98	.97	.05
Teachers' social support							
Configural invariance							
1a	92.58	78	.12	.03	.99	.99	.04
Metric measure invariance							
2a	109.17	87	.05	.03	.99	.98	.06
Scalar measure invariance							
3a	173.76	97	.00	.06	.96	.94	.08
3b	160.02	105	.00	.05	.97	.96	.09

Note. 1a = no parameters constrained to be invariant, 2a = Factor loadings and factor variance-covariances constrained to be invariant , 3a = + intercept constrained to be invariant , 3b = + factor variance -covariances constrained to be invariant.

TABLE A4
WALD CHI-SQUARE TESTS TO COMPARE SIGNIFICANT EFFECTS ACROSS GENDER
FOR ALL TESTED CROSS-LAGGED MODELS

			Gender-specific effects		Wald-Test (χ^2)		
			male	female	Value	df	p
Effect for mothers' social support							
m-cohort							
Mom9	→	Depr10	-.31**	-.16	0.96	1	.33
Depr9	→	Mom10	-.07	.10	1.30	1	.26
Mom9	→	Risk10	-.02	.02	0.04	1	.84
Risk9	→	Mom10	-.31**	-.06	3.80	1	.05
o-cohort							
Mom10	→	Depr11	-.14	-.13*	0.00	1	.98
Mom10	→	Risk11	.09	.03	0.40	1	.52
Risk10	→	Mom11	-.14	-.07	2.10	1	.15
Depr10	→	Mom11	.11	.03	0.55	1	.45
Mom11	→	Depr12	.13	-.02	1.01	1	.31
Mom11	→	Risk12	-.02	.13*	0.59	1	.44
Risk11	→	Mom12	-.00	.13**	1.88	1	.17
Depr11	→	Mom12	-.12	.05	2.30	1	.13
Effect for fathers' social support							
m-cohort							
Dad9	→	Depr10	-.20*	.08	2.84	1	.09
Depr9	→	Dad10	.05	.01	0.10	1	.75
Dad9	→	Risk10	.24**	-.02	3.55	1	.06
Risk9	→	Dad10	-.25**	-.00	5.21	1	.02
o-cohort							
Dad10	→	Depr11	.01	-.07	0.17	1	.68
Depr10	→	Dad11	-.12	-.04	0.63	1	.43
Dad11	→	Depr12	.20**	-.14	6.74	1	.01
Depr11	→	Dad12	-.09	-.14**	0.28	1	.60
Risk10	→	Dad11	-.00	-.17**	3.07	1	.08
Dad10	→	Risk11	.09	.08	0.08	1	.77
Risk11	→	Dad12	.12	.06	0.10	1	.75
Dad11	→	Risk12	-.02	-.06	0.08	1	.78
Effect for teachers' social support							
m-cohort							
Teach9	→	Depr10	.05	-.37***	7.66	1	.01
Depr9	→	Teach10	-.03	.03	0.15	1	.70
Teach9	→	Risk10	.20	.05	0.61	1	.44
Risk9	→	Teach10	-.09	-.23**	0.17	1	.68
o-cohort							
Teach10	→	Depr11	.04	.02	0.04	1	.85
Depr10	→	Teach11	-.12	.05	1.93	1	.17
Teach11	→	Depr12	-.09	-.10	0.11	1	.74
Depr11	→	Teach12	-.08	-.09	0.01	1	.92
Teach10	→	Risk11	-.02	-.06	0.11	1	.74
Risk10	→	Teach11	-.18*	-.07	1.93	1	.16
Teach11	→	Risk12	-.10	-.01	0.77	1	.38
Risk11	→	Teach12	-.14	-.16**	0.12	1	.73

Note. risk = risky behavior, dep = depressive symptoms, teach = perceived teachers' social support, dad = perceived fathers' social support, mom = perceived mothers' social support, 9 = grade 9, 10 = grade 10, 11 = grade 11, 12 = grade 12.
*$p < .10$, **$p < .05$, ***$p < .001$.

TABLE A5
MEANS OF ADOLESCENTS' DEPRESSIVE SYMPTOMS AND RISKY BEHAVIOR ACROSS HIGH SCHOOL BY GENDER

	m-cohort 9th grade M (SD)	10th grade M (SD)	o-cohort 10th grade M (SD)	11th grade M (SD)	12th grade M (SD)
Depressive symptoms					
Male	2.12 (1.09)	2.17 (1.00)	2.54 (1.30)	2.28 (1.08)	2.06 (0.86)
Female	2.64 (1.18)	2.63 (1.25)	2.80 (1.41)	2.64 (1.19)	2.51 (1.18)
Risky behavior					
Male	8.89 (6.79)	10.49 (9.59)	13.55 (16.00)	13.66 (11.47)	14.95 (11.21)
Female	10.28 (11.97)	11.92 (11.58)	8.289 (8.64)	10.10 (9.93)	12.23 (9.57)

TABLE A6
TEST OF DIFFERENCES FOR SOCIALIZERS' SOCIAL SUPPORT BY GENDER (T-TESTS) AND FOR SOCIAL SUPPORT BY SOCIALIZER AND GENDER (ANOVA) FOR THE M-COHORT IN 9th AND 10th GRADE

Source of support	9th grade Female	9th grade Male	Independent t-test	10th grade Female	10th grade Male	Independent t-test
Mom (MS)	3.28 (0.99)	3.31 (0.76)	$t(123) = 0.18$, $p > 0.05$	3.39 (1.05)	3.32 (0.94)	$t(152) = -0.45$, $p > 0.05$
Dad (FS)	2.76 (1.18)	2.86 (0.91)	$t(119) = 0.50$, $p > 0.05$	2.73 (1.03)	2.77 (1.04)	$t(146) = 0.20$, $p > 0.05$
Teach (TS)	5.08 (1.05)	5.14 (1.10)	$t(125) = 0.34$, $p > 0.05$	4.79 (1.13)	5.18 (1.10)	$t(152) = 2.17$, $p < 0.05$
			Repeated Measures ANOVA with Post Hoc results (Bonferroni)			
ANOVA	$F(2, 112) = 121.36$, $p < .05$	$F(2, 104) = 142.29$, $p < .05$		$F(2, 149) = 107.40$, $p < .05$	$F(1, 97) = 136.81$, $p < .05$	
Post Hoc	TS > MS > FS	TS > MS > FS		TS > MS > FS	TS > MS > FS	

Note. teach = perceived teachers' social support (TS), dad = perceived fathers' social support (FS), mom = perceived mothers' social support (MS).

TABLE A7
TEST OF DIFFERENCES PER SOCIALIZERS' SOCIAL SUPPORT BY GENDER (T-TESTS) AND FOR SOCIAL SUPPORT BY SOCIALIZER AND GENDER (ANOVA) FOR THE O-COHORT IN 10th, 11th AND 12th GRADE

	10th grade			11th grade			12th grade		
	Female	*Male*	Independent *t*-test	*Female*	*Male*	Independent *t*-test	*Female*	*Male*	Independent *t*-test
Mom (MS)	3.26 (1.12)	3.17 (0.98)	$t(452) = -0.93$, $p > .05$	3.18 (1.04)	3.26 (0.95)	$t(313) = 0.68$, $p > .05$	3.32 (1.03)	3.26 (0.94)	$t(354) = -0.58$, $p > .05$
Dad (FS)	2.85 (1.18)	2.92 (1.08)	$t(439) = 0.64$, $p > .05$	2.71 (1.11)	2.82 (1.01)	$t(299) = 0.85$, $p > .05$	2.75 (1.07)	2.81 (1.00)	$t(342) = 0.52$, $p > .05$
Teach (TS)	4.53 (1.14)	4.63 (1.12)	$t(465) = 1.03$, $p > .05$	4.92 (1.08)	5.00 (1.08)	$t(315) = 0.65$, $p > .05$	4.87 (1.15)	5.09 (1.10)	$t(353) = 1.78$, $p > .05$

Repeated Measures ANOVA with Post Hoc results (Bonferroni)

	10th grade			11th grade			12th grade		
	Female	*Male*		*Female*	*Male*		*Female*	*Male*	
ANOVA	$F(2, 441) = 199.48$, $p < .05$	$F(2, 337) = 276.32$, $p < .05$		$F(2, 331) = 300.17$, $p < .05$	$F(2, 230) = 244.35$, $p < .05$		$F(2, 351) = 279.52$, $p < .05$	$F(2, 250) = 299.02$, $p < .05$	
Post Hoc	TS > MS > FS	TS > MS > FS		TS > MS > FS	TS > MS > FS		TS > MS > FS	TS > MS > FS	

Note. teach = perceived teachers' social support (TS), dad = perceived fathers' social support (FS), mom = perceived mothers' social support (MS).