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Party Pooper or Life of the Party: Dampening and Enhancing of Positive Affect in a Peer Context

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Abstract Dampening and enhancing responses to positive affect have been linked to depressive symptoms. The main aim of the present study was to examine such responses in an *interpersonal* peer context and to examine their relation with depressive symptoms. A community sample of 665 seventh-graders (52.0% girls, *M*age = 12.7 years) took part in the study. Using a newly developed questionnaire, the Co-Dampening and Co-Enhancing Questionnaire (CoDEQ), a two-factor model distinguishing co-dampening and co-enhancing was validated. Relations with general depressive symptoms, anhedonic symptoms, and friendship quality were investigated. The direction of relations was examined over a 1-year interval using cross-lagged analyses. Cross-sectional results revealed that higher levels of co-dampening and lower levels of co-enhancing were associated with more depressive and anhedonic symptoms, while controlling for co-rumination levels. For anhedonic symptoms, this pattern also held over and above intrapersonal dampening and enhancing. Friendship quality was related to higher concurrent levels of co-enhancing and lower levels of co-dampening. The longitudinal results pointed towards a scar model, in that both depressive and anhedonic symptoms predicted relative increases in co-dampening over time; however, this did not hold in a model in which dampening and enhancing were included as control variables.

Keywords Co-enhancing · Co-dampening · Depression · Anhedonia · Friendship quality · Adolescence

Community studies indicate that about 6 to 20% of adolescents experience an episode of major depression by the age of 18 (e.g., Costello et al. 2006; Lewinsohn et al. 1998), whereas less than 6% do so under the age of 11 (Cohen et al. 1993; Kessler et al. 1993). Depressive episodes as well as subclinical depressive symptoms predict future depressive episodes and a range of other maladaptive outcomes, including interpersonal difficulties (e.g., Fergusson and Woodward 2002). Approximately 20 to 50% of adolescents report subsyndromal, yet clinically significant, levels of depression (Kessler et al. 2001). The transition from early to middle adolescence is particularly interesting given that depression rates and depressive symptoms tend to surge in this period (Cole et al. 2002; Kessler et al. 1993).

Cognitive theories of depression postulate that individuals' thoughts, attitudes, inferences, and the way in which information is processed, lead to an increase in vulnerability to depression (e.g., Gotlib and Joormann 2010). In line with this, cognitive responses to both positive and negative affect have been shown to render individuals vulnerable to depressive symptoms (e.g., Abela and Hankin 2008; Raes et al. 2012). Apart from having intrapersonal cognitive responses towards one's affect, responses to positive and negative affect are also shared with others. During adolescence, peers become particularly important conversation partners.

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In the context of interpersonal responses towards negative affect, Rose (2002) introduced the concept of co-rumination, which refers to "excessively discussing personal problems within a dyadic relationship" (p. 1830). On the one hand, co-rumination with peers has been found to be related to greater levels of depressive symptoms (Starr and Davila 2009) and to predict relative increases in such symptoms (Hankin et al. 2010). On the other hand, it has been shown to be related to greater concurrent and prospective levels of closeness and positive friendship quality (Calmes and Roberts 2008; Rose 2002; Rose et al. 2007; Starr and Davila 2009).

To the best of our knowledge, however, responses to positive affect during peer conversation have not yet been examined. To fill this gap, the current study explores two types of responses towards positive affect in an interpersonal peer context and examines their relation with depressive symptoms and friendship quality.

Intrapersonal Responses to Positive Affect

The way in which individuals cognitively respond to and regulate their positive affective states has repeatedly been shown to be associated with levels of depressive symptomatology. Broadly, two types of regulatory responses to positive affect have been distinguished. On the one hand, there are enhancing responses, variously labeled savoring (Bryant 2003; Tugade and Fredrickson 2007), maximizing (Gentzler et al. 2010), and positive rumination (Feldman et al. 2008). Enhancing responses are believed to maintain or increase positive emotional experiences. For instance, the content of enhancing thoughts can include a focus on positive self-qualities, on achievements, or on positive emotions (Feldman et al. 2008). Sample enhancing thoughts are: "I am proud of myself" or "I think about how strong I feel". On the other hand, dampening responses downgrade the positive experience, for instance by focusing on the negative aspects of the positive experience, minimizing its importance, or thinking about less fortunate aspects of life. Typical dampening thoughts are "I don't deserve this", "these feelings won't last, you'll see", and "this doesn't change my problems and worries" (Feldman et al. 2008).

Both forms of responses to positive affect have been shown to be relevant to depressive symptoms. In adult studies, higher levels of dampening have robustly been related to higher levels of concurrent depressive symptoms (e.g., Feldman et al. 2008; Nelis et al. 2015b; Werner-Seidler et al. 2013). Dampening has also been related to prospective depressive symptoms in students and pregnant women (Raes et al. 2012, 2014). For enhancing, a negative association with depressive symptoms has been found, although this association is not consistent across studies (Feldman et al. 2008; Raes et al. 2012). In young adolescents, dampening has been related to more concurrent depressive symptoms (Bijttebier et al. 2012; Verstraeten et al. 2012). Prospectively, low levels of enhancing, but not high levels of dampening, have been shown to predict increases in adolescent depressive symptoms in times of stress (Bijttebier et al. 2012).

Moving Towards an Expansion: Interpersonal Responses to Positive Affect

An important drawback of the current cognitive-affective models of responses to positive affect is that they predominantly focus on processes that are intrapersonal. Nevertheless, there are indications from both adult and adolescent research that it is also important to take the interpersonal context into account. A first type of evidence stems from adult research within social and clinical psychology. Sharing positive experiences with others (i.e., capitalizing) has been associated with more life satisfaction and positive emotions (Gable et al. 2004; Hershenberg et al. 2014; Quoidbach et al. 2010). Moreover, also the way in which people respond to sharing a positive experience matters. That is, destructive responses to a romantic partner who shares a positive experience (i.e., dampening) have been related to less relationship satisfaction, whereas active-constructive responses (i.e., enhancing) have been related to higher satisfaction (Gable et al. 2004). Concerning depressive symptoms, the interpersonal parent-adolescent context has been examined as well. This research has revealed that the way in which parents respond to their child's positive feelings is associated with concurrent depressive symptoms and depressive status of the child (Katz et al. 2014; Yap et al. 2008).

In adolescence, the peer context provides a crucial research focus in the study of interpersonal responses to positive affect. Peers become very important conversation partners during this developmental phase, as peer relationships become increasingly salient and adolescents tend to seek more autonomy from their parents (Rose and Rudolph 2006; Steinberg 1990). In this, it can be expected that individuals vary in how they discuss positive feelings and positive events with their peers, with different ways or styles potentially having different associations with emotional health.

Anhedonia

Most research we discussed so far examined depressive symptomatology as an aggregation of several depressive symptom facets. Anhedonia is one of these facets or symptom clusters, which can refer to reduced consummatory and anticipatory pleasure and a reduced drive for pleasurable activities. Given that the type of responses to positive feelings or events might potentially reduce the positive emotional experience, scholars have started to examine whether dampening and enhancing relate to the specific symptoms of reduced pleasure (i.e., anhedonia; Nelis et al. 2015b; Werner-Seidler et al. 2013).

Identifying risks for anhedonia is of special relevance given that current interventions for depression have unsatisfactory impact on anhedonia (e.g., Dunn 2012). Moreover, several authors underscore that risk factors for specific symptom clusters should be examined, rather than risk factors for general syndromes or a variety of symptoms (e.g., Fried 2015; Fried et al. 2016); for instance because specific depression symptoms differ in their correlates and their centrality in the broader symptom network (e.g., Fried et al. 2016; Lux and Kendler 2010).

Objectives of the Current Study

Given the increasing relevance of conversations with peers in adolescence, the aim of the current study was to extend knowledge on vulnerability to depression by investigating interpersonal responses to positive affect in a peer context. To examine these responses, we took as our starting point the previously described research on responses to positive affect in an intrapersonal context. To extend the concepts of enhancing and dampening to the interpersonal context, we propose the concepts of "co-enhancing" and "co-dampening" as two types of interpersonal sharing of positive feelings between peers. These positive feelings can refer to one of both friends who feels glad or happy, for instance because of something fun he/she has experienced. We define co-enhancing as elaborating on the positive aspects of positive emotions within a dyadic relationship. Co-dampening refers to talking about positive emotions in a downgrading manner within a dyadic relationship. Since the life stage of early adolescence is a critical period for understanding the etiology of depression, this research was conducted in a sample of seventh graders.

The current study had four main aims. Our first aim was to develop and evaluate a measure of interpersonal responses to positive feelings, comprising the constructs of co-dampening and co-enhancing. To this end, we created items tapping co-dampening and co-enhancing and evaluated the presumed two-factor structure.

Our second aim was to examine the associations of co-dampening and co-enhancing with depressive symptoms. Both general depressive symptoms and the specific symptom cluster of anhedonic symptoms were examined. In this, we aimed to investigate the extent to which the interpersonal variants of dampening and enhancing add to the prediction of depressive symptoms, over and above their *intra*personal forms. Additionally, we wanted to investigate the extent to which interpersonal responses to positive affect explain variance in depressive symptoms above and beyond co-rumination, providing insight into the unique predictive value of interpersonal discussion of *positive* affect. Based on the literature on intrapersonal response styles to positive affect, we hypothesized that higher levels of co-dampening would be associated with higher levels of both depressive symptoms and anhedonia. Co-enhancing on the other hand, was expected to be associated with more adaptive outcomes, reflected in a negative relationship with depressive and anhedonic symptoms. However, given the positive content of enhancing (thoughts), anhedonia might be especially related with co-enhancing (compared to co-dampening).

Given that friendship quality has consistently been shown to be related to interpersonal response styles to negative affect in a peer context (e.g., Rose 2002; Rose et al. 2007), our third aim was to investigate associations of co-dampening and co-enhancing with friendship quality. Drawing on evidence from studies on the link between co-rumination and friendship quality, one might expect both types of talking about positive feelings to be related to higher friendship quality, resulting from feelings of closeness. However, we believe that an interaction style characterized by the downgrading of positive emotions (i.e., co-dampening) might cause individuals to experience negative feelings towards their friend, resulting in lower reports of friendship quality. As a result, we expected co-dampening to be related to lower levels of friendship quality, whereas we hypothesized a positive relationship between co-enhancing and friendship quality. As co-rumination has been shown to be an important predictor of friendship quality, we also aimed to investigate the unique predicting value of co-dampening and co-enhancing over and above co-rumination.

Our fourth aim concerned a longitudinal extension of the previous questions, i.e. the examination of the direction of associations over time. To this end, we tested the extent to which co-dampening and co-enhancing predict changes in depressive symptoms, anhedonic symptoms, and friendship quality over a 1-year interval, as well as relationships in the opposite direction. Several authors emphasized that such an opposite directional relation from symptoms to response styles should be considered as well (e.g., Hankin et al. 2010; Nolen-Hoeksema et al. 2007; Werner-Seidler et al. 2013). Similarly, Rose et al. (2007) found evidence for friendship quality predicting higher levels of co-rumination.

Method

Participants

In seven secondary schools in the Dutch-speaking part of Belgium, adolescents from the seventh grade (i.e., first year of secondary education) were invited to take part in the study. Thirty-seven of the adolescents' parents refused participation of their child and 18 adolescents did not give consent to participate themselves. In addition, 60 adolescents were not able to participate due to other reasons (e.g., illness). Finally, four participating adolescents were not included in any of the analyses, because they did not complete the core questionnaire (i.e. the CoDEQ) and five other participants were excluded

because we could clearly identify that they had chosen a friend from the opposite sex to complete the CoDEQ (instead of a same-sex friend as instructed, see further). This resulted in a final sample of 665 adolescents with a mean age of 12.7 years (SD = 0.4; age ranging from 11.3 to 14.9 years) and 52.0% were girls. Informed consent was obtained from all individual participants included in the study. The scores for depressive symptoms were in the clinically significant range for 15.5% of the participants (i.e., CDI score > = 16; Timbremont et al. 2008).

At the 1-year follow-up assessment at grade 8, 545 of the 665 adolescents participated a second time (82%). Two persons were not included at follow-up because we could identify they had chosen a friend from the opposite sex to complete the CoDEQ, resulting in 543 (281 girls) of the 665 adolescents, M_{age} = 13.7 years, SD_{age} = 0.4, age ranging from 12.3 to 16.0 years. In addition, 70 adolescents participated for the first time at Time 2; 69 (34 girls) of them were included in the cross-lagged longitudinal analyses (one chose a friend from the opposite sex), M_{age} = 14.0 years, SD_{age} = 0.5, age ranging from 13.2 to 15.8 years. No significant gender differences were found between the group present at both assessments and those who dropped out, χ^2 (1) = 0.35, p = 0.56. Also no baseline differences were observed for co-enhancing, $t(662) = 0.25$, $p = 0.80$, enhancing, $t(648) = 0.79$, $p = 0.43$, and friendship quality, $t(626) = 1.81$, $p = 0.07$. However, significant baseline differences between the two groups were observed for depressive symptoms, $t(146.82) = 3.18$, $p = 0.002$, anhedonic symptoms, $t(145.41) = 3.32$, $p = 0.001$, dampening, $t(149.12) = 3.47$, $p < 0.001$, co-dampening, $t(149.23) = 2.74$, $p = 0.01$, and co-rumination, $t(663) = 2.15$, $p = 0.03$.[1] For all these variables, the attrition group reported the higher score.

Measures

The *Co-Dampening and Co-Enhancing Questionnaire* (CoDEQ) is a new questionnaire we developed to assess interpersonal responses to positive affect. Items were constructed to assess interpersonal dampening and enhancing responses to happy feelings within dyads. The items were inspired by the literature on intrapersonal response styles to positive affect. For intrapersonal dampening, the following responses to positive affect are described: thinking about the fleetingness of positivity, thinking about worries, focusing on negative aspects of the positive affect or event, making upward social comparisons (i.e., how others are even better off than you), making external attributions (e.g., thinking "it was just luck"), and starting to think about past negative events. Co-enhancing items were based on the following enhancing responses: behavioral display, focusing on positive feelings (e.g., thinking about how energetic one feels), thinking about positive past and future events, making downward social comparisons (i.e., comparing yourselves to those who are less fortunate), and thinking about positive self-qualities such as the ability to achieve whatever you desire. The questionnaire was originally developed in Dutch; for an English translation (back translation approved by the authors), see Supplementary material. In the questionnaire instructions, respondents are asked to answer the questions according to their same-sex best friend. Respondents have to indicate how often they respond in the described way when one of them feels glad or happy and they are talking about this. The rating scale has four response options: *almost never* (1), *sometimes* (2), *often* (3), and *almost always* (4). Eighteen items were developed; nine items intended to measure co-enhancing and nine items intended to measure co-dampening (see Supplementary material). Psychometric properties of the CoDEQ are presented in the results section.

The *Responses to Positive Affect questionnaire for Children* (RPA-C; Bijttebier et al. 2012) measures intrapersonal response styles to positive affect and is a slightly adapted child version of the adult RPA (Feldman et al. 2008; Raes et al. 2009). It consists of 17 items with a rating scale from 1 (*almost never*) to 4 (*almost always*). Respondents have to indicate how often they respond in the described way when they feel glad and happy. The scale consists of a dampening and a positive rumination subscale. Positive rumination is a type of enhancing, referring to strategies in which individuals focus on the self, on positive self-qualities, on goal pursuit, or on the positive emotional state. Because the term positive rumination can be misleading (e.g., as an adaptive type of rumination), that subscale will hereinafter be referred to as enhancing. In the Dutch versions, one item is not included in the scoring of the dampening subscale (Raes et al. 2009; Verstraeten et al. 2012), resulting in a seven-item dampening and a nine-item enhancing subscale. Validity and reliability of this Dutch child version were shown to be satisfactory (Bijttebier et al. 2012). Internal consistency of the subscales was acceptable to high in the present study (Table 1).

The short version of the *Co-Rumination Questionnaire* (CRQ: Rose 2002; CRQ-short version: Hankin et al. 2010) assesses co-rumination with the adolescents' closest, same-sex friend. The questionnaire includes statements about discussing problems with the friend. The rating scale ranges from *completely not true* (1) to *completely true* (5). This short version of the CRQ comprises nine items (i.e., one item from each of the nine content areas in the original scale: frequency of discussing problems, discussing problems instead of engaging in other activities, friend encouraging discussion of problems, target child encouraging friend to discuss problems, discussing the same problem repeatedly, speculation about causes, speculation about consequences, speculation about parts of the problem that are not understood, and focusing

[1] Where needed, the t-test was adjusted for unequal variances

Table 1 Descriptive information

	Baseline											Follow-up			
					Gender differences										
					Girls		Boys								
					n = 346		*n* = 319								
	α	*Min-Max*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*t*(df)	*d*	*p*	α	*Min-Max*	*M*	*SD*
Co-dampening	0.86	9–35	13.71	4.63	13.83	4.78	13.58	4.47	0.70 (663)	0.05	0.48	0.79	9–27	12.00	2.98
Co-enhancing	0.84	9–36	22.26	5.55	24.00	5.21	20.37	5.30	8.89 (663)	0.69	<0.001	0.85	10–36	22.28	5.25
Dampening	0.78	7–28	13.05	3.81	13.20	3.75	12.88	3.88	1.10 (663)	0.08	0.27	0.75	7–26	12.35	3.35
Enhancing	0.84	9–36	22.62	4.91	22.56	4.76	22.68	5.09	0.31 (663)	0.02	0.75	0.84	9–36	22.18	4.60
Co-rumination	0.86	9–45	28.17	6.41	30.22	5.93	25.95	6.18	9.11 (663)	0.71	<0.001	0.87	9–45	27.25	6.02
Depressive symptoms	0.86	0–48	9.46	6.54	9.85	7.03	9.03	5.94	1.64 (658.1)[a]	0.13	0.10	0.87	0–48	9.82	6.50
Anhedonic symptoms	0.81	12–57	21.81	6.09	21.24	6.30	22.43	5.79	2.52 (663)	0.20	0.01	0.83	12–47	22.40	5.64
Friendship quality	0.89	56–115	89.88	12.10	94.61	10.31	84.74	11.80	11.45 (633.7)[a]	0.89	<0.001	0.89	51–115	90.15	11.26

N = 665 at baseline and *N* = 663 at follow-up. Co-Dampening and Co-Enhancing = the Co-Dampening and Co-Enhancing Questionnaire (CoDEQ); Dampening and Enhancing = the Responses to Positive Affect questionnaire – Child version (RPA-C); Co-rumination = the short version of the Co-Rumination Questionnaire (CRQ-short); Depressive symptoms = the Children's Depression Inventory (CDI); Anhedonic symptoms = the Leuven Anhedonia Self-Report Scale (LASS); Friendship quality = the Friendship Qualities Scale (FQS)

[a] t-test adjusted for unequal variances across gender

on negative feelings). Hankin et al. (2010) showed the nine-item version to be psychometrically reliable and construct valid. Internal consistency was high in the present study (Table 1).

The *Children's Depression Inventory* (CDI; Kovacs 2003) is a self-report questionnaire that measures symptoms of depression during the past 2 weeks. Each of the 27 three-choice statements are coded from 0 to 2. Consequently, total scores on the CDI range from 0 to 54, with higher scores representing more severe depressive symptoms. The Dutch version by Timbremont et al. (2008) was used. The CDI has good reliability and its criterion validity has been confirmed via relations with depression-related constructs (Kovacs 2003; Timbremont et al. 2008). Internal consistency of the CDI was high in the present study (Table 1).

The *Leuven Anhedonia Self-report Scale* (LASS, developed by Nelis et al. 2015a) is a newly developed scale that was used to assess anhedonia. The items were constructed to tap the consummatory (i.e., reduced pleasure in ongoing experiences), anticipatory (i.e., the diminished pleasure from anticipation to a future positive event), and the motivational (i.e., the decreased drive or motivation to pursue positive outcomes or reward) aspects of anhedonia. Participants are asked to rate 12 statements according to the last 2 weeks. Sample items are: "I found little pleasure in things that I used to enjoy", "I could get really excited in advance about fun things", and "I was motivated to do all kinds of things". The rating scale ranges from *completely untrue* (1) to *completely true* (5). Internal consistency of the total scale was good (Table 1).

The *Friendship Qualities Scale* (FQS, Bukowski et al. 1994) assesses friendship quality. Respondents are asked to complete the scale for the same best friend as chosen for the CoDEQ. Respondents indicate how much each of the 23 items applies to their friendship on a rating scale from *totally not* (1) to *totally* (5). Subscales assessing separate aspects of friendship quality can be calculated (companionship, conflict, help, security, and closeness), as well as a general friendship quality score. In the current study, we used the total score. Bukowski et al. (1994) showed good internal consistency and comparisons between ratings by reciprocated versus non-reciprocated and stable versus non-stable friends supported the validity of the scale. Internal consistency in the present study was high (Table 1).

We further asked for the name of their same-sex best friend. This was an open question, with no requirement that the friend be in the same school. These questionnaires were administered alongside other questionnaires that are not of interest for the present paper.

Procedure

Adolescents were sent home with an invitation letter describing the study and giving parents the opportunity to decline participation. Participants gave consent and completed the questionnaire booklet in a pencil-and-paper format, both at baseline and at the follow-up in collective sessions during

school hours. At least one research assistant was available to handle questions and provide clarifications. For instance, adolescents reporting multiple best friends were instructed to choose one; and participants reporting not to have a (best) friend were told that they were not obliged to fill in the questionnaire. As incentive, participants were entered into a raffle for cinema tickets. There was an interval of about 1 year between baseline and follow-up assessment; mean interval of 11.9 months, *SD* = 1.3, range from 9 to 13 months.

Data Analysis

Hierarchical linear regression analyses were conducted in IBM SPSS Statistics 23. Confirmatory factor analysis and cross-lagged analysis were conducted in Mplus version 7 (Muthén and Muthén 1998–2012).

To test the assumed two-factor structure of the CoDEQ, a confirmatory factor analysis was conducted. The two-factor model (including a factor based on the nine a priori co-dampening items and a factor based on the nine a priori co-enhancing items) was evaluated as well as a one-factor model including only one general factor. Model fit was evaluated using the following indices: the Comparative Fit Index (CFI; Hu and Bentler 1999), the Root Mean Square Error of Approximation (RMSEA; Browne and Cudeck 1993), the Standardised Root Mean square Residual (SRMR), and the Chi-square test of model fit (χ^2). For an acceptable model fit, the chi-square index is preferably as small as possible (and the ratio between χ^2 and degrees of freedom preferably <3); the RMSEA should be less than 0.08; the CFI should exceed 0.90; and the SRMR should be less than 0.10 (Kline 2006). Comparison of model fits of the one- and two-factor model was examined with the Chi-square difference test, the Akaike's Information Criterion (AIC) and the Bayesian Information Criterion (BIC), with lower AIC and BIC representing better fit (Nagin 2005). Following the factor analysis, internal consistency of the corresponding subscales was evaluated using the Cronbach's alpha coefficient; stability coefficients were examined, and gender differences were explored.

Pearson correlations and hierarchical regression analyses were used to examine the cross-sectional relationship of co-dampening and co-enhancing with depressive symptoms, anhedonic symptoms, and friendship quality. Participants with and without complete data were compared using Little's (1988) Missing Completely At Random test. This test was significant, $\chi^2(319) = 432.87$, $p < 0.001$, but the normed chi square (ratio of χ^2/df), which is less sensitive to large sample sizes, was small (< 2; χ^2/df = 1.36), indicating an acceptable fit between the scores with and without imputation of missings (Ullman 2001). Therefore, to minimize bias associated with attrition and missing data (Schafer and Graham 2002), we used the expectation maximization algorithm available in SPSS to impute scale-based missing data at baseline and at follow-up.

Cross-lagged analysis was applied from a structural equation modeling approach to examine the associations between all variables over time. This analysis allows testing for directionality of associations. Our models accounted for all within-time associations (i.e., the correlations between the different variables at each time point), stability paths (i.e., the variable as predicted by its level at the previous time point), and cross-lagged paths (i.e., all possible directions of effects over time between the different variables). Cross-lagged coefficients can be interpreted as variable X at Time 1 predicting relative changes in variable Y at Time 2. Model fit was evaluated using the same indices as for factor analysis.

Both the confirmatory factor analysis and the cross-lagged analysis in Mplus were run using the robust maximum likelihood estimator in Mplus, providing standard errors and a chi-square test (when applicable) robust to non-normality (Muthén and Muthén 1998–2012). All participants present at Time 1 and/or Time 2 were included in the cross-lagged analyses.[2] Missing data in Mplus were dealt with the method of full information maximum likelihood.

Results

Descriptive information is presented in Table 1.

Testing a Two-Factor Model: Confirmatory Factor Analysis

The results are presented in Table 2. For the one-factor model (including all CoDEQ items), model fit indices were not within an acceptable range. However, the two-factor model (i.e., a Co-Dampening factor and a Co-Enhancing factor) showed good model fit and performed significantly better than the one-factor model, χ^2diff(1) = 12,659.59, $p < 0.001$, see also the AIC and BIC values which indicated a better fit of the two-factor model (i.e., lower, ΔAIC = 1035.66, ΔBIC = 1031.16). Consequently, the two-factor solution was retained.[3] In this two-factor model, standardized factor loadings exceeded 0.55 for co-dampening and

[2] Analyses were rerun without the inclusion of drop-ins at follow-up. Values of coefficients did not change considerably and significance levels remained the same.

[3] Following a suggestion of a reviewer, we conducted a post-hoc principal component analysis on our data. This analysis pointed towards two components, which were completely conform the intended co-dampening and co-enhancing constructs (cf., confirmatory factor analysis).

Table 2 Results of the confirmatory factor analyses for a one-factor and a two-factor model of the CoDEQ

	One-factor model	Two-factor model	
CFI	0.63	0.91	
TLI	0.58	0.89	
RMSEA	0.12	0.06	
90% CI for RMSEA	0.11–0.12	0.05–0.06	
SRMR	0.11	0.06	
BIC	27,098.80	26,067.64	
AIC	26,855.81	25,820.15	
Scaled χ^2	1335.04	434.99	
	df = 135	*df* = 134	
	$p < 0.001$	$p < 0.001$	
	Factor loadings	Factor loadings	
		Factor 1	Factor 2
		Co-dampening	Co-enhancing
Item 3	0.60	0.61	-
Item 6	0.61	0.66	-
Item 7	0.58	0.64	-
Item 8	0.57	0.67	-
Item 9	0.59	0.68	-
Item 12	0.50	0.59	-
Item 15	0.58	0.65	-
Item 16	0.62	0.68	-
Item 18	0.49	0.55	-
Item 1	0.39	-	0.62
Item 2	0.42	-	0.57
Item 4	0.41	-	0.62
Item 5	0.48	-	0.62
Item 10	0.49	-	0.60
Item 11	0.56	-	0.67
Item 13	0.56	-	0.71
Item 14	0.51	-	0.50
Item 17	0.45	-	0.65

$N = 665$. Standardized factor loadings are reported

CFI Comparative Fit Index, *TLI* Tucker–Lewis Index, *RMSEA* Root Mean Square Error of Approximation, *CI* Confidence Interval, *SRMR* Standardized Root Mean square Residual, *BIC* Bayesian Information Criterion, *AIC* Akaike's Information Criterion

0.50 for co-enhancing. The correlation between both factors was moderate, $r = 0.43$.

Internal Consistency, Subscales Intercorrelation, and Stability Coefficients

Subscale scores were computed for Co-Dampening and Co-Enhancing by summing all items of the corresponding factors. Both subscales showed good internal consistency (Table 1) and the subscales were moderately correlated, $r(n = 665) = 0.37$, $p < 0.001$.

Stability of the CoDEQ was calculated using Pearson correlations between the scores at baseline and the 1-year follow-up: $r(n = 663) = 0.47$ for co-dampening and $r(n = 663) = 0.61$ for co-enhancing, ps < 0.001. The stability coefficients were moderate to large in a subgroup of participants who completed the CoDEQ according to the same best friend at baseline and at follow-up; $r(n = 220) = .44$ for co-dampening and $r(n = 220) = 0.66$ for co-enhancing, and for a subgroup who chose another friend at baseline and at follow-up; $r(n = 323) = 0.39$ for co-dampening and $r(n = 323) = 0.53$ for co-enhancing, all ps < 0.001. For both CoDEQ subscales, we further examined the association with friend reports in reciprocal friendships. We identified 202 reciprocal friends, equivalent to 101 dyads. The intraclass correlation (average measures) between co-dampening and friend-reported co-dampening was 0.47, $p < 0.001$. For co-enhancing, the association with friend reports was 0.38, $p = 0.01$.

Gender Differences

An independent-samples *t*-test revealed no significant gender differences for co-dampening (Table 1). However, girls reported significantly more co-enhancing with their best friend compared to boys. Girls further reported significantly higher levels of co-rumination and friendship quality, whereas boys reported higher levels of anhedonic symptoms. Given the significant gender differences, gender was added as a control variable in the regression and cross-lagged analyses. In the cross-lagged analyses, gender was controlled for by estimating paths from gender to each variable at Time 1 and Time 2.

Correlational Analyses

Cross-sectionally, higher levels of depressive symptoms were mildly associated with more co-dampening but unrelated to co-enhancing (Table 3). Higher levels of anhedonic symptoms were associated with more co-dampening and less co-enhancing. Both co-dampening and co-enhancing were positively related to their intrapersonal counterpart of dampening and enhancing. Co-dampening was also positively related to enhancing, and co-enhancing to dampening, but to a smaller extent than to their intrapersonal counterpart (comparison between correlations were examined using *Steiger's Z; Steiger's* $Z = 6.40$ and *Steiger's* $Z = 4.06$, both $p < 0.001$). Interestingly, more co-dampening and more co-enhancing were associated with more co-rumination; with the co-enhancing's correlation being the largest, *Steigers* $Z = 6.38$, $p < 0.001$.

Table 3 Associations of the CoDEQ with dampening, enhancing, co-rumination, depressive symptoms, anhedonic symptoms, and friendship quality

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. Co-dampening T1	-														
2. Co-enhancing T1	0.37***	-													
3. Dampening T1	0.42***	0.20***	-												
4. Enhancing T1	0.10**	0.40***	0.07	-											
5. Co-rumination T1	0.36***	0.59***	0.21***	0.21***	-										
6. Depressive symptoms T1	0.14***	0.01	0.49***	−0.32***	0.08*	-									
7. Anhedonic symptoms T1	0.19***	−0.21***	0.24***	−0.34***	−0.11**	0.44***	-								
8. Friendship quality T1	−0.05	0.48***	−0.06	0.27***	0.47***	−0.15***	−0.37***	-							
9. Co-dampening T2	0.47***	0.15***	0.30***	0.01	0.16***	0.18***	0.20***	−0.10**	-						
10. Co-enhancing T2	0.20***	0.61***	0.14***	0.30***	0.44***	0.03	−0.17***	0.42***	0.27***	-					
11. Dampening T2	0.30***	0.14***	0.53***	−0.03	0.16***	0.41***	0.21***	−0.05	0.46***	0.23***	-				
12. Enhancing T2	0.14***	0.32***	−0.02	0.53***	0.18***	−0.25***	−0.25***	0.22***	0.12**	0.47***	0.004	-			
13. Co-rumination T2	0.32***	0.44***	0.15***	0.14***	0.59***	0.10*	−0.05	0.29***	0.35***	0.55***	0.26***	0.25***	-		
14. Depressive symptoms T2	0.05	0.01	0.35***	−0.25***	0.07	0.67***	0.30***	−0.08*	0.12**	−0.004	0.47***	−0.39***	0.04	-	
15. Anhedonic symptoms T2	0.03	−0.20***	0.20***	−0.27***	−0.16***	0.39***	0.49***	−0.33***	0.12**	−0.30***	0.29***	−0.40***	−0.16***	0.51***	-
16. Friendship quality T2	0.05	0.39***	−0.05	0.14***	0.36***	−0.17***	−0.26***	0.60***	−0.07	0.51***	−0.09*	0.27***	0.47***	−0.19***	−0.45***

$N = 665$ at baseline and $N = 663$ at follow-up. Pearson correlations are reported for all participants, including the participants who chose another best friend at T2

T1 = Baseline; T2 = Follow-up. Co-Dampening and Co-Enhancing = the Co-Dampening and Co-Enhancing Questionnaire (CoDEQ); Dampening and Enhancing = the Responses to Positive Affect questionnaire – Child version (RPA-C); Co-rumination = the short version of the Co-Rumination Questionnaire (CRQ-short); Depressive symptoms = the Children's Depression Inventory (CDI); Anhedonic symptoms = the Leuven Anhedonia Self-Report Scale (LASS); Friendship quality = the Friendship Qualities Scale (FQS)

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Regression Analyses: Association with Depressive and Anhedonic Symptoms

Hierarchical regression analyses were conducted to examine the extent to which co-dampening and co-enhancing add to the prediction of concurrent depressive symptoms after controlling for dampening and enhancing on the one hand and co-rumination on the other hand. Two sets of regression analyses with different criterion variables (depressive symptoms in general and anhedonic symptoms in particular) were conducted. The association between the CoDEQ and depressive/anhedonic symptoms was examined (1) controlling for gender, (2) controlling for gender, dampening, and enhancing, and (3) controlling for gender and co-rumination (Table 4). For anhedonic symptoms, co-dampening was positively and co-enhancing was negatively related to symptomatology. These associations remained significant both after controlling for co-rumination, and above and beyond intrapersonal dampening and enhancing. For depressive symptoms, findings were less clear-cut. Consistent with expectations, co-dampening was related to higher levels of depressive symptoms in a model including only gender as a covariate. Yet, a significant negative association with co-enhancing was not found. After controlling for co-rumination, results were in line with expectations, with co-dampening being positively and co-enhancing being negatively related to depressive symptoms. However, in a model in which intrapersonal dampening and enhancing were added, associations were found in the opposite direction, with lower levels of co-dampening and higher levels of co-enhancing being related to higher depressive symptom levels.

Thus, both co-dampening and co-enhancing were found to have additional predictive value for anhedonic and general depressive symptomatology after controlling for co-rumination, in the expected direction. For anhedonia, additional predictive value was also found when controlling for the intrapersonal variants dampening and enhancing. For general depressive symptoms, the associations were small in this model and opposite to expectations.

Regression Analyses: Association with Friendship Quality

Two hierarchical regression analyses were conducted to examine the extent to which interpersonal responses to positive affect (CoDEQ) were associated with friendship quality (1) over and above gender and (2) over and above gender and co-rumination (Table 5). More co-dampening related to lower levels of friendship quality, whereas more co-enhancing related to higher levels. This was still the case when taking into account co-rumination.

Cross-Lagged Analyses: Investigating Directionality of Associations between Co-Dampening, Co-Enhancing, Depressive and Anhedonic Symptoms

In the cross-lagged analyses, we investigated the extent to which co-dampening, co-enhancing, and depressive/anhedonic symptoms predict one another over a 1-year interval. Anhedonia and general depressive symptoms were investigated in separate models. The models including all within-time correlations, all stability coefficients and all cross-lagged paths among the variables at Time 1 and Time 2 were fully saturated (i.e., zero degrees of freedom).[4]

In a first set of analyses, we accounted for effects of gender and co-rumination by including paths from gender and baseline co-rumination to all variables at Time 1 and Time 2 (Fig. 1). Against expectations, co-enhancing and co-dampening did not significantly predict symptomatology. However, higher levels of both depressive symptoms and anhedonic symptoms predicted relative increases in co-dampening levels over a 1-year interval.

In a second set of analyses, two models were run, including paths from gender and baseline dampening and enhancing towards all variables at Time 1 and Time 2 as a control (Fig. 2). Against prediction, none of the cross-lagged paths were significant.

Concerning the control variables in our models, the following significant pathways were found: Levels of co-rumination were significantly related to cross-sectional levels of co-enhancing, $\beta = 0.54$, $p < 0.001$, and co-dampening, $\beta = 0.40$, $p < 0.001$, with coefficients being the same both for the model including depressive symptoms and for the model including anhedonic symptoms. Further, enhancing was found to be predictive of levels of co-enhancing 1 year later, with $\beta = 0.09$, $p = 0.04$ in the model with depressive symptoms and $\beta = 0.09$, $p = 0.04$ in the model with anhedonic symptoms. Finally, the intrapersonal responses were predictive of increases in anhedonic symptoms, with $\beta = 0.14$, $p = 0.004$ and $\beta = -0.10$, $p = 0.048$, for dampening and enhancing, respectively.

By means of post-hoc analyses,[5] we compared the longitudinal results for adolescents reporting a stable friendship (i.e., reporting the same best friend at both time points) with

[4] To be able to interpret the fit of the models, nonsignificant paths of the control variables were trimmed. Fit of the trimmed models indicated excellent fit to the data, with p-values of χ^2-test >0.05, RMSEA ranging from 0.00 to 0.02, CFI = 1.00, and SRMR ranging from 0.01 to 0.02. All paths of the fully saturated models remained robust. Two additional paths emerged: For anhedonia, higher levels of co-enhancing were predictive of relative decreases in anhedonic symptoms in the model including both co-rumination and gender as covariates, $\beta = -0.09$, $p = 0.04$. In the models in which nonsignificant control paths were omitted, depressive and anhedonic symptoms remained predictive of future levels of co-dampening, also in the models including both dampening and enhancing, $\beta = 0.11$, $p = 0.01$ and $\beta = 0.12$, $p = 0.03$, respectively.

[5] We thank an anonymous reviewer for this interesting suggestion.

Table 4 Summary of hierarchical regression analyses: The relation of co-dampening and co-enhancing with concurrent measures of depressive and anhedonic symptoms controlling for gender (Model 1); for gender, dampening and enhancing (Model 2); and for gender and co-rumination (Model 3)

		Criterion: depressive symptoms (CDI)				Criterion: anhedonic symptoms (LASS)			
		β	*p*	R^2	ΔR^2	*β*	*p*	R^2	ΔR^2
Model 1	Gender	0.17	0.04	0.004		−0.002	0.98	0.01	
	Co-dampening	**0.16**	<0.001			**0.31**	<0.001		
	Co-enhancing	−0.08	0.08	0.03	0.02	**−0.32**	<0.001	0.13	0.12
Model 2	Gender	0.02	0.73	0.004		−0.11	0.14	0.01	
	Dampening	**0.53**	<0.001			**0.22**	<0.001		
	Enhancing	**−0.38**	<0.001	0.36	0.36	**−0.30**	<0.001	0.20	0.19
	Co-dampening	**−0.08**	0.03			**0.20**	<0.001		
	Co-enhancing	**0.08**	0.04	0.37	0.01	**−0.19**	<0.001	0.24	0.04
Model 3	Gender	0.15	0.08	0.004		0.02	0.86	0.01	
	Co-rumination	0.06	0.22	0.01	0.004	−0.05	0.33	0.02	0.01
	Co-dampening	**0.15**	<0.001			**0.32**	<0.001		
	Co-enhancing	**−0.11**	0.03	0.03	0.02	**−0.30**	<0.001	0.13	0.11

N = 665. Gender: boys coded as 0 and girls coded as 1. Regression coefficients indicate the results for predictors and criterion variable standardized (except for gender). Significant predictors or control variables are in bold

adolescents reporting a different best friend at Times 1 and 2. Moderating effects of stable (coded as 1) versus unstable (coded as 0) friendships were investigated using multi-group analyses with the Wald test (Wald 1943) of parameter constraints. A significant Wald test suggests that groups vary on the pathway of interest, whereas a nonsignificant test suggests that the most parsimonious model may be maintained. Analyses were performed on adolescents present at both time points, resulting in a sample of 220 adolescents with stable friendships and 323 adolescents with unstable friendships. All bidirectional pathways between symptoms and interpersonal responses to positive affect were examined. For most paths, Wald's test of significance suggested that the relationships identified between interpersonal responses towards positive affect and symptoms applied equally well to both groups ($\chi^2(1)$ ranging from 0.00 to 2.99, *p*-values ranging from 0.13 to 0.99). However, a difference between the two groups was observed in the models including general depressive symptoms. Specifically, for friends reporting the same best friend over a time period of 1 year, higher levels of co-dampening were prospectively related to a *decrease* in levels of depressive symptoms, $\beta = -0.17$, $p = 0.001$; $\chi^2(1) = 5.17$, $p = 0.02$ for a model including co-rumination as a covariate and $\beta = -0.20$, $p < 0.001$; $\chi^2(1) = 6.31$, $p = 0.01$ for a model including enhancing and dampening as covariates, whereas this was not the case for individuals in unstable friendships, $\beta = 0.01$, $p = 0.86$ and $\beta = 0.01$, $p = 0.93$, respectively.

Table 5 Hierarchical regression analyses: The relation of co-dampening and co-enhancing with concurrent measures of friendship quality controlling for gender (Model 1) and for gender and co-rumination (Model 2)

		Criterion: friendship quality			
		β	*p*	R^2	ΔR^2
Model 1	Gender	**0.51**	<0.001	0.17	
	Co-dampening	**−0.24**	<0.001		
	Co-enhancing	**0.49**	<0.001	0.35	0.19
Model 2	Gender	**0.41**	<0.001	0.17	
	Co-rumination	**0.30**	<0.001	0.29	0.12
	Co-dampening	**−0.29**	<0.001		
	Co-enhancing	**0.35**	<0.001	0.41	0.12

N = 665. Gender: boys coded as 0 and girls coded as 1. Regression coefficients indicate the results for predictors and criterion variable standardized (except for gender). Significant predictors or control variables are in bold

Cross-Lagged Analyses: Investigating Directionality of Associations between Co-Dampening, Co-Enhancing, and Friendship Quality

For the analyses predicting friendship quality, we examined the subset of participants who reported the same best friend at both time points (n = 220). Again, models including all within-time correlations, all stability coefficients and all cross-lagged paths among the variables at Time 1 and Time 2 were fully saturated.[6] Apart from the stability coefficients, no significant paths were found in the model (Fig. 3).

[6] To be able to interpret the fit of the models, nonsignificant paths of the control variables were trimmed. Fit of the trimmed models indicated excellent fit to the data, with *p*-values of χ^2-test >0.05 for both models, values RMSEA = 0.00, CFI = 1.00, and SRMR = 0.01. All paths of the fully saturated models remained robust.

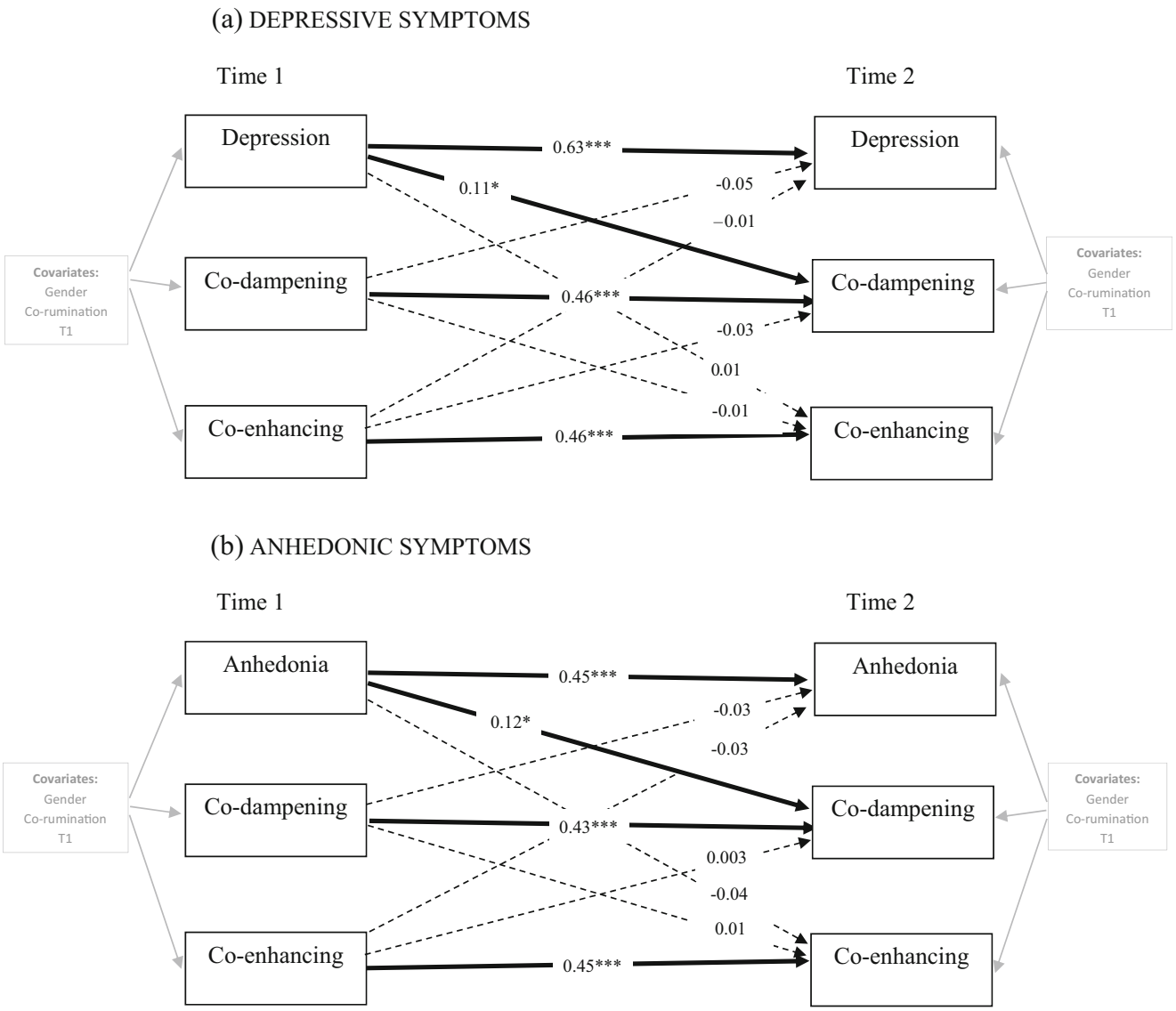

Fig. 1 Cross-lagged path model with significant standardized path coefficients for general depressive symptoms (panel **a**) and anhedonic symptoms (panel **b**) with gender and co-rumination added as control variables. *Dashed lines* represent nonsignificant paths. Within-time correlations were included in the model, but are not presented for reasons of clarity. $*p < 0.05$, $*** p < 0.001$

Discussion

The overarching goal of the present study was to extend the research on responses to positive affect to an interpersonal peer context. Our first aim was to evaluate a newly developed self-report measure of interpersonal responses to positive affect, more precisely of co-dampening and co-enhancing. As a second and third aim, we examined the relation of co-dampening and co-enhancing with concurrent depressive symptoms (in general as well as the specific symptom cluster of anhedonia) and friendship quality. As a fourth aim, we examined the direction of these relations using longitudinal data.

Regarding our first aim, confirmatory factor analyses of the CoDEQ revealed that a two-factor model adequately fitted the data and was superior to a one-factor model. In this two-factor model, the interpersonal responses to positive affect comprised co-dampening and co-enhancing, two moderately correlated facets. Both subscales of the CoDEQ showed high internal consistency. Findings indicated a moderate to high stability across 1 year, both for stable and unstable friendships, suggesting that the tendency to co-dampen and co-enhance might generalize across different friendships and comprises a somewhat stable response style. Furthermore, in a small subsample of reciprocal friends, friend reports were significantly associated, with a size comparable to friends' reports in co-rumination as reported by Smith and Rose (2011), pointing to the interpersonal aspect of the two response facets.

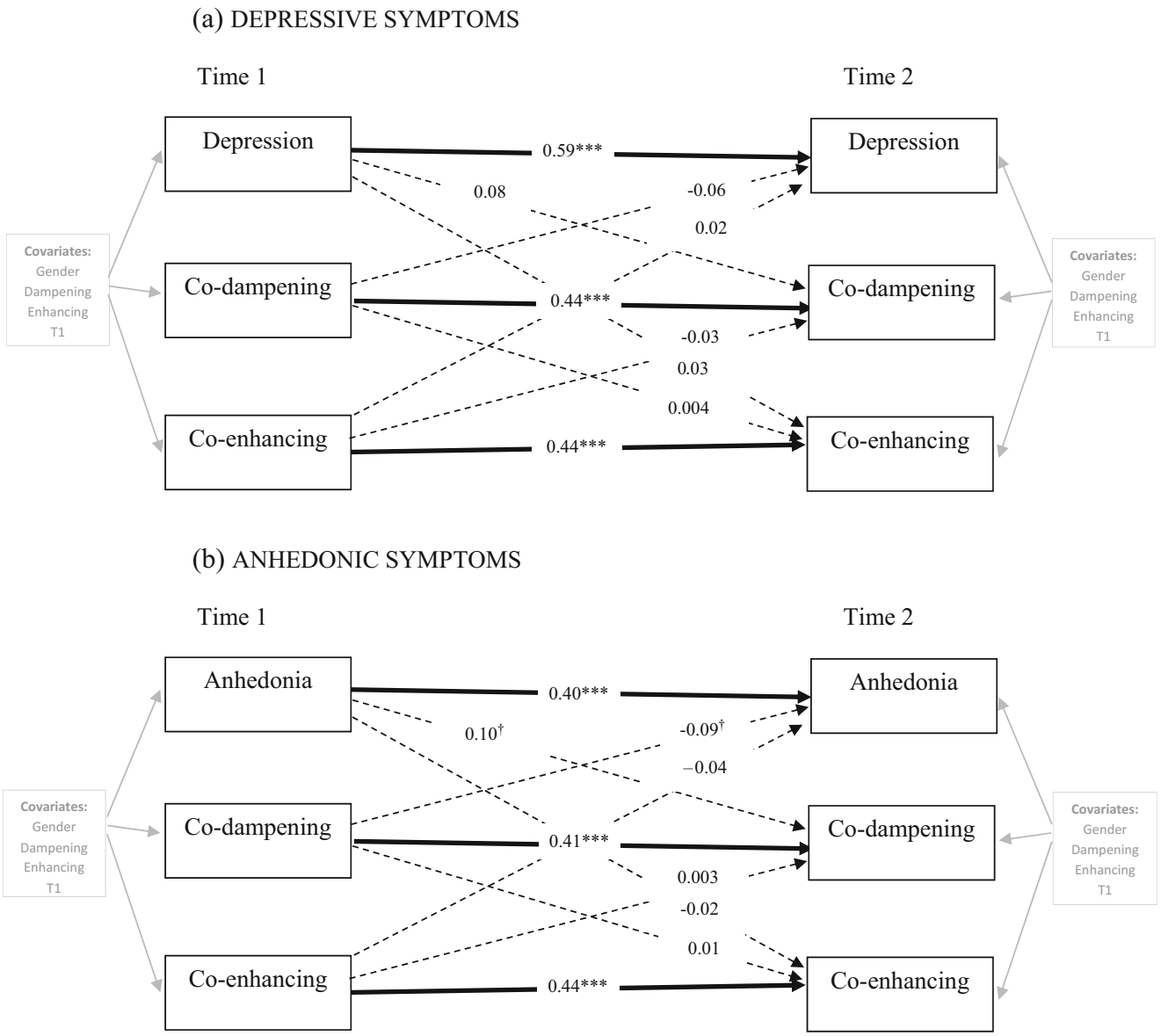

Fig. 2 Cross-lagged path model with significant standardized path coefficients for general depressive symptoms (panel **a**) and anhedonic symptoms (panel **b**) with gender, dampening, and enhancing added as control variables. *Dashed lines* represent nonsignificant paths. Within-time correlations were included in the model, but are not presented for reasons of clarity. † $p < 0.10$, *** $p < 0.001$

An exploration of gender differences further showed that girls reported higher co-enhancing levels compared to boys. This is in line with previously reported gender differences in co-rumination (girls reporting higher levels, cf. e.g., Hankin et al. 2010; Stone et al. 2011). We found no gender differences in co-dampening. However, and in line with this, no gender differences emerged for the intrapersonal forms of dampening and enhancing either.

With respect to our second aim and in line with our expectations, the results revealed that more co-dampening and less co-enhancing were associated with more concurrent depressive and anhedonic symptoms, while controlling for co-rumination levels. Interestingly, the standardized regression coefficients of these associations were twice as large for anhedonia than for general depressive symptoms, underscoring the importance of looking at specific symptom clusters and not (only) general measures of depressive symptoms (cf., Fried 2015). Moreover, the robustness of the association with anhedonia was also confirmed by the finding that associations between co-dampening/co-enhancing and anhedonia held above and beyond the role of two other correlates of anhedonia (i.e., intrapersonal dampening and enhancing).

Unexpectedly, the parallel association of co-dampening/co-enhancing with depressive symptoms when controlling for their intrapersonal forms took the opposite direction, with co-dampening being associated with less and co-enhancing being associated with more concurrent depressive symptoms. This suggests the occurrence of a classical suppression effect,

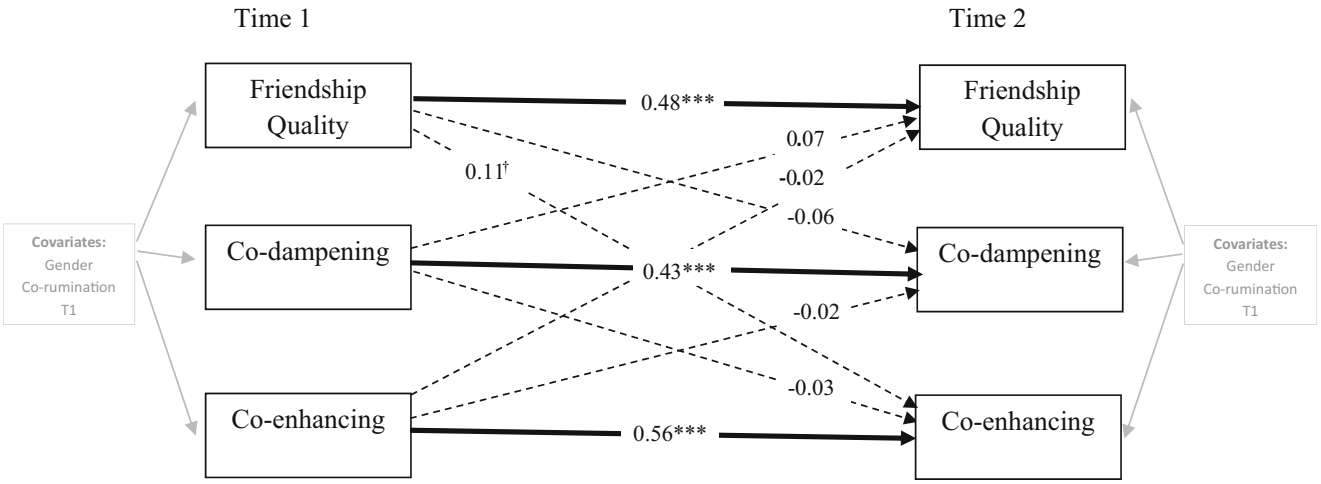

Fig. 3 Cross-lagged path model with significant standardized path coefficients for friendship quality with gender and co-rumination added as a control variable. *Dashed lines* represent nonsignificant paths. Within-time correlations were included in the model, but are not presented for reasons of clarity. † $p = 0.09$, *** $p < 0.001$

which implies that the variance in co-dampening and co-enhancing that is left after controlling for dampening and enhancing has an unexpected relationship towards depressive symptoms. The suppression appears to be specific for the distress and negative affect part of depressive symptoms, since it did not occur with anhedonia as outcome variable. Above and beyond enhancing and dampening, the co-dampening scale might uniquely be tapping affiliation (i.e., having a friend to share emotions with), resulting in a negative association with distress. Similarly, Rose (2002) found a negative relationship between co-rumination and concurrent internalizing symptoms once rumination was partialled out and attributed this to the adaptive aspect of self-disclosure. However, this does not explain why the same association was not found for co-enhancing. For both "reversed" associations, however, it is important to note that effect sizes were small. Future research is certainly essential in order to verify whether this counterintuitive finding is idiosyncratic or represents a robust phenomenon.

Next, the direction of these relationships between co-dampening and co-enhancing on the one hand and depressive and anhedonic symptoms on the other hand, was established in a cross-lagged model. Unexpectedly, co-dampening and co-enhancing did not predict depressive and anhedonic symptoms over a 1-year interval. Yet, these symptoms predicted relative increases in levels of co-dampening 1 year later after controlling for co-rumination. Thus, whereas a vulnerability model – in which response styles render individuals vulnerable to depressive symptoms – is generally assumed, our study provides evidence for a "scar model" in which depressive symptoms may feed back on response tendencies (cf., Tackett 2006). Individuals who experience depressive symptoms or a reduced drive for and pleasure in enjoyable activities (i.e., anhedonia) might thus be especially prone to talk about positive events in a dampening way. This evidence for a scar model further complements previous findings with regard to co-rumination. For instance, Rose et al. (2007) established reciprocal associations in which co-rumination levels were predicted by previous levels of symptomatology. Furthermore, Hankin et al. (2010) found evidence for a transactional model in which internalizing symptoms predicted later elevations in co-rumination, and this, in turn, predicted future symptoms. Our results stress the importance of examining bi-directionality in models of response styles and depressive symptoms.

Although our failure to find support for a vulnerability model may mean that interpersonal responses to positive affect are simply not influential over time, it may instead be that their importance depends on the operation of moderators. Additionally, our failure to find such effects across two waves separated by a 1-year interval does not preclude the possibility that co-dampening/co-enhancing have effects operating over shorter or longer time intervals. The need to consider possible moderating factors is further suggested by the unexpected finding that higher levels of co-dampening seemed to have a *protective* function for general depressive symptoms among individuals reporting the same best friend over a 1-year interval. It may be that the benefits of self-disclosing with a friend in stable friendships outweighs any costs of dampening positive feelings in these friendships, thus contributing to a decrease in emotional distress over time. Future studies should further examine differences in the impact of interpersonal responses to positive affect over time as a function of friendship stability/instability and other possible moderators.

Importantly, it was unexpected that associations were only found in a model including co-rumination as a covariate and not in a model including intrapersonal dampening and

enhancing. Here again, replication will be important, especially in data sets in which co-rumination is predictive of depressive symptoms. To enhance knowledge on interpersonal response styles in a peer context, it seems worthwhile to consider interpersonal responses to positive affect. However, no strong evidence was found for the additional value of studying the interpersonal discussion of positive affect on top of the cognitive *intrapersonal* responses to positive affect.

According to our third aim of the study, results showed that co-dampening relates to lower friendship quality; whereas co-enhancing might be rather experienced as an agreeable interaction style expressed in a positive association with friendship quality, conform expectations. Against expectations, however, these associations did not replicate longitudinally. Based on findings in the co-rumination literature, we had expected the self-disclosing aspect to promote friendship quality; especially co-enhancing was expected to be related to greater feelings of closeness in the long run. It is possible that this lack of associations was caused by the relative small number of participants that reported a same best friend over the time span. More research with a larger sample of stable friendships is recommended.

Finally, the results of the present study indicated that adolescents who excessively discuss their problems with their friends (i.e., co-ruminate) also tend to co-dampen and co-enhance. The positive association between co-rumination and co-enhancing might sound counterintuitive given that the first has been positively and the latter negatively related to depressive symptoms. However, the associations most likely indicate that co-rumination and co-dampening/co-enhancing share the interpersonal aspect of talking with friends in general and self-disclosure in particular.

Future Research

Given that this is the first study to investigate dampening and enhancing in an interpersonal peer context, further research is needed. First, replication of the present study in an independent sample of adolescents is vital, as well as replication in other grades and in a clinical sample to examine generalizability. Second, the CoDEQ assesses co-dampening and co-enhancing tendencies with a best friend. It would be interesting for future studies to investigate whether our findings hold in other relationships, like relationships with siblings and colleagues (for related research on parents and romantic partners, see for instance Gable et al. 2004; Yap et al. 2008) and to continue studying both stable and unstable friendships. Also the investigation of specific contexts in which the current and expected associations are especially present would be worthwhile (i.e., the amount of positive events or stressors someone is exposed to). Third, the CoDEQ specifically assesses how often a conversation on happy feelings of one of two friends tends to have a downgrading or enhancing content. Observational studies are needed to get a more detailed and nuanced understanding of the micro-level processes within these interactions. For example, coding the interactions would provide insight into the person within the dyad who starts the dampening and enhancing process and the influence it has when downgrading or enhancing patterns are interrupted by one of both friends. Observational studies would further have the advantage of providing a more objective measure of co-dampening and co-enhancing. Also an extended version of the questionnaire could focus on specific aspects, for instance how each individual within the dyad responds when the friend shares happy feelings and vice versa. Fourth, findings in our study indicate that intrapersonal levels of enhancing are predictive of increases in their interpersonal counterpart. Future research might benefit from investigating this relationship between intrapersonal and interpersonal response styles to positive affect to get a better idea of the sequence of both. Finally, we suggest examining co-dampening and co-enhancing in adolescents who might have an increased tendency to co-dampen. For instance, future research could disentangle whether depressed inpatients strengthen co-dampening responses among one another and whether patients are vulnerable to take over co-dampening tendencies of the patients with whom they cohabit during hospitalization.

Strengths and Limitations

An important strength of the present study is the prospective design which allowed us to examine the direction of associations over time while making use of a conservative statistical model. Also the inclusion of both general depressive symptoms and symptom-specific anhedonic symptoms is an advantage of the study. However, some limitations should be noted. First, the sole use of self-report questionnaires may lead to shared method variance. As mentioned before, research would benefit from observational measures of co-dampening and co-enhancing, as this may provide a more objective way of measuring both facets and provide deeper insight into micro-level processes of conversations on happy feelings. The inclusion of a social desirability measure could further help to provide insight into the degree to which socially desirable answers are given. Second, the reliance on one reporter may raise concerns about shared rater biases. Reports from friends or parents could unravel potentially inflated associations and provide external validation of relations between symptoms and co-dampening/co-enhancing. Unfortunately, the current study did not have enough reciprocal friendships present at both assessment waves to conduct more complex analyses.

Conclusion

This study was the first to investigate the interpersonal forms of dampening and enhancing within friendships. A two-factor model distinguishing co-dampening and co-enhancing was validated using confirmatory factor analysis. We found that co-dampening positively related to concurrent levels of depressive symptoms. Co-dampening was further positively and co-enhancing negatively related to concurrent anhedonic symptom levels. The associations with general depressive symptoms were counterintuitive when controlling for the role of intrapersonal dampening and enhancing and require further examination. High co-enhancing and low co-dampening were related to concurrent friendship quality. Our results further suggested a scar model, with depressive and anhedonic symptoms predicting co-dampening over a 1-year interval after controlling for co-rumination, but not after controlling for intrapersonal dampening and enhancing. This study gives a first indication towards the value of examining interpersonal responses to positive affect with peers when studying depressive symptoms, apart from the sole study of interpersonal responses to negative affect. More research is needed in order to replicate these findings and to examine co-dampening and co-enhancing in other age groups, with different time intervals, and with the inclusion of potential moderation factors.

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Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

This article does not contain any studies with animals performed by any of the authors.

Informed Consent Informed consent was obtained from all individual participants included in the study.

References

Abela, J. R. Z., & Hankin, B. L. (2008). The development of depression during the transition from early to middle adolescence: a cognitive vulnerability-stress perspective. *Journal of Affective Disorders, 107*, 111–112.

Bijttebier, P., Raes, F., Vasey, M. W., & Feldman, G. C. (2012). Responses to positive affect predict mood symptoms in children under conditions of stress: a prospective study. *Journal of Abnormal Child Psychology, 40*, 381–389.

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural models*. Newbury Park: Sage Publications.

Bryant, F. B. (2003). Savoring beliefs inventory (SBI): a scale for measuring beliefs about savouring. *Journal of Mental Health, 12*, 175–196.

Bukowski, W. M., Hoza, B., & Boivin, M. (1994). Measuring friendship quality during pre-adolescence and early adolescence: the development and psychometric properties of the friendship qualities scale. *Journal of Social and Personal Relationships, 11*, 471–484.

Calmes, C. A., & Roberts, J. E. (2008). Rumination in interpersonal relationships: does co-rumination explain gender differences in emotional distress and relationship satisfaction among college students? *Cognitive Therapy and Research, 32*, 577–590.

Cohen, P., Cohen, J., Kasen, S., Velez, C., Hartmark, C., Johnson, J., et al. (1993). An epidemiological study of disorders in late childhood and adolescence, I: age- and gender-specific prevalence. *Journal of Child Psychology and Psychiatry, 34*, 851–867.

Cole, D. A., Tram, J. M., Martin, J. M., Hoffman, K. B., Ruiz, M. D., Jacquez, F. M., & Maschman, T. L. (2002). Individual differences in the emergence of depressive symptoms in children and adolescents: a longitudinal investigation of parent and child reports. *Journal of Abnormal Psychology, 111*, 156–165.

Costello, E. J., Erkanli, A., & Angold, A. (2006). Is there an epidemic of child or adolescent depression? *Journal of Child Psychology and Psychiatry, 47*, 1263–1271.

Dunn, B. D. (2012). Helping depressed clients reconnect to positive emotion experience: current insights and future directions. *Clinical Psychology & Psychotherapy, 19*, 326–340.

Feldman, G. C., Joormann, J., & Johnson, S. L. (2008). Responses to positive affect: a self-report measure of rumination and dampening. *Cognitive Therapy and Research, 32*, 507–525.

Fergusson, D. M., & Woodward, L. J. (2002). Mental health, educational and social role outcomes of adolescents with depression. *Archives of General Psychiatry, 59*, 225–231.

Fried, E. (2015). Problematic assumptions have slowed down depression research: why symptoms, not syndromes are the way forward. *Frontiers in Psychology, 6*, article 309.

Fried, E. I., Epskamp, S., Nesse, R. M., Tuerlinckx, F., & Borsboom, D. (2016). What are "good" depression symptoms? Comparing the centrality of DSM and non-DSM symptoms of depression in a network analysis. *Journal of Affective Disorders, 189*, 314–320.

Gable, S. L., Reis, H. T., Impett, E. A., & Asher, E. R. (2004). What do you do when things go right? The intrapersonal and interpersonal benefits of sharing positive events. *Journal of Personality and Social Psychology, 87*, 228–245.

Gentzler, A. L., Kerns, K. A., & Keener, E. (2010). Emotional reactions and regulatory responses to negative and positive events: associations with attachment and gender. *Motivation and Emotion, 34*, 78–92.

Gotlib, I. H., & Joormann, J. (2010). Cognition and depression: current status and future directions. *Annual Review of Clinical Psychology, 6*, 285–312.

Hankin, B. L., Stone, L., & Wright, P. A. (2010). Corumination, interpersonal stress generation, and internalizing symptoms: accumulating

effects and transactional influences in a multiwave study of adolescents. *Development and Psychopathology, 22*, 217–235.

Hershenberg, R., Davila, J., & Leong, S. H. (2014). Depressive symptoms in women and the preference and emotional benefits of discussing positive life events. *Journal of Social and Clinical Psychology, 33*, 767–788.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55.

Katz, L. F., Shortt, J. W., Allen, N. B., Davis, B., Hunter, E., Leve, C., & Sheeber, L. (2014). Parental emotion socialization in clinically depressed adolescents: enhancing and dampening positive affect. *Journal of Abnormal Child Psychology, 42*, 205–215.

Kessler, R. C., Avenevoli, S., & Merikangas, K. R. (2001). Mood disorders in children and adolescents: an epidemiologic perspective. *Biological Psychiatry, 49*, 1002–1014.

Kessler, R. C., McGonagle, K., Swartz, M., Blazer, D., & Nelson, C. (1993). Sex and depression in the National Comorbidity Survey: I. Lifetime prevalence, chronicity and recurrence. *Journal of Affective Disorders, 29*, 85–96.

Kline, R. B. (2006). *Principles and practices of structural equation modeling* (2nd ed.). New York: The Guilford Press.

Kovacs, M. (2003). *Children's depression inventory: Technical manual*. New York: Multi-health Systems.

Lewinsohn, P. M., Rohde, P., & Seeley, J. R. (1998). Major depressive disorder in older adolescents: prevalence, risk factors, and clinical implications. *Clinical Psychology Review, 18*, 765–794.

Little, R. J. A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association, 83*, 1198–1202.

Lux, V., & Kendler, K. S. (2010). Deconstructing major depression: a validation study of the DSM-IV symptomatic criteria. *Psychological Medicine, 40*, 1679–1690.

Muthén, L. K., & Muthén, B. O. (1998-2012). *Mplus user's guide* (Seventh ed.). Los Angeles: Muthén & Muthén.

Nagin, D. S. (2005). *Group-based modelling of development*. Cambridge: Harvard University Press.

Nelis, S., Bastin, M., Raes, F., & Bijttebier, P. (2015a). *Leuven anhedonia self-report scale (LASS)*. Unpublished questionnaire.

Nelis, S., Holmes, E. A., & Raes, F. (2015b). Response styles to positive affect and depression: Concurrent and prospective associations in a community sample. *Cognitive Therapy and Research, 39*, 480–491.

Nolen-Hoeksema, S., Stice, E., Wade, E., & Bohon, C. (2007). Reciprocal relations between rumination and bulimic, substance abuse, and depressive symptoms in female adolescents. *Journal of Abnormal Psychology, 116*, 198–207.

Quoidbach, J., Berry, E. V., Hansenne, M., & Mikolajczak, M. (2010). Positive emotion regulation and well-being: Comparing the impact of eight savoring and dampening strategies. *Personality and Individual Differences, 49*, 368–373.

Raes, F., Daems, K., Feldman, G. C., Johnson, S. L., & Van Gucht, D. (2009). A psychometric evaluation of the Dutch version of the responses to positive affect questionnaire. *Psychologica Belgica, 49*, 293–310.

Raes, F., Smets, J., Nelis, S., & Schoofs, H. (2012). Dampening of positive affect prospectively predicts depressive symptoms in non-clinical samples. *Cognition & Emotion, 26*, 75–82.

Raes, F., Smets, J., Wessel, I., Van Den Eede, F., Nelis, S., Franck, E., et al. (2014). Turning the pink cloud grey: dampening of positive affect predicts postpartum depressive symptoms. *Journal of Psychosomatic Research, 77*, 64–69.

Rose, A. J. (2002). Co-rumination in the friendships of girls and boys. *Child Development, 73*, 1830–1843.

Rose, A. J., Carlson, W., & Waller, E. M. (2007). Prospective associations of co-rumination with friendship and emotional adjustment: considering the socioemotional trade-offs of co-rumination. *Developmental Psychology, 43*, 1019–1031.

Rose, A. J., & Rudolph, K. D. (2006). A review of sex differences in peer relationship processes: potential trade-offs for the emotional and behavioral development of girls and boys. *Psychological Bulletin, 132*, 98–131.

Schafer, J. L., & Graham, J. W. (2002). Missing data: our view of the state of the art. *Psychological Methods, 7*, 147–177.

Smith, R. L., & Rose, A. J. (2011). The "cost of caring" in youths' friendships: considering associations among social perspective taking, co-rumination, and empathetic distress. *Developmental Psychology, 47*, 1792–1803.

Starr, L. R., & Davila, J. (2009). Clarifying co-rumination: associations with internalizing symptoms and romantic involvement among adolescent girls. *Journal of Adolescence, 32*, 19–37.

Steinberg, L. (1990). Autonomy, conflict, and harmony in the family relationship. In G. R. Elliott & S. S. Feldman (Eds.), *At the threshold: The developing adolescent*. Cambridge: Harvard University Press.

Stone, L. B., Hankin, B. L., Gibb, B. E., & Abela, J. R. Z. (2011). Co-rumination predicts the onset of depressive disorders during adolescence. *Journal of Abnormal Psychology, 3*, 752–757.

Tackett, J. L. (2006). Evaluating models of the personality-psychopathology relationship in children and adolescents. *Clinical Psychology Review, 26*, 584–599.

Timbremont, B., Braet, C., & Roelofs, J. (2008). *Handleiding children's depression inventory (herziene versie) [manual for Children's depression inventory (revised version)]*. Amsterdam: Pearson.

Tugade, M. M., & Fredrickson, B. L. (2007). Regulation of positive emotions: emotion regulation strategies that promote resilience. *Journal of Happiness Studies, 8*, 311–333.

Ullman, J. B. (2001). Structural equation modeling. In B. G. Tabachnick & L. S. Fidell (Eds.), *Using multivariate statistics* (Fourth ed., pp. 653–771). Needham Heights: Allyn & Bacon.

Verstraeten, K., Vasey, M. W., Raes, F., & Bijttebier, P. (2012). The mediational role of responses to positive affect in the association between temperament and (hypo)manic symptoms in children. *Cognitive Therapy and Research, 36*, 768–775.

Wald, A. (1943). Tests of statistical hypotheses concerning several parameters when the number of observations is large. *Transactions of the American Mathematical Society, 54*, 426–482.

Werner-Seidler, A., Banks, R., Dunn, B. D., & Moulds, M. L. (2013). An investigation of the relationship between positive affect regulation and depression. *Behaviour Research and Therapy, 51*, 46–56.

Yap, M. B. H., Allen, N. B., & Ladouceur, C. D. (2008). Maternal socialization of positive affect: The impact of invalidation on adolescent emotion regulation and depressive symptomatology. *Child Development, 79*, 1415–1431.