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Perceived Autonomy Support From Parents and Best Friends: Longitudinal Associations with Adolescents' Depressive Symptoms

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Abstract

According to the self-determination theory, experiencing autonomy support in close relationships is thought to promote adolescents' well-being. Perceptions of autonomy support from parents and from best friends have been associated with lower levels of adolescents' depressive symptoms. This longitudinal study examines the relative contribution of perceived autonomy support from parents and best friends in relation to adolescents' depressive symptoms and changes in these associations from early to late adolescence. Age and gender differences were also investigated. Questionnaires about mother, father, and a best friend were filled out by 923 early adolescents and 390 middle adolescents during five consecutive years, thereby covering an age range from 12 to 20. Multi-group cross-lagged path analysis revealed concurrent and longitudinal negative associations between perceived parental autonomy support and adolescents' depressive symptoms. No concurrent and longitudinal associations were found between perceived best friends' autonomy support and adolescents' depressive symptoms. Results were similar for early and middle adolescent boys and girls. Prevention and treatment programs should focus on the bidirectional interplay during adolescence between perceptions of parental autonomy support and adolescents' depressive symptoms.

Keywords: perceived autonomy support; depressive symptoms; parent-adolescent relationships; friendships

Introduction

It is well recognized that the emergence of more autonomous functioning is a crucial developmental process for adolescents (Smetana, 2011; Wray-Lake, Crouter, & McHale, 2010). According to the self-determination theory (SDT, Ryan & Deci, 2000), experiencing autonomy support from the social environment is thought to promote adolescents' well-being and to prevent the development of adolescents' depressive

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symptoms. Thus, healthy affective functioning adolescents need to feel that their opinions, wishes, and needs are supported within close relationships (Grotevant & Cooper, 1986).

The two relational contexts most important for adolescents are relationships with parents and friends (Smetana, 2011). Perceiving autonomy support from parents (Manzi, Regalia, Pelucchi, & Fincham, 2012) and from best friends (Deci, La Guardia, Moller, Scheiner, & Ryan, 2006) has been associated concurrently with lower levels of adolescents' depressive symptoms. Although parents are thought to remain important for adolescents, best friends gradually take a more central position in the lives of adolescents (De Goede, Branje, Delsing, & Meeus, 2009; Way & Greene, 2006). Best friends may become more important providers of autonomy support over the course of adolescence. These changes may affect the relative contributions of perceptions of autonomy from parents and best friends to adolescents' depressive symptoms from early to late adolescence. Therefore, this longitudinal study examined bidirectional associations between parents' and best friends' perceived autonomy support and depressive symptoms and changes in these associations from early to late adolescence.

Perceptions of Autonomy Support in Close Relationships and Depressive Symptoms

According to SDT, the need for autonomy implies that adolescents have a natural desire to experience a sense of personal choice, volition, and psychological freedom (Ryan & Deci, 2000). Autonomy supportive relationships are thought to encourage such self-determined functioning in adolescents and are critical for adolescents' well-being, including depressive symptoms (Grolnick, Ryan, & Deci, 1991). Adolescents who feel pressured to think, behave, or feel in a particular way are assumed to show higher levels of depressive symptoms (Soenens & Vansteenkiste, 2010). In line with SDT, the autonomy-relatedness perspective assumes that for healthy affective functioning of adolescents, relationship partners should support adolescents' autonomy while maintaining a warm and supportive relationship (Allen et al., 2006; Feeney, 2007; Grotevant & Cooper, 1986). Thus, adolescents' need for autonomy support refers to the central issue of feelings of encouragement of the self in the context of interpersonal interaction, and it is therefore vitally important to investigate adolescents' perceptions of autonomy support in close relationships.

A growing body of cross-sectional research consistently showed that perceptions of autonomy support from parents were negatively associated with adolescents' depressive symptoms. Higher levels of perceived parental promotion of volitional functioning were related to fewer depressive symptoms during middle (Soenens, Park, Vansteenkiste, & Mouratidis, 2012) and late adolescence (Soenens, Vansteenkiste, & Sierens, 2009). Also, early and middle adolescents who reported a low frequency of depressive feelings perceived more autonomy support from parents than adolescents who reported a high frequency of depressive feelings (Wong & Wiest, 1999). Late adolescents who perceived more satisfaction regarding their need for autonomy from parents reported lower levels of depressive symptoms (La Guardia, Ryan, Couchman, & Deci, 2000). Moreover, the negative association between perceptions of autonomy support and depressive symptoms has been found repeatedly across cultures during middle and late adolescence (Chirkov & Ryan, 2001; Manzi et al., 2012; Sheldon, Abad, & Omoile, 2009). One longitudinal study also showed that early adolescents who perceived an autonomy-enhancing family climate reported more adaptive coping over time (Seiffge-Krenke & Pakalniskiene, 2011).

Besides empirical support for a direct link between perceived parental autonomy support and adolescents' depressive symptoms, there are also studies that provided evidence for an indirect association. When adolescents perceived more autonomy support from parents, they reported higher levels of personal choice or volition, and consequently showed lower levels depressive symptoms during middle and late adolescence (Soenens et al., 2007). Autonomy-supportive parenting during middle and late adolescence was found to predict more adaptive emotion regulation, and this has been associated with fewer depressive symptoms during adolescence (Roth & Assor, 2012; Roth, Assor, Niemiec, Ryan, & Deci, 2009; Silk, Steinberg, & Morris, 2003). Altogether, these cross-sectional studies supported the notion that greater perceived autonomy support from parents was associated with fewer depressive symptoms during adolescence. Longitudinal research is needed that examines whether higher levels of perceived parental autonomy support also predict lower levels of adolescents' depressive symptoms over time.

Research on perceived autonomy support from best friends and depressive symptoms is more limited. One cross-sectional study (Deci et al., 2006) showed that higher levels of perceived autonomy support from best friends were associated with higher levels of well-being (e.g., fewer depressive symptoms) during late adolescence. Furthermore, early and middle adolescents who reported a low frequency of depressive feelings perceived more autonomy support from friends than adolescents who reported a high frequency of depressive feelings (Wong & Wiest, 1999). Finally, girls who experienced from early to late adolescence low levels of autonomy support and closeness with best friends showed an increase in depressive symptoms over time. Yet girls who experienced high levels of autonomy support and closeness with best friends throughout adolescence showed low levels of depressive symptoms over time (Selfhout, Branje, & Meeus, 2009). Overall, these studies indicated that experiencing low levels of autonomy support in (best) friendships was related cross-sectionally to more depressive symptoms and related longitudinally to the development of depressive symptoms. Nevertheless, longitudinal predictive effects from adolescents' perceptions of best friends' autonomy support to subsequent adolescents' depressive symptoms need to be examined.

Relative Contribution of Perceptions of Autonomy Support From Parents and Best Friends to Depressive Symptoms

Although several studies showed that perceptions of autonomy support from parents and best friends were negatively associated with adolescents' depressive symptoms (Deci et al., 2006; Soenens et al., 2012), only a few studies examined the relative contribution of parents' and best friends' autonomy support to adolescents' depressive symptoms. A cross-sectional study found that during early adolescence, only perceptions of parental autonomy support, instead of perceptions of siblings, friends, and school, were negatively related to depressive symptoms (Eccles, Early, Fraser, Belansky, & McCarthy, 1997). In contrast, one observational study showed that difficulties with establishing autonomy and relatedness during interactions with parents and best friends each explained small, but unique, amounts of variance in future depressive symptoms of early adolescents (Allen et al., 2006). Studies that examined parents' and best friends' autonomy support in tandem used different measures of autonomy support (i.e., perceptions and observations) and yielded different results. More research needs to examine the relative contribution of perceived parents' and best friends' autonomy support to adolescents' depressive symptoms across adolescence.

Theory (Bowlby, 1980; Laursen & Bukowski, 1997) and empirical evidence (Hodges, Finnegan, & Perry, 1999) suggest that adolescents' perceptions of relationships of parents and friends are closely related. For example, when adolescents perceived their parents as more supportive, they also perceived their friends as more supportive (Stice, Ragan, & Randall, 2004; Young, Berenson, Cohen, & Garcia, 2005). Nevertheless, it has been found that although parents remained important during adolescence, friends became increasingly important during this age period (Bokhorst, Sumter, & Westenberg, 2009; De Goede et al., 2009). Whereas support and closeness decreased in relationships with parents, closeness, support, and intimacy increased in friendships (Collins & Steinberg, 2006; Smetana, 2011). It is possible that perceived autonomy support from best friends becomes more strongly related to depressive symptoms over the course of adolescence than perceived autonomy support from parents. Hence, this study examined whether age moderates the longitudinal associations between perceived autonomy support from parents and best friends, and adolescents' depressive symptoms.

Direction of Effects Between Perceptions of Autonomy Support and Depressive Symptoms

Most earlier studies investigated whether perceived autonomy support from parents or best friends predicted concurrent levels of depressive symptoms in adolescents (e.g., Deci et al., 2006; Soenens et al., 2012). These unidirectional effects have been interpreted often as evidence for a parent effect model or a friend effect model. However, the direction of effects could also go from adolescents' depressive symptoms to parents' and best friends' autonomy support, reflecting a child effect model. Adolescents with depressive symptoms tend to view themselves and others negatively, which makes adolescents less likely to recognize, utilize, and benefit from support from others, and more likely to perceive rejection from others (Hale, VanderValk, Akse, & Meeus, 2008). Adolescents' depressive symptoms could also potentially change their perceptions of autonomy support: according to Coyne's (1976) interpersonal theory of depression, these negative beliefs of adolescents with depressive symptoms may also elicit more rejecting responses and less adequate reactions to support from others, and such support erosion may result in lower perceived autonomy support by adolescents. To disentangle the direction of effects between perceived autonomy support and depressive symptoms, we employed longitudinal cross-lagged path models (Neyer & Asendorpf, 2001), thereby controlling for concurrent associations and stability of perceived autonomy support from parents and best friends, and depressive symptoms when estimating bidirectional effects over time.

Research Aims and Hypotheses

The major aim of this longitudinal study was to investigate bidirectional associations between perceived autonomy support from parents and best friends, and adolescents' depressive symptoms from early to late adolescence. We expected that perceived autonomy support in both close relationships is negatively associated over time with adolescents' depressive symptoms (Deci et al., 2006; Soenens et al., 2012). We also studied differences in the strength of these associations from early to late adolescence. Because best friends have been found to become more important over the course of adolescence (De Goede et al., 2009), it was expected that during early adolescence, perceived parental autonomy support would be most strongly related to depressive symptoms and that during middle adolescence, best friends' autonomy support would

become more strongly related to depressive symptoms. Additionally, we examined gender differences in the longitudinal associations between perceived autonomy support and depressive symptoms. Within SDT (Ryan & Deci, 2000) autonomy support is thought to be equally beneficial for boys and girls throughout life, and we expected to find negative associations between perceptions of parents' and best friends' autonomy support and adolescents' depressive symptoms for boys and girls during adolescence.

Method

Participants

The sample consisted of 1313 adolescents from the early to middle adolescence cohort (N = 923) and the middle to late adolescence cohort (N = 390) who participated in the longitudinal project on Conflict and Management of Relationship (Meeus et al., 2004). Questionnaires were filled out by the adolescents in five waves with a one-year interval. Adolescents reported about their father, mother, and a self-nominated best friend. Adolescents answered the questionnaires about their biological, adoptive, or stepparent; most adolescents reported about their biological mother (98.0%) and biological father (95.5%). Of the 1313 adolescents, 48.5% were boys and 51.5% were girls. The mean age at the first wave was 12.42 years [standard deviation (*SD*) = .59] for the early adolescence cohort and was 16.68 years (*SD* = .80) for the middle adolescence cohort. Because both age groups were assessed during five measurement waves, a total age range from 12 to 16 and from 16 to 20 years was available. The majority of the participants were Dutch (82.80 %), and the remaining participants (17.20%) identified themselves as part of a non-Western ethnic minority group. Adolescents were in junior high and high schools at wave 1 and most (82.90%) lived in intact families. The early and middle adolescence cohort were comparable regarding living situation [χ^2 (1) = 10.43, p = .110] and ethnicity [χ^2 (1) = 7.66, p = .110]. The distribution of gender across age groups appeared to be different, χ^2 (1) = 5.96, p = .015, φ = .07. There were more adolescent boys who were 16 years and younger, and there were more adolescent girls who were 16 years and older. Finally, adolescents from non-intact families and intact families were comparable at wave 1 regarding levels of perceived autonomy support from parents [F(1, 1310) = .50, p = .481] and best friends [F(1, 1310) = .67, p = .413]. Yet, at wave 1, adolescents from non-intact families reported higher levels of depressive symptoms than adolescents from intact families [F(1, 1310) = 7.29, p < .001, η^2 = .01].

Sample attrition was 1.20% across waves 1–5. Little's (1988) Missing completely at random test produced a normed χ^2 (χ^2/degrees of freedom) of 1.55. This indicated that it was likely the data were missing at random and that it was safe to impute missing items (Bollen, 1989). Missing items were therefore estimated in Mplus 6 (Muthén & Muthén, 2010) using full information maximum likelihood (Satorra & Bentler, 2001).

Procedure

Participants were recruited from various high schools in Utrecht and surroundings. A recruitment letter was given to parents and students explaining the goals of the project. The possibility of not participating was also explained in this letter. Adolescents and their parents were required to provide informed consent. More than 99% of the approached adolescents decided to participate. During annual assessments, participants completed a series of questionnaires on relationships and psychosocial problems in their classrooms after school hours. Measures were administered in a fixed order during all

five measurement waves: adolescents first completed questionnaires about their relationship (with mothers, fathers, and friends), and after that adolescents filled out questionnaires about their psychosocial problems. The present study focused on autonomy symptoms and depressive symptoms, and the measures are presented below in the order they were administered. Interviewers who visited the schools provided verbal and written instructions about the questionnaires. Confidentiality of responses was guaranteed. Each wave adolescents received €10 as a reward for their participation.

Measures

Perceived Autonomy Support. The balanced relatedness scale (Shulman, Laursen, Kalman, & Karpovsky, 1997) was used to measure adolescents' perceived autonomy support in relationships with their mother, father, and best friend. This scale assessed the extent to which adolescents felt that their mother, father, and best friend accepted their opinions, wishes, and needs. The questionnaire consisted of seven items that were answered on a 4-point scale (i.e., 1 = absolutely disagree to 4 = absolutely agree). Adolescents judged to what extent the seven items characterized their relationship with their mother, father, and best friend, respectively. For example, the adolescent had to answer the following statements: 'My mother/father/best friend respects my decisions' and 'My mother/father/best friend considers my opinion'. For each wave, the seven items were averaged to compute mean composite scale scores for perceived autonomy support. Previous research supported construct validity, convergent validity, and test–retest reliability of the instrument for parent–adolescent relationships and friendships (e.g., Selfhout et al., 2009; Shulman et al., 1997; Van der Giessen, Branje, Frijns, & Meeus, 2013). In this study, Cronbach's alphas of autonomy support ranged from .84 to .90 for mothers, from .88 to .91 for fathers, and from .90 to .91 for the best friend over the five measurement waves.

Mean scores for reports on mothers ranged from 3.22 to 3.32 across waves, and for reports on fathers means ranged from 3.18 to 3.24 over across waves. At each wave, mothers' mean scores were significantly higher that fathers' mean scores ($p < .001$). Also, mean scores on mothers and fathers were strongly correlated over the five waves, ranging from.57 to .67 ($p < .001$). To avoid problems of collinearity, for each wave the scale scores on mothers and fathers were collapsed into one parent score by computing their mean. When adolescents' reports of either fathers or mothers were missing (3.88% at wave 1, 3.06% at wave 2, 3.39% at wave 3, 3.39% at wave 4, and 4.59% at wave 5), the mean score reflected the score for just one parent.

Depressive Symptoms. Adolescents' depressive symptoms were assessed with the Children's Depression Inventory (CDI; Kovacs, 1992). The CDI is a widely used self-report measure for depression in non-clinical samples of children and adolescents, and it has demonstrated good validity and reliability over time (Craighead, Smucker, Craighead, & Ilardi, 1998; Timbremont & Braet, 2002). Cronbach's alphas in this study ranged from .89 to .93 over the five measurement waves. Twenty-seven multiple-choice items assessed the severity of depressive symptoms during the previous two weeks. Example items included: 'I feel lonely all the time', 'I hate myself', and 'I do not have any friends'. For each item, adolescents were presented with three statements representing varying levels of symptomatology. Adolescents were asked to choose the statement that best described them. Items were rated on a 3-point scale indicating symptom severity (i.e., 1 = no presence of symptom and 3 = highest severity possible).

For analytic purposes, items were averaged to compute a mean score, with higher mean scores indicating greater reports of depressive symptomatology (Kline, 2005). Nonetheless, it should be noted that when items were recoded (i.e., 0 = no presence of symptom and 2 = the highest severity possible) and then summed into a total depression score, these total scores were between 0 and 54, and the means were between 4.59 and 5.01 (*SD* = 5.83–7.38) over the five measurement waves in the present sample. Finally, because it appeared that the mean scores of depressive symptoms were censored at one (i.e., a large proportion of adolescents had a mean of one on the measure) and positively skewed, this measure was log transformed (Tabachnick & Fidell, 2007).

Results

Descriptive Statistics

The means, *SD*s, and bivariate correlations for all study variables are presented in Table 1. Parental autonomy support was consistently associated with adolescents' depressive symptoms within and across waves. Adolescents who perceived more autonomy support from parents reported lower levels of depressive symptoms. Perceived best friends' autonomy support was not consistently associated with adolescents' depressive symptoms within and across waves (i.e., only 13 out of 20 relations were significant). Using the Fisher *r*-to-*z* transformation, the significance of the difference between significant Pearson correlation coefficients was calculated. Significant correlations between perceived best friends' autonomy support and adolescents' depressive symptoms also were significantly smaller ($p < .001$) than significant correlations between perceived parental autonomy support and adolescents' depressive symptoms. Furthermore, parental autonomy support was significantly associated with best friends' autonomy support, indicating that adolescents who perceived their parents as more supportive of autonomy also perceived their best friend as more supportive of autonomy.

Model Comparisons: Longitudinal Associations Between Perceptions of Autonomy Support and Depressive Symptoms

To examine the hypothesized temporal relations between adolescents' perceptions of autonomy support from parents and best friends with depressive symptoms over time, path analyses with cross-lagged effects were conducted using Mplus 6 (Muthén & Muthén, 2010) (see also remark 7). To determine the goodness-of-fit of the models the following global fit measures were used: Akaike Information Criterion (AIC), Chi-Square/degrees of freedom (χ^2/df). We used multi-group analyses to examine whether the path coefficients differed between boys and girls, and between the two cohorts. Model comparisons were conducted using Robust Chi-square difference tests (ΔMLRχ^2). Model comparison tests and model fit indices of the different models are presented in Table 2.

First, we examined whether within-wave and cross-lagged associations between parents' autonomy support and depressive symptoms and best friends' autonomy support and depressive symptoms could be added to the model. A four-group model that included stability paths of autonomy support and depressive symptoms, and within-wave correlations and cross-lagged effects between autonomy support of parents and best friends represented the baseline model (model 1). Within-wave correlations refer to wave 1 cross-sectional correlations and to correlated change in waves 2–5. Model 2 examined the within-wave and cross-lagged associations between

Table 1. Means, Standard Deviations, and Correlation Coefficients Between Perceived Parents' and Best Friends' Autonomy Support and Adolescents' Depressive Symptoms

	Autonomy support parents					Autonomy support best friends					Depressive symptoms				
	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5
Autonomy support parents															
Wave 1															
Wave 2	.49**														
Wave 3	.38**	.53**													
Wave 4	.38**	.50**	.56**												
Wave 5	.31**	.47**	.48**	.60*											
Autonomy support best friends															
Wave 1	.36**	.29**	.25**	.23**	.20**										
Wave 2	.27**	.48**	.34**	.32**	.28**	.35**									
Wave 3	.19**	.33**	.52**	.33**	.31**	.33**	.42**								
Wave 4	.27**	.31**	.37**	.52**	.39**	.28**	.38**	.40**							
Wave 5	.19**	.32**	.34**	.40**	.54**	.26**	.35**	.39**	.46**						
Depressive symptoms															
Wave 1	−.20**	−.19**	−.14**	−.20**	−.17**	−.11**	−.03	−.04	−.08**	−.10**					
Wave 2	−.20**	−.23**	−.18**	−.23**	−.23**	−.03	−.10**	−.09**	−.09**	−.08**	.50**				
Wave 3	−.16**	−.16**	−.21**	−.18**	−.20**	−.03	−.01	−.10**	−.07*	−.08**	.41**	.55**			
Wave 4	−.13**	−.15**	−.16**	−.27**	−.27**	−.06*	−.06*	−.01	−.02	−.08**	.36**	.44**	.55**		
Wave 5	−.11**	−.16**	−.13**	−.20**	−.26**	−.02	−.02	−.05	−.07*	−.13**	.34**	.46**	.53**	.62**	
M	3.21	3.25	3.23	3.24	3.29	3.17	3.18	3.17	3.22	3.26	1.18	1.18	1.18	1.19	1.17
SD	.42	.44	.45	.46	.45	.52	.48	.50	.48	.45	.27	.25	.24	.23	.22

Note: Means and standard deviations reported here are not transformed. *M* = mean; *SD* = standard deviation.
* $p < .05$, ** $p < .01$.

Table 2. Longitudinal Model Fit Indices and Model Comparison Tests

	Model fit indices							Model comparison test		
	df	MLr χ^2	χ^2 (*df*)	AIC	CFI	RMSEA	90% CI RSMEA		$\Delta\chi^2$	Δdf
Model 1. Baseline model	244	379.80	1.56	−5553	.97	.046	(.040, .053)			
Model 2. Cross-lagged paths and within-wave correlations autonomy support parents and depressive symptoms	200	219.40	1.10	−5626	1.00	.019	(.005, .028)	2 vs. 1	160.40***	44
Model 3. Cross-lagged paths and within-wave correlations autonomy support best friends and depressive symptoms	200	339.45	1.70	−5498	.97	.051	(.041, .054)	3 vs. 1	40.35	44
Model 4. Models 2 and 3 combined	156	170.16	1.09	−5596	1.00	.018	(.000, .031)	4 vs. 1	209.64***	88
								4 vs. 2	49.24	44
								4 vs. 3.	169.29***	44
Model 5. Fixation of cross-lagged paths and within-wave correlations within age and gender groups	236	270.29	1.15	−5639	.99	.023	(.000, .034)	5 vs. 2	50.89	74
Model 6. Fixation of cross-lagged paths and within-wave correlations across age groups	244	279.05	1.14	−5642	.99	.023	(.000, .034)	6 vs. 5	8.76	14
Model 7. Fixation of cross-lagged paths and within-wave correlations across gender	244	283.25	1.16	−5638	.99	.024	(.000, .031)	7 vs. 5	12.96	14
Model 8. Fixation of cross-lagged paths and within-wave correlations across age and gender groups	248	288.14	1.16	−5640	.99	.025	(.000, .031)	8 vs. 5	17.85	12
								8 vs. 6	9.09	4
								8 vs. 7	4.89	4

Note: First, for reasons of presentation, we added/constrained within-wave correlations and cross-lagged paths at the same time, but it should be noted that results were the same when adding/constraining both type of paths separately. Second, we constrained unstandardized parameter estimates in our models; mean levels were still allowed to vary across age and gender groups. AIC = Akaike Information Criterion; CFI = Comparative Fit Index; MLR = Robust Chi Square; RMSEA = Root Mean Square Error of Approximation.
*** $p < .001$.

parental autonomy support and depressive symptoms, model 3 examined the within-wave and cross-lagged associations between best friends' autonomy support and depressive symptoms, and model 4 investigated the combined within-wave and cross-lagged associations of autonomy support of parents and best friends, and depressive symptoms. Results revealed that the goodness-of-fit improved significantly when relations between perceived parental autonomy support and adolescents' depressive symptoms were added to the baseline model, but not when relations between perceived best friends' autonomy support and adolescents' depressive symptoms were added to this model. Model 2 was used in further analyses.

Second, we examined whether it was possible to constrain within-wave correlations and cross-lagged paths across waves and across age and gender groups. We only constrained unstandardized parameter estimates in our models; mean levels were still allowed to vary across age and gender groups. We tested with model 5 whether it was possible to fix across waves the within-wave correlations (i.e., correlated change) between autonomy support and depressive symptoms, cross-lagged paths from autonomy support to depressive symptoms, and cross-lagged paths from depressive symptoms to autonomy support. We wanted to know if these paths were of the same strength across waves while allowing these paths to vary between age and gender groups. Model comparisons showed that within-wave correlations and cross-lagged paths could be constrained across waves (see Table 2). Then we examined whether it was also possible to fix the different paths (i.e., within-wave correlations and cross-lagged paths) to be equal across the age groups (model 6), across the gender groups (model 7), and across age and gender groups (model 8) without significantly impairing the model fit. Model comparisons showed that cross-lagged paths and within-wave correlations could be constrained across age and gender groups. Therefore, model 8 was the final model and offered an excellent fit, χ^2 (248) = 288.14; CFI = .99; RMSEA = .025.

The cross-lagged path coefficients from perceived parental autonomy support to adolescents' depressive symptoms (parent effect model) and from adolescents' depressive symptoms to perceived parental autonomy support (child effect model) in the final model appeared to be different in strength, and therefore we additionally tested, using again the MLRχ^2 difference test ($\Delta\chi^2$), whether these cross-lagged paths were also statistically different. It appeared that a model that constrained these cross-lagged paths within and across gender and age groups significantly worsened the model fit [χ^2 (249) = 324.54; CFI = .98; RMSEA = .034], indicating that the child effect and the parent effect significantly differed in strength from each other. Therefore, we can conclude that the child effect was significantly stronger than the parent effect.

Finally, it should be noted that the mean score of perceived autonomy support from parents sometimes represented just the score for one parent. To check whether results were the same for mothers and fathers, we ran all analyses separately for perceived autonomy support from mothers and perceived autonomy support from mothers. It appeared that results of these analyses were similar to the abovementioned findings. Therefore, we retained the construct of perceived parents' autonomy support in our analyses.

Model Results: Longitudinal Associations Between Perceptions of Autonomy Support and Depressive Symptoms

Figure 1 presents the standardized estimates for of the final model of the relations between perceived parental autonomy support and adolescents' depressive symptoms.

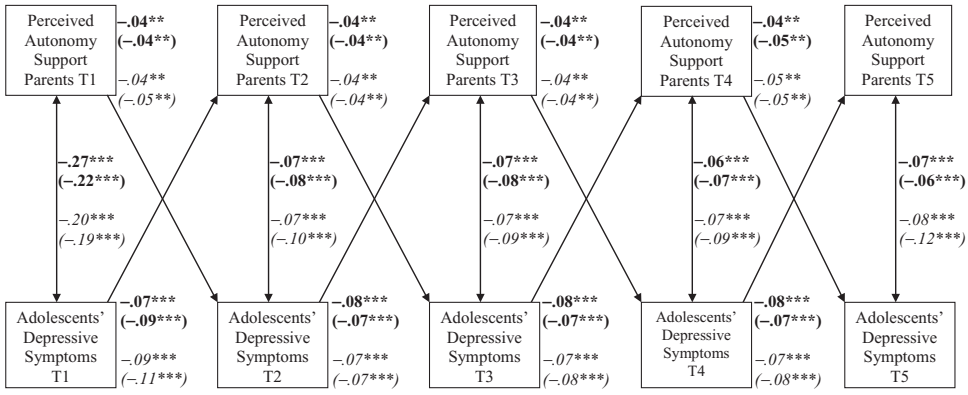

Figure 1. Longitudinal Associations Between Perceived Parental Autonomy Support and Adolescents' Depressive Symptoms.
Notes: The standardized estimates are shown separately for each group. Bold = girls; italic = boys. The middle adolescent group is presented between brackets. To simplify the figure, stability paths and associations between perceived parents' autonomy support and perceived best friends' autonomy support were not included here. See Table 3 for ranges of standardized estimates of all paths of this cross-lagged model. The first author can be contacted for standardized and unstandardized regression coefficients of all paths in the final model. ** $p < .01$, *** $p < .001$.

Table 3 displays the standardized parameter estimates of the final model. Although standardized estimates are reported for all four groups (i.e., younger boys, younger girls, older boys, and older girls), cross-lagged paths and within-wave correlations did not significantly differ in strength between these groups; the model comparisons showed that these paths could be constrained within and across age and gender groups. Results showed that within-wave correlations between perceived parental autonomy support and adolescents' depressive symptoms were small to moderate. As expected, lower levels of parental autonomy support were significantly related to more depressive symptoms of adolescents (i.e., T1 correlation), and a relative increase in autonomy support from parents was significantly associated with a relative decrease in depressive symptoms of adolescents (i.e., correlated changes). Perceived autonomy support from parents and best friends, and adolescents' depressive symptoms were moderately stable over time.

Most importantly, our results revealed a significant bidirectional relationship between perceived parental autonomy support and adolescents' depressive symptoms over time, offering support for the parent effect model and the child effect model. Even after controlling for cross-time stability and within-wave correlations of all variables, cross-lagged paths from perceived parental autonomy support to adolescents' depressive symptoms and from adolescents' depressive symptoms to perceived parental autonomy support were significant. Hence, more depressive symptoms of adolescents significantly predicted less autonomy support from parents over time, and more autonomy support from parents significantly predicted fewer depressive symptoms of adolescents. Finally, the child effect appeared to be significantly stronger than the parent effect.

Table 3. Standardized Estimates of the Final Model

Standardized paths	Early adolescent girls	Middle adolescent girls	Early adolescent boys	Middle adolescent boys
Stability paths				
Parents	.32*** to .53***	.26** to .52***	.32*** to .44***	.14 to .47***
Best friends	.16** to .32***	.25** to .33***	.18* to .30***	.04 to .33**
Depressive symptoms	.38*** to .61***	.42*** to .68***	.32*** to .45***	.22*** to .50*
T1 Correlations				
T1 parents ↔ depressive symptoms	−.27***	−.22***	−.20***	−.19***
T1 parents ↔ best friends	.39***	.33***	.40***	.21
Correlated change				
Parents ↔ depressive symptoms	−.07*** to −.06***	−.08*** to −.07***	−.08*** to −.07***	−.12*** to −.09***
Parents ↔ best friends	.26*** to .39***	.12* to .25***	.26*** to .27***	.35***–.46***
Cross-lagged effects				
Parents → depressive symptoms	−.04**	−.05** to −.04**	−.05** to −.04**	−.05** to −.04**
Depressive symptoms → parents	−.08*** to −.07***	−.09*** to −.07***	−.09*** to −.07***	−.11*** to −.07***
Parents → best friends	.12* to .31***	.04 to .24**	.11 to .21***	−.04 to .28***
Best friends → parents	−.17*** to −.02	.02 to .19*	.06 to .20**	−.04 to .15*

Note: Variables named parents and best friends refer to the perceived autonomy support of these relationship partners. In this table, ranges of parameter estimates across the five waves are presented. The first author can be contacted for standardized and unstandardized regression coefficients of all paths in the final model. See also Figure 1 for a simplified graphical presentation of the cross-lagged model.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Discussion

The main aims of this longitudinal study were to examine the bidirectional associations between depressive symptoms and perceived autonomy support from parents and best friends over time, and to investigate whether these associations differed for early and middle adolescent boys and girls. Overall, the results showed that perceived parental autonomy support and adolescents' depressive symptoms were concurrently and longitudinally associated during adolescence. Findings revealed bidirectional associations over time, although paths from depressive symptoms to parental autonomy support (child effect) tended to be stronger than paths from parental autonomy support to adolescents' depressive symptoms (parent effect). In contrast, no concurrent and longitudinal associations were found between perceived autonomy support from best friends and adolescents' depressive symptoms. Findings were similar for early and late adolescent boys and girls.

Perceptions of Autonomy Support From Parents and Depressive Symptoms

In line with assumptions of SDT (Ryan & Deci, 2000) and with earlier cross-sectional studies (Soenens et al., 2012), this study provided longitudinal evidence for a parent effect model; adolescents who perceived lower levels of support for their wishes, opinions, and needs from their parents reported higher levels of depressive symptoms over time. Adolescents have a basic inclination to act in a self-determined fashion, and parents who nurture this self-determination promote well-being (Ryan & Deci, 2000). When adolescents feel that parents do not support their thoughts, feelings, and choices, they are at increased risk for later depressive symptoms. Although more longitudinal research should examine the mediating role of self-determined functioning, our results suggested that the extent to which parents were perceived as promoting autonomy was associated with future levels of adolescents' depressive symptoms.

A child effect was also found, which tended to be stronger than the parent effect. Adolescents who reported more depressive symptoms perceived lower levels of autonomy support from parents over time. This could be explained by the negative beliefs or support erosion that depressive adolescents are thought (Coyne, 1976) and found (Hale et al., 2008) to experience. Depressed adolescents are characterized by negative cognitive beliefs; they tend to view themselves and others negatively. These negative beliefs make them less likely to recognize, utilize, and benefit from support from others, and more likely to expect and receive rejection from others. These negative feelings exhibited by adolescents with depressive symptoms are thought to foster subsequent feelings and experiences of not being accepted, valued, and supported by their parents. Interventions should therefore, especially, focus on how negative beliefs of adolescents with depressive symptoms affect their perceptions of parental autonomy support.

As expected, concurrent and longitudinal associations between perceived parental autonomy support and depressive symptoms were found for boys and girls and from early to late adolescence. Our results provided longitudinal support for the proposition of SDT (Ryan & Deci, 2000) that autonomy support is positively associated with adolescents' well-being across age and gender. Earlier studies showed positive concurrent associations between perceived parental autonomy support and well-being during early, middle, and late adolescence (La Guardia et al., 2000; Soenens et al., 2012; Wong & Wiest, 1999), and between perceived parental autonomy support and adaptive

adolescent coping of adolescent boys and girls (Seiffge-Krenke & Pakalniskiene, 2011). Altogether, this study emphasized the mutual interplay between perceptions of parental autonomy support and depressive symptoms for boys and girls throughout adolescence.

Perceptions of Autonomy Support From Best Friends and Depressive Symptoms

Consistent with earlier cross-sectional study (Eccles et al., 1997), yet in contrast with assumptions of SDT (Ryan & Deci, 2000) and findings of earlier studies (Allen et al., 2006; Deci et al., 2006), this study showed no concurrent and longitudinal associations between perceived autonomy support from best friends and adolescents' depressive symptoms, taking into account the amount of perceived parental autonomy support. Perceptions of best friends' autonomy support did not become more strongly related to depressive symptoms over the course of adolescence. A lack of associations between perceived best friends' autonomy support and adolescents' depressive symptoms was also apparent, despite the fact that positive associations between perceived parental autonomy support and perceived best friends' autonomy support were quite strong. Finally, in line with cross-lagged path analyses, correlations between perceived best friends' autonomy support and adolescents' depressive symptoms were quite inconsistent and weak. Together, perceptions of autonomy support and depressive symptoms were related in parent–adolescent relationships rather than in friendships.

The absence of a friend effect might suggest that perceptions of autonomy support are especially important in parent–adolescent relationships. Because of the unequal power balance in the parent–adolescent relationship, this relationship is considered to be most important for adolescents to gain and experience autonomy (Smetana, 2011). However, friendships are usually characterized by reciprocity and mutuality (Collins & Steinberg, 2006). Although we did not examine reciprocity of best friendships, it might explain why promoting autonomy is more self-evident in best friendships than in parent–adolescent relationships. Other aspects of adolescents' best friendships might be more strongly related to adolescents' healthy functioning; intimacy, closeness, and negative feedback seeking in friendships were found to be related to adolescents' depressive symptoms (Bokhorst et al., 2009; Borelli & Prinstein, 2006; Burk & Laursen, 2005). Possibly, experiencing relatedness in best friendships is more closely related to well-being than experiencing autonomy support (Ryan & Deci, 2000). Future studies should compare associations between these different characteristics in best friendships and adolescents' depressive symptoms.

Parental autonomy support might also be related to depressive symptoms because it is more consistent than best friends' autonomy support. Perceptions of parents' autonomy support showed greater temporal stability than perceptions of best friends' autonomy support. During adolescence, there appears to be a considerable level of fluidity, change, and instability in (best) friendships (Cantin & Boivin, 2004; Chan & Poulin, 2007). When friendships are high in both quality and stability, they are thought to have a positive impact on adolescents' adjustment (Poulin & Chan, 2010). In this study, adolescents were allowed to report about a different best friend each year, and only 10.80% of the adolescents reported about the same best friend each year. The relative instability of best friendships during adolescence might explain the absence of the associations between perceived best friends' autonomy and adolescents' depressive symptoms; future studies should address this issue.

Finally, co-rumination might explain the absence of associations between perceived best friends' autonomy support and adolescents' depressive symptoms. Co-rumination

and autonomy support involve a focus on mutual encouragement of personal thoughts and feelings (Rose, 2002). Although perceptions of co-rumination in best friendships have been related to higher levels of depressive symptoms of adolescents (Rose, Carlson, & Waller, 2007), perceptions of autonomy support in best friendships have been related to lower depressive symptoms of adolescents (Deci et al., 2006). In this study, perceptions of autonomy support from best friends might partly reflect perceptions of co-rumination with best friends, resulting in an absence of associations between best friends' autonomy support and depressive symptoms. Future studies should examine in best friendships the unique contributions of perceived autonomy support and co-rumination for adolescent's depressive symptoms.

Limitations and Future Directions

Several limitations of this study should be noted and addressed in future research. Despite the advantages of an accelerated longitudinal design, which enabled examining the longitudinal effects between perceived autonomy support and depressive symptoms, this study was limited in that two groups of participants were assessed annually for five years. Future work would benefit when one group of adolescents is followed from early until late adolescence. Furthermore, this study relied on adolescents' perceptions. We examined perceptions of autonomy support because within SDT (Ryan & Deci, 2000), it is argued that the degree to which adolescents feel encouraged to express opinions, wishes, and needs in close relationships is related to well-being. Furthermore, it has been found that depressive symptoms are best judged by self-report because internalizing problems may only in part be observable by parents (Vierhaus & Lohaus, 2008) and that perceptions of the relationship affect depressive feelings more than the actual state of the relationship (Brendgen, Wanner, Morin, & Vitaro, 2005). The fact that different patterns of effects were found for perceived autonomy support from parents and best friends suggests that the results do not merely reflect a response bias. Still, current findings will be enhanced when future research assesses autonomy support with a combination of measurement approaches, such as multi-informant questionnaires and behavioral observations.

This study included a community-based sample of adolescents who were not diagnosed with depression. Extending this study to clinical populations could increase our understanding of how perceived autonomy support relates to depression. For the development of prevention and intervention, it is also important to know whether adolescents with depressive symptoms are different from those who are clinically depressed with regard to perceptions of autonomy support.

Furthermore, perceptions of parental autonomy support are theoretically and empirically related to anxiety symptoms in adolescence (McLeod, Wood, & Weisz, 2007). Because anxiety symptoms co-occur frequently with depressive symptoms (Angold, Costello, & Erkanli, 1999), it is important that future research addresses the relative contribution of perceived parents' and best friends' autonomy support for depressive symptoms and anxiety symptoms in the same analytical model.

Finally, current data were gathered from a relatively homogeneous sample of adolescents, thereby limiting the generalizability of the findings. Although associations between perceptions of parental autonomy support and depressive symptoms have been found for adolescents with diverse cultural backgrounds (Manzi et al., 2012), future research needs to examine the relative contribution of parents' and best friends' autonomy support on adolescents' depressive symptoms across cultures.

Conclusion

Altogether, this study showed concurrent and longitudinal associations between perceived parental autonomy support and adolescents' depressive symptoms during adolescence. The longitudinal nature of our data enabled us to extend current knowledge about autonomy support and depressive symptoms over the course of adolescence and to infer temporal relations among these variables. Results revealed that different associations between adolescents' depressive symptoms and autonomy support from parents vs. best friends existed; only perceived parental autonomy support was bidirectionally associated with the existence and development of early and middle adolescent boys' and girls' depressive symptoms. The extent to which parents were perceived as supporting autonomy appeared to be more closely related to adolescents' depressive symptoms that the extent to which best friends were perceived to support autonomy. Prevention and treatment programs should focus on the mutual interplay between adolescents' depressive symptoms and perceptions of parental autonomy support.

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