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A Longitudinal Rejection Sensitivity Model of Depression and Aggression: Unique Roles of Anxiety, Anger, Blame, Withdrawal and Retribution

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Abstract In this longitudinal study, attributional and social processes involved in symptoms of mental health problems (depressive symptoms and aggressive behavior) were identified by investigating anxious and angry rejection sensitivity (RS), causal attributions of self-blame and peer-blame, and responses to rejection threat of withdrawal and retribution. Young adolescents ($N = 713$, grades 5–7) completed questionnaires three times in their regular classrooms over 14 months. Participants who reported more self-blame for rejection were more likely to withdraw in response to rejection threat, and withdrawal and anxious RS were associated with increased depressive symptoms at T3 relative to T1. In contrast, adolescents higher in the angry form of RS and who reported more peer-blame for rejection were more likely to seek retribution, which in turn was associated with more overt/relational aggressive behavior at T3 relative to T1. Depressive symptom level measured at T1 also was associated with later RS and coping with withdrawal, and aggressive behavior at T1 was associated with later retribution. Sex of the participants did not moderate any longitudinal associations, and only one prospective path, from T1 depressive symptoms to T2 RS anxious, was moderated by age.

Keywords Peer rejection · Coping · Rejection sensitivity, depressive symptoms · Aggressive behavior

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Research studies over the past 40 years have shown that psychological and social adjustment during childhood and adolescence are affected by the extent to which relationships with friends and classmates are rejecting, as opposed to inclusive (e.g., Laursen and Collins 2009; Leary 2001; Rubin et al. 2006; Twenge et al. 2002; Williams et al. 2005; Zimmer-Gembeck et al. 2010). Empirical research founded on rejection sensitivity (RS) theory has supported RS as one important mechanism that explains how and why rejection experiences are associated with concurrent and developing emotional and behavioral maladjustment (Feldman and Downey 1994). RS refers to the tendency to anxiously or angrily expect and readily perceive rejection.

RS involves a bias toward the perception of rejection and a heightened emotional reaction to rejection when it is perceived. Moreover, maladaptive behavioral responses, particularly social withdrawal (or isolating oneself from others) and aggressive retribution, typically follow these RS perceptions and emotions (Zimmer-Gembeck 2015). These responses of withdrawal and retribution can be quite maladaptive because they have been shown to covary with concurrent and increasing emotional and social problems and harm to others (Ayduk et al. 2001; Downey and Feldman 1996; Downey et al. 1998a; McDonald et al. 2010; Purdie and Downey 2000). In addition, withdrawal and retribution are likely to interfere with the development of competence in adaptive coping and repair of interpersonal problems. Although much of this research has focused on adults, RS also has been associated with negative emotional adjustment in children (Downey et al. 1999) and adolescents (London et al. 2007; McLachlan et al. 2010; Zimmer-Gembeck et al. 2014b). Experiences of rejection provide a foundation for the development of RS, and once these rejection experiences are internalized, which seems to occur as early as late childhood (Nesdale et al. 2014; Zimmer-Gembeck et al. 2014a), the reactions to signs of rejection or

lack of belonging may be socially maladaptive eventually prompting increasing social, emotional and behavioral problems.

In this longitudinal study we investigated the processes involved in depressive symptoms and aggressive behavior by considering RS and maladaptive behavioral responses to rejection among Australian students in grades 5, 6 or 7 (the final years of primary school, ages 10 to 13). We refer to the participants as young adolescents. We focus on this age group given that peer relationships and acceptance into peer groups become increasingly important between late childhood and the first few years of the second decade of life (Farmer and Xie 2007; Rubin et al. 2006). As children transition from childhood to adolescence, they spend increasing amounts of time with peers without adults present, they become more focused on peer group membership, have a better understanding of peer group hierarchies and interrelationships, and increasingly rely on peers for support and information (Brown 2004; Furman and Buhrmester 1992; Larson et al. 1999; Rubin et al. 2006; Zimmer-Gembeck et al. 2011a). Given the increasing importance of close relationships with peers and the likely consolidation of RS with increasing age, we expected to find sufficient changes in RS at this age.

Our more specific purpose in this study was to investigate the extent to which young adolescents' RS was a precursor of their depressive symptoms and aggressive behavior towards peers. Another purpose was to expand this RS model to test the possibility that there are specific sensitivities and behavioral responses to rejection threat associated with depressive symptoms as compared to aggressive behavior. Two forms of RS, an anxious and an angry form, and two forms of behavioral responses to rejection, withdrawal and retribution, were considered. Furthermore, we tested how adolescents' causal attributions for peer rejection (self-blame versus peer-blame) may better account for behavioral responses to rejection threat and patterns of rejection sensitivity, depressive symptoms and aggression over time. We also tested for moderation of associations by sex of the participants and age.

RS and Responses to Perceived Rejection

RS Anxious and RS Angry Downey et al. (1999) extended their original RS theory, which focused primarily on anxious expectations of rejection. They proposed that rejection expectations are accompanied by defensively oriented emotions of anxiety (i.e., anxious expectations) or anger (i.e., angry expectations). These defensively oriented emotions prepare the individual to defend the self against subsequent rejection. Yet, few studies have distinguished anxious from angry expectations of rejection, or examined the potential maladjustment that may uniquely follow from each of these two RS forms. It is known that some adolescents are more likely to have anxious expectations of rejection (RS anxious), whereas others may be more likely to have angry expectations (RS angry; Zimmer-Gembeck and Nesdale 2013) and it is believed that RS anxious and RS angry forms each accompany general social dissatisfaction and maladaptive behavior (Downey et al. 1999). However, Downey et al. (1998b) argued that there may be different correlates and consequences of RS anxious and RS angry forms. They asserted that RS anxious would be more strongly associated with internalizing problems, such as depressive affect and social anxiety, whereas RS angry would be more strongly associated with externalizing problems, such as aggressive behavior. It is known that anxious and angry RS relates differently to young adolescents' friendship conflict and conflict resolution (Croft and Zimmer-Gembeck 2014), and there has been some research that has measured anxious separate from angry RS (Downey et al. 1998b). However, there has been no published study on the different internalizing and externalizing correlates of anxious vs. angry RS in young adolescents.

RS, Behavioral Responses to Rejection Threat, and Adjustment RS has been of interest to researchers primarily because of its usefulness for understanding when relationships and interactions yield increasing mental health or behavioral problems into adolescence and adulthood, but also because of its importance for understanding how people respond to the threat of rejection, either adaptively or maladaptively. For example, several studies have found that when adolescents and young adults are higher in RS they are more likely to react with aggression following the presentation of events that imply rejection (Ayduk et al. 1999; Buckley et al. 2004; Twenge et al. 2001). Others have found similar results in young adolescents (Downey et al. 1998b). In other studies, individuals had heightened tendency to withdraw from interactions following the presentation of events that implied rejection (Leary et al. 1998; Williams 2001; Zimmer-Gembeck and Nesdale 2013). Taken together, this body of research suggests two common responses to rejection threat - an aggressive or a withdrawn response. In turn, each of these maladaptive responses has been associated with increasing social and emotional problems over time (Downey et al. 1998b).

The specific type of anticipatory affect associated with RS (i.e., anxious or angry) would be expected to predict the type of behavioral response to threat enacted (i.e., social withdrawal or aggression). Moreover, the particular behavioral response would be dependent on the relative levels of anxious or angry emotions that were instigated (London et al. 2007). Hence, in interpersonal situations, RS anxious is more likely to lead to flight responses (e.g., withdrawal and worry), whereas RS angry is more likely to lead to fight responses (e.g., retribution or reactive aggression). Only one previous study has examined this prospectively with two measurements separated by a period of 4 months. Consistent with the revised

RS model, London et al. (2007) reported that adolescents who reported higher levels of RS anxious showed elevated social withdrawal and anxiety at T2 relative to T1, whereas adolescents higher in RS angry showed decreased anxiety at T2 relative to T1.

Extending these findings, unique associations between the two RS forms and responses to rejection threat were found in a series of two experimental cross-sectional studies of older adolescents and young adults (Zimmer-Gembeck and Nesdale 2013). RS anxious but not RS angry was uniquely associated with social withdrawal in response to rejection threat, whereas RS angry was uniquely associated with seeking retribution as a response to rejection threat. However neither of these previous studies measured depressive symptoms or aggression to examine socioemotional maladaptation associated with rejection responses, and neither considered the potentially unique importance of causal attributions for understanding responses to rejection threat.

RS and Attributions for Rejection

The inferences individuals make about the reasons why particular social events occur (e.g., why someone rejected you) have been referred to as causal attributions (Weiner and Graham 1984). Making causal attributions for perceived social failures, such as the perception of rejection, is a relational self-system process that aids with interpretation and understanding of others and the self, and guides subsequent behavior (Zimmer-Gembeck 2015). The essence of attribution theory is that individuals are constructive thinkers who approach situations searching for causes of stimulus events and, based on those attributions and inferences, they respond accordingly and with, often predictable, behaviors.

There are many dimensions of causal attributions (Quiggle et al. 1992; Skinner 1995; Skinner et al. 1998). Yet, one common method for differentiating attributions is to identify them as internal or external (Abramson et al. 1978) or, as was the case in the present study, to the self (self-blaming) or to peers (peer-blaming; Crick and Ladd 1993; Guerra et al. 2004; Sandstrom and Coie 1999). Individuals who engage in self-blame for negative social events have been found to be more vulnerable to depression than those who make external attributions (Hankin and Abramson 2001; Panak and Garber 1992). Also, self-blame for social failure has been associated with social withdrawal (Goetz and Dweck 1980). In this study, we also model self-blame as a correlate of increasing RS over time, given our view that self-blame could prompt an unfolding of even more anxious expectations of others' rejection over time.

Most research and theoretical attention has been on self-blame rather than other-blame for the occurrence of negative social events. Nevertheless, some research suggests links between RS angry, external attributions for rejection, retribution and aggression. For example, (1) young people who tend to make external attributions for social failures are reported by others to be more aggressive (Guerra et al. 2004), (2) child and adolescent beliefs about others as hostile is associated with more aggressive behavior (Burks et al. 1999), (3) individuals who make external attributions for failure report more anger (Weiner and Graham 1984), and (4) aggressive children are more likely than withdrawn children to make other-blame attributions (Burgess et al. 2006). These associations suggest that angry RS and blaming others for rejection would each be correlates of increasing aggressive behavior over time and that blaming others for rejection might also prompt even more angry expectations of rejection over time.

Consistent with the research on attribution, withdrawal and aggression, recent research on RS has begun to identify particular cognitive and behavioral responses to perceived social challenges or stressors that together provide a better understanding of why RS is associated with internalizing and externalizing symptoms. In RS theory, links have been suggested between RS, individuals' attributions for the responsibility or cause of interpersonal threats or problems, and negative or maladaptive responses to rejection. In particular, individuals who use self-blame to explain their own rejection (e.g., attribute cause to the self) may be at higher risk for increasing anxious RS as well as withdrawal, worry and negative affect, whereas individuals who blame others seem more prone to increasing angry RS as well as reactive aggression and seeking revenge (Ayduk et al. 2001).

Other related lines of research provide evidence for the added importance of attributions for explaining responses to rejection threat, as well as emotional and behavioral maladjustment. Recent research with adolescents has identified negative self-evaluation as a correlate of their later elevated depressive symptoms, whereas adolescents' concerns about negative evaluations by others was a correlate of their later aggressive behavior (Taylor et al. 2013). Similarly, others have argued that negative self-evaluations may be a specific risk for internalizing rather than externalizing symptoms (Asher et al. 1990; Crick and Bigbee 1998; Sandstrom and Coie 1999), but attributions that others are disrespectful, responsible or hostile may be a more specific risk for externalizing symptoms (Crick and Dodge 1994; Guerra et al. 2004).

Study Aims and Hypotheses

RS theory (Downey and Feldman 1996; Downey et al. 1998b) and previous research suggest that RS is associated with maladaptive behavioral responses to many social situations, as well as a range of emotional and behavioral problems, during adolescence and adulthood. However, the present longitudinal study was the first to consider anxious and angry forms of RS, and related processes, in order to simultaneously account for

depressive symptoms and aggressive behavior. Two patterns were expected. The first pattern expected was a depressogenic style of responding, whereby RS anxious and self-blame would be uniquely associated with social withdrawal in response to rejection threat and, RS anxious and social withdrawal would account for a greater increase in depressive symptoms at T3 relative to T1. The second pattern expected was an externalizing style of responding, whereby RS angry and peer-blame would be uniquely associated with retribution in response to rejection threat and RS angry and retribution would be linked to escalating aggression with peers. The model was designed to simultaneously explain depressive symptoms and aggressive behavior with peers. To build on the RS model further, we incorporated attributions for rejection threat events, namely focusing on self-blame and peer-blame. We anticipated that self-blame would be important for understanding the progression of anxious RS and depressive symptom over time, but peer-blame would be a key component for understanding the progression of angry RS and aggressive behavior over time.

Finally, this study was longitudinal allowing for tests of whether depressive symptoms and aggressive behavior are not only outcomes of RS, attributions, and behavioral responses to rejection threat, but also antecedents of these processes. Research has shown that adolescents' elevated depressive affect is linked to later isolation and withdrawal from social relationships (Nolen-Hoeksema et al. 1986; Prinstein et al. 2005). Also, other research has shown that adolescents with a history of aggressive behavior are more likely to respond with retribution and even more aggression when they are threatened by rejection (Burks et al. 1999; Guerra et al. 2004). These findings suggest that adolescents who report more depressive symptoms or aggression at T1 would report responding to rejection threat with withdrawal and retribution at T2, respectively, at the same time that T2 responses might be associated with later (T3) depressive symptoms and aggressive behavior with peers.

Because our aim was to identity the associations of depressive symptoms and aggressive behavior with RS in two forms, we examined RS somewhat differently than has been done in most past research (for an exception, see Zimmer-Gembeck and Nesdale 2013). One standard way of measuring RS has been to capture both an emotional response (anxiety and/or anger), as well as rejection expectations, by using multiple items that are answered in response to written vignettes. Hence, participants read a vignette and report (1) how anxious (or angry) they would feel if this event occurred, and (2) how much they would expect rejection or acceptance. Anxious expectation of rejection is the sum of the cross-products of answers to items about anxiety and about expectation (#1 and #2). Similarly, angry expectation of rejection is the sum of the cross-products of answers to items about anger and expectation. If these scores are calculated, there is measurement overlap because the same item (the question about expecting rejection or acceptance) is used in both composite scores. Accordingly, we asked about anxiety, anger and rejection expectations, and calculated three measures of RS by summing items tapping anxiety about possible rejection, anger about possible rejection, and expectation of rejection. Thus, we examined the unique associations of expectation apart from RS anxious and RS angry. Because no previous longitudinal study has done this, we had no hypotheses regarding how a stronger expectation of rejection (RS expectation) would be associated with other measures. However, we reasoned that greater RS expectation should have a more widespread negative impact than either RS anxious or RS angry given its importance in RS theory as a critical aspect of a processing system attuned to perceive and react negatively to even subtle indicators of rejection.

Participant Sex and Age as Moderators

Another aim of the present study was to determine whether model pathways were moderated by participant sex and age. We did not anticipate moderation by sex of the participants, however. The negative mental health consequences of elevated RS have been found for both boys and girls (Downey et al. 1998b; London et al. 2007), and no significant sex difference has been found in two studies - one study of early adolescents' peer rejection, perceptions of social acceptance and depression (Zimmer-Gembeck et al. 2007) and one study of associations between early adolescents' peer rejection and RS (McLachlan et al. 2010).

In contrast to sex, we did anticipate age moderation, expecting associations would be stronger for older compared to younger participants. This was hypothesized given the increasing importance of close relationships with peers and the likelihood that there would be more alignment of RS with social experience and responses as adolescents get older.

Method

Participants

At Time 1 (T1), participants included 713 adolescents in grades 5, 6 or 7 from three Australian schools. Their ages ranged from 9 to 14 years (M = 11.2, SD = 1.1), with 48 % boys. Representing the regions, 90 % were white Australian and 10 % were Aboriginal Australian, Maori or Pacific Islander, Asian, Middle Eastern, or from multiple other sociocultural backgrounds. All participating students had parent consent and gave their own consent to participate in the study. The response rate was 76 %; 21 % did not return consent forms and 3 % declined to participate. Of students who participated at T1, 14 were not retained at T2 and T3 (98 % retention). However, multiple imputation (for

correlations) and FIML (for SEM) methods were used to estimate missing data in order to maintain all 713 participants in all analyses. Eight participants did not report their age or sex, and these data were not imputed. Students in grade 7 at T1 transitioned to secondary school prior to the T3 assessment. Most students transitioned to the geographically closest school and were assessed there, but those who moved elsewhere (<30) were assessed individually in their home or by telephone.

Procedure

Following approvals from the university Human Subjects Review Committee, education departments, and schools, students were given information and consent packets to take home to their parents. These packets contained an information sheet, a parent consent form, and a demographic questionnaire. They were asked to return completed forms to their class teachers. A code was assigned to the parental information that was linked to each child's questionnaire. The parents' information was used for demographic data. For incomplete parent questionnaires, parents were contacted and asked to complete missing items via mail or on the telephone.

The participants were told that the study was about their relationships with others at school and home. They completed the questionnaires three times with seven months between assessments. All completed the T1 assessment in their regular classrooms under supervision of the researcher and research assistants. Six months (Time 2, T2) and 12 months (Time 3, T3) after T1 most completed the questionnaires again in their regular classrooms. At T2 and T3, those who had moved to schools with fewer than three study participants completed the questionnaires at home or by telephone. At T1, the questionnaire was read aloud using a standardized set of instructions while the students followed and completed each item. Once completed, each student placed his or her questionnaire in an envelope for privacy. If completed by telephone, questionnaires were mailed back to the research team. At each time, it took approximately 45 min to complete the portions of the questionnaires used in this study. Debriefing was provided at completion of each questionnaire and any questions were answered. The students were thanked for their participation and given a small school-related gift for their time after each time of measurement.

Measures

Depressive Symptoms Participants completed the 10-item short form of the CDI (Kovacs 1992) at T1 and T3. The short-form CDI is a self-report measure designed to assess the presence and severity of a range of depressive symptoms. Respondents were required to choose one of three statements for each item. An example item is: "i) I feel like crying every day, ii) I feel like crying many days, iii) I feel like crying once in a while". Five items were reversed before averaging items so that higher scores indicated more depressive symptoms. Cronbach's α in the present study were .82 at T1 and .82 at T3.

Aggressive Behavior with Peers At T1 and T3, three items assessed physical/verbal (overt) aggression and three items assessed relational aggression. Response options for each item ranged from 1 (not at all true) to 5 (very true). Items were developed by Crick and Grotpeter (1995) and extended by Zimmer-Gembeck and Pronk (2012). An example overt aggression item was, "I threaten to or do push, shove or hit other kids." An example relational aggression item was, "I leave other kids out of things on purpose". Overt and relational aggression were correlated, r = .45 at T1 and at T3. These two scores were summed to create a composite aggression score for each participant. Cronbach's α was .73 at T1 and .80 at T3.

RS Anxious and RS Angry At T1 and T2, anxious and angry expectations of rejection were measured using a shortened version of the Children's Rejection Sensitivity Questionnaire (CRSQ; Downey et al. 1998b). Six hypothetical rejection scenarios were used, with three related to peers and three related to teachers (Imagine that a famous person is coming to visit your school. Your teacher is going to pick five kids to meet this person. You wonder if she will choose YOU). Following each scenario, three questions were answered. The first two questions assessed RS anxious (e.g., How nervous would you feel about whether or not your teacher will choose you?) and RS angry (e.g., How MAD/ANGRY would you feel about whether or not your teacher will choose you?) about the outcome of the situation. The response options for these questions ranged from 1 (not nervous/mad at all) to 5 (extremely nervous/mad). The third question asked the participant to report the likelihood of an accepting versus a rejecting response (RS expectation; e.g., do you think your teacher will choose you?). Response options to this question ranged from 1 (No!) to 5 (Yes!). RS anxious, RS angry, and RS expectation scores were calculated for each adolescent by averaging the relevant items. Cronbach's α were .77, .79 and .64 for RS anxious, RS angry, and RS expectations at T1, and .77, .81, and .79 at T2, respectively.

Withdrawal and Retribution Responses to Rejection At T1 and T2, the Students' Reactions to Rejection Scale (SRRS; Zimmer-Gembeck and Nesdale 2013) was used to assess participants' attributions for scenarios that implied peer rejection (at T1) and behavioral responses when facing possible rejection experiences (at T2). The SRRS was used to measure responses of self-blame, other-blame, withdrawal (e.g., think of ways to avoid seeing people), and retribution (e.g., think of

ways to get back at your friends). The measure contained two rejection scenarios, for example:

> Imagine that you hear that someone you hang out with is throwing a big birthday party. Most of your group of friends expect to go. You hear that some of your friends have received their invitations and they are excited! You still have not received your invitation and the party is not far off.

Following each scenario at T1, students responded to items to assess their attribution of cause (self and other). Attributions of cause for each described event were measured with items from the attributional questionnaire used by Graham and Juvonen (1998). Participants were asked to indicate their causal attributions for each vignette by responding to four items, two measuring self-related causes (e.g., It is something about the way I am) and two measuring peer-related causes (e.g., It is something about the way they are). Response options ranged from 1 (not at all true) to 5 (very true) and subscale scores were obtained by averaging within each scenario and then averaging across the scenarios. Higher scores indicated higher levels of self-blame or other-blame. Cronbach's α were .79 and .64, respectively.

At T2, students reported their anticipated behavioral responses to each vignette. Items that measured withdrawal (4 items following each vignette, e.g., think of ways to avoid seeing people), and retribution (3 items following each vignette; e.g., think of ways to get back at your friends) were used to form total scores for maladaptive responses to rejection. Response options ranged from 1 (not at all) to 5 (very much). Filler items were also included. To construct composite scores, appropriate items were averaged within each scenario and then averaged across the two scenarios. Higher scores indicated higher levels of withdrawal and retribution, with Cronbach's α of .89 and .81, respectively.

Overview of the Analyses

The primary analyses consisted of fitting a series of structural equation models (SEMs) estimated with AMOS using maximum likelihood estimation and FIML to maintain all participants in the analyses (Byrne 2009). The SEMs were used to examine (1) prospective associations of T1 RS and causal attributions (self-blame and other-blame) with adolescents' T2 anticipated social withdrawal and retribution in response to vignettes that described threats of rejection, as well as their T2 RS, (2) whether RS, attributions, social withdrawal and retribution prospectively explained adolescents' T3 depressive symptoms and aggressive behavior, and (3) whether T1 depressive symptoms and aggressive behavior also accounted for T2 withdrawal and retribution in response to rejection threat and T2 RS. We estimated three models. The first model, referred to as the indirect pathways model, tested paths from RS and attributions to adolescents' T2 responses of withdrawal and retribution and T2 RS, and paths from T2 responses and T2 RS to T3 adjustment outcomes. In this model, we also freed the significant intercorrelations between measures within each wave and all associations were adjusted for the stability in measures of outcomes (depression and aggression) from T1 to T3, as well the stability in RS from T1 to T2.

Building on the first model, the second model freed paths from T1 RS and attributions to T3 outcomes. We refer to this second model as the direct and indirect pathways model. Finally, the third model tested the role of T1 socioemotional adjustment in T2 withdrawal and retribution responses to rejection and T2 RS by freeing these paths in the model. We refer to this model as the complete model. In this complete model, we also repeated the analyses with the 586 participants with complete data in order to bootstrap estimates of direct, indirect, and total effects and their significance (MacKinnon et al. 2002; Shrout and Bolger 2002).

Next, we tested two 2-group models (boy/girl; younger/older). These models were estimated to examine sex and age as moderators. To examine sex as a moderator of prospective model paths, we first fit a model with all paths fixed to sex equality (sex constraint model). We next fit a model with all prospective paths free to differ by sex of the participants (sex-specific model). Comparing the fit of these two models determined whether or not further tests were needed to identify a path or paths that differed between boys and girls. More specifically, if a difference in model fits was significant, this led to additional models to locate any moderated paths. This model testing procedure was repeated to test for age group moderation, comparing younger (age 10.5 years or less, n = 272) to older (n = 433) participants.

Prior to testing structural models, we examined associations using hierarchical linear regression. We did this to test whether it would be important to examine interactions between RS and attributions in the SEMs. No interaction between two RS components (i.e., anxiety, anger, and expectation) or between a RS component and a measure of attributions (self or other) was significantly associated with withdrawal or retribution or with depressive symptoms or aggressive behavior. Therefore, we did not test interactions between RS components or between RS and blame in the structural models.

Results

Simple Correlations, Age Correlations, and Sex Differences

Table 1 shows correlations between all measures. These correlations were estimated using SPSS multiple imputation to maintain all 713 participants in the analyses. Age was

Table 1 Pearson's Correlations Between All Pairs of Variables (N = 713)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
M	2.23	1.85	2.82	2.15	2.16	13.03	2.38	2.18	1.82	2.85	1.65	1.38	12.84	3.15
SD	0.78	0.69	0.54	0.86	0.79	3.21	0.66	0.76	0.69	0.54	0.76	0.55	2.46	0.84
1. RS – anxious, T1	–													
2. RS – angry, T1	.51**	–												
3. RS – exp., T1	.11**	.12**	–											
4. Self-blame, T1	.33**	.22**	.12**	–										
5. Other-blame, T1	.18**	.20**	−.05	.13**	–									
6. Depression, T1	.34**	.27**	.34**	.28**	.05	–								
7. Aggression, T1	.08*	.15**	.19**	.11**	.08	.22**	–							
8. RS – anxious, T2	.56**	.33**	.08*	.42**	.15**	.29**	.02	–						
9. RS – angry, T2	.29**	.46**	.03	.25**	.18**	.14**	.10*	.49**	–					
10. RS – exp., T2	.12**	.17**	.46**	.19**	−.05	.30**	.18**	.17**	.17**	–				
11. Withdrawal, T2	.23**	.23**	.16**	.31**	.18**	.40**	.15**	.33**	.27**	.25**	–			
12. Retribution, T2	.06	.21**	.09*	.14**	.18**	.12**	.27**	.15**	.24**	.11**	.39**	–		
13. Depression, T3	.19**	.13**	.18**	.21**	.06	.50**	.20**	.25**	.12**	.27**	.38**	.19**	–	
14. Aggression, T3	.02	.04	.01	.06	.06	.06	.35**	.02	.09*	.04	.17**	.35**	.18**	–
15. Age[a]	−.03	−.06	.01	.16**	−.06	−.05	.09*	.01	−.03	−.03	−.08	−.04	.00	.09*

*$p < .05$. **$p < .01$. exp. = expectations

[a] $n = 705$

correlated with all measures for the 705 participants who reported their age. Older participants reported less self-blame at T1 and more overt/relational aggression at T1 and T3.

Measures were compared between the 705 boys and girls who reported their sex. Boys reported less T1 self-blame, RS anxious and T3 depressive symptoms than girls, $t(1, 703) = -4.01$, $t(1, 703) = -6.51$, and $t(1, 703) = -2.04$, respectively, all $p < .05$. Boys reported more T1 and T2 RS expectations, T2 retribution, and T1 and T3 aggression compared to girls, $t(1, 703) = 2.88$, $t(1, 703) = 2.00$, $t(1, 703) = 2.34$, $t(1, 703) = 5.54$, and $t(1, 703) = 6.01$, respectively, all $p < .05$, respectively. Sex of the participants was tested as a covariate in all models, but it was not included in the results reported here because adjusting for sex did not substantially change any model paths.

Indirect Pathways Model

We first fit the indirect pathways model (see Fig. 1). Although not shown in Fig. 1, all covariances between measures assessed at the same time also were freed and all but three were significant and maintained in the model, $p < .01$. All hypothesized paths between T1 and T2 measures and between T2 and T3 measures, as well as prospective associations that were not hypothesized, were freed in this model. Finally, the stabilities of RS, depressive symptoms and aggressive behavior were adjusted in this model.

This model had an adequate fit to the data, $\chi^2(28) = 140.1$, $p < .01$, CFI = .95, RMSEA = .075 (.063–.088), $p < .01$. Eight of the ten hypothesized associations (estimates shown in bold in Fig. 1) were significant. As predicted, T1 self-blame was associated with T2 social withdrawal and T2 RS, and T2 social withdrawal and T2 RS anxious were, in turn, associated with elevated T3 depressive symptoms. Also, as predicted, T1 RS angry and peer-blame were associated with T2 retribution, which was in turn associated with elevated T3 aggressive behavior. The two hypothesized paths that were not significant were from T1 RS anxious to T2 withdrawal, $p = .07$, and from T2 RS angry to T3 aggression, $p = .66$.

There were also two, small significant crossover paths from T1 to T2 measures. Regarding the crossover from the depressogenic to the externalizing aspects of the model, T1 RS anxious was associated with less T2 retribution. For the crossover from the externalizing to the depressogenic aspects of the model, T1 peer-blame was associated with more T2 withdrawal. Importantly, there were no significant crossover paths between T2 reactions to rejection (withdrawal or retribution) and T3 measures; withdrawal was not associated with later aggression, and retribution was not associated with later depressive symptoms. Finally, RS expectation played a role in the depressogenic part of the model, with T1 RS expectation associated with greater T2 social withdrawal, and T2 RS expectation associated with greater T2 depressive symptoms.

Direct and Indirect Pathways Model

We next fit the direct and indirect pathways model, which involved freeing 10 additional paths from the five T1

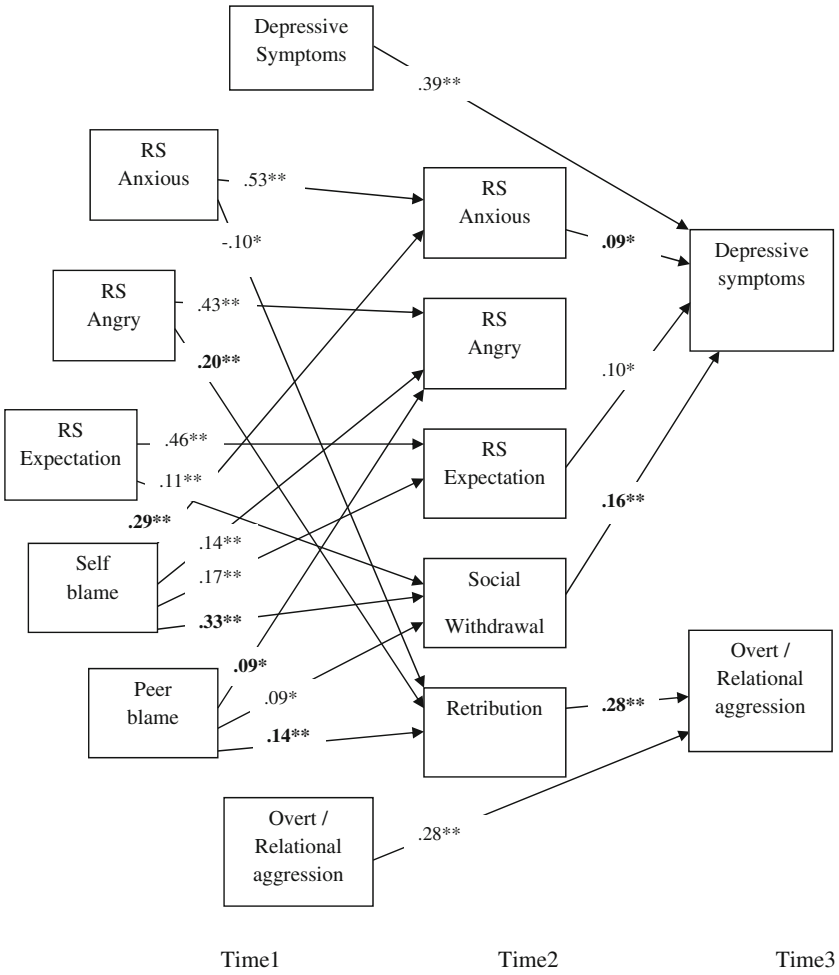

Fig. 1 Indirect pathways model. All significant covariances between variables within time were freed, but are not shown here. $\chi^2(28, N = 713) = 140.1$, $p < .01$, CFI = .95, RMSEA = .075 (.063–.088) $p < .01$. RS = Rejection Sensitivity

measures (RS and attributions) to T3 depressive symptoms and aggression. Not one of these additional paths was significant, coefficients ranged from −.08 to .08, and the model fit was similar to the indirect pathways model, $\chi^2(18) = 122.3$, $p < .01$, CFI = .95, RMSEA = .090 (.075–.106), $p < .01$.

Complete Model

In the next model, ten additional paths from T1 depressive symptoms and aggression to T2 withdrawal and retribution, as well as T2 RS, were freed. This complete model had a good fit to the data across all fit indices, $\chi^2(8) = 7.8$, $p = .45$, CFI = 1.00, RMSEA = .000 (.000–.043), $p = .98$. As can be seen in Fig. 2, which displays the significant paths only, four paths from T1 depressive symptoms or T1 aggressive behavior to T2 measures were significant and all were consistent with the hypothesis of differentiated depressogenic and externalizing processes. Adolescents who reported more depressive symptoms at T1 also reported they would be more likely to withdraw following rejection threat at T2, and they reported greater T2 RS anxious and T2 RS expectations. In contrast, adolescents who reported more aggressive behavior at T1 believed they would be more likely to seek retribution following rejection threat at T2. Further, all paths that were significant previously remained significant in this model, with the exception of the link between T1 RS expectancy and T2 withdrawal was no longer significant in this model. The direct, indirect and total effects in this model are shown in Table 2. These findings generally support differentiating depressogenic from externalizing processes, with only attributions (and not RS or behavioral responses to rejection threat) showing crossover effects. In addition, there were two unanticipated negative prospective associations that even further differentiate the depressogenic from the externalizing aspects of the model; these were between T1 RS anxious and T2 retribution, and between T1 aggression and T2 RS anxious.

Sex and Age Moderation

Sex Moderation To test longitudinal paths for sex moderation, we first fit a model with all paths fixed to be equal for boys and girls and compared this to a model with all longitudinal paths unconstrained. The difference between the fits of

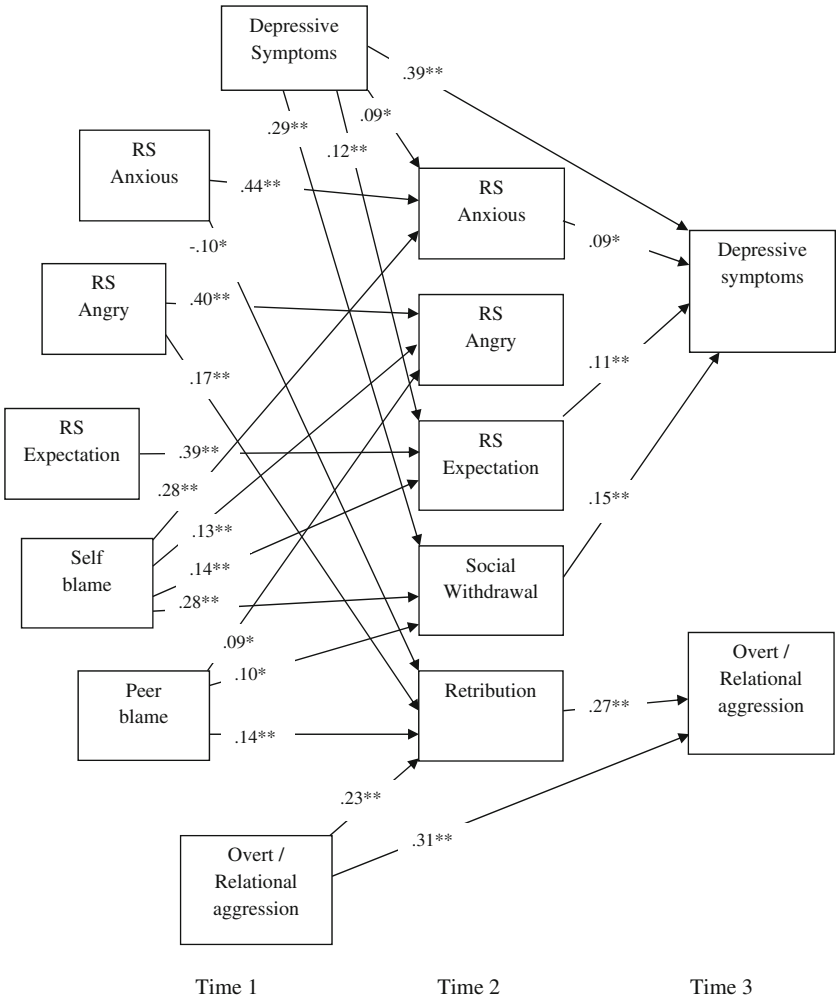

Fig. 2 Effects model. All significant covariances between variables within time were freed, but are not shown here. $\chi^2(8) = 7.8$, $p = .45$, CFI = 1.00, RMSEA = .000 (.000–.043), $p = .98$. RS = Rejection Sensitivity

the two models did not differ significantly, χ^2 difference (46) = 61.3, $p > .05$.

Age Moderation The same process used for sex was used to test longitudinal paths for age moderation. In this case the fits of the models did differ significantly, χ^2 difference (46) = 82.7, $p < .01$. Follow-ups comparing the fit of a model with all paths fixed to age equality to a model with a single path freed to differ between younger and older participants revealed that one path, from T1 depressive symptoms to T2 RS anxious, differed between younger and older participants, χ^2 difference (1) = 7.4, $p < .05$. This association was nonsignificant and negative for younger participants (−.06), but significant and positive for older participants (.19).

Discussion

Some young people react more negatively than others to rather subtle or implied rejection, as well as reacting more negatively to overt rejection (Downey and Feldman 1996; Romero-Canyas et al. 2009; Zimmer-Gembeck and Nesdale 2013). These reactions have been linked to a social-cognitive processing system referred to as rejection sensitivity (RS; Romero-Canyas et al. 2009), and such reactions have been found to predict escalating mental health symptoms and social-relational difficulties (Ayduk et al. 2001; Levy et al. 2001; London et al. 2007). The purpose of the current longitudinal study was to extend what we know about the cascade of perceptions, cognitions, emotions and responses to rejection threat that combine to prompt increasing emotional and behavioral maladjustment over time during early adolescence. Of particular note, the primary novel contribution of the present study lies in the identification of different attributional and behavioral responses involved in young adolescents' maladaptation – one depressogenic and one externalizing. Different forms of RS and different responses to rejection threat marked these two patterns. Central to this contribution was the use of a three-wave longitudinal design that allowed us to assess the participants' depressive symptoms and aggressive behavior at the start of the study

Table 2 Bootstrapped Standardized Direct, Indirect and Total Correlational Effects of the Effects Model for T2 Social Withdrawal, T2 Retribution, T2 RS, T3 Depressive Symptoms, and T3 Aggressive Behavior (N = 586)

Dependent variable	Exogenous variable	Direct effect	Indirect effect	Total effect
Social withdrawal, T2	RS anxious T1	.01	–	.01
R^2 = .27	RS angry T1	.05	–	.05
	RS expectations T1	−.04	–	−.04
	Self-blame T1	.30**	–	.30**
	Peer-blame T1	.09*	–	.09*
	Depressive symp T1	.31**	–	.31**
	Aggression T1	.04	–	.04
Retribution, T2	RS anxious T1	−.12*		−.12*
R^2 = .14	RS angry T1	.18**	–	.18**
	RS expectations T1	.03	–	.03
	Self-blame T1	.09	–	.09
	Peer-blame T1	.13*	–	.13*
	Depressive symp T1	.03	–	.03
	Aggression T1	.22**	–	.22**
RS anxious, T2	RS anxious T1	.46**	–	.46**
R^2 = .38	RS angry T1	.00	–	.00
	RS expectations T1	.00	–	.00
	Self-blame T1	.26**	–	.26**
	Peer-blame T1	.02	–	.02
	Depressive symp T1	.11*	–	.11*
	Aggression T1	−.10*	–	−.10*
RS angry, T2	RS anxious T1	.00	–	.00
R^2 = .23	RS angry T1	.42**	–	.42**
	RS expectations T1	.00	–	.00
	Self-blame T1	.13**	–	.13**
	Peer-blame T1	.08*	–	.08*
	Depressive symp T1	.00	–	.00
	Aggression T1	−.01	–	−.01
RS exp., T2	RS anxious T1	.00	–	.00
R^2 = .25	RS angry T1	.00	–	.00
	RS expectations T1	.40**	–	.40**
	Self-blame T1	.13*	–	.13*
	Peer-blame T1	−.07	–	−.07
	Depressive symp T1	.13*	–	.13*
	Aggression T1	.02	–	.02
Depressive symp, T3	RS anxious T1	−.01	.03	.02
R^2 = .31	RS angry T1	−.05	−.01	−.06
	RS expectations T1	−.04	.05	.01
	Self-blame T1	.05	.08**	.13**
	Peer-blame T1	.00	.01	.01
	Social withdrawal T2	.15**	.00	.15**
	Retribution T2	.04	.00	.04
	RS anxious T2	.09*	.00	.09*
	RS angry T2	−.06	.00	−.06
	RS expectations T2	.09*	.00	.09*
	Depressive symp T1	.39**	.07**	.46**
	Aggression T1	.07	.01	.08

Table 2 (continued)

Dependent variable	Exogenous variable	Direct effect	Indirect effect	Total effect
Aggressive beh, T3	RS anxious T1	−.01	−.02	−.03
R^2 = .22	RS angry T1	−.06	.07**	.01
	RS expectations T1	−.09	.00	−.09
	Self-blame T1	.00	.05	.05
	Peer-blame T1	−.10*	.05*	−.05
	Social withdrawal T2	.04	.00	.04
	Retribution T2	.31**	.00	.31**
	RS anxious T2	.04	.00	.04
	RS angry T2	.04	.00	.04
	RS expectations T2	−.02	.00	−.02
	Depressive symp T1	−.02	.02	.00
	Aggression T1	.30**	.07**	.37**

*p < .05. **p < .01. χ^2 (8, N = 586) = 8.03, p = .43, CFI = 1.00, RMSEA = .002 (.000–.049) p = .96

– indicates no indirect effect. Symp = symptoms. Beh = behavior

and to assess their impact following rejection threat, as well as their contribution to the participants' subsequent depression and aggression levels.

RS Anxious and RS Angry

Drawing from extended RS theory (Downey et al. 1999), the depressogenic process was expected to involve prospective associations between the anxious form of RS (RS anxious), self-blame for rejection, and a tendency to socially withdraw in response to rejection threat. The externalizing pathway was expected to involve prospective associations of the angry form of RS (RS angry), peer-blame for rejection, and a tendency to seek retribution in response to rejection threat.

Structural equation modeling confirmed most of the expected associations. For the depressogenic process, adolescents who reported a greater tendency to blame themselves for rejection at T1 were more likely to withdraw in response to rejection threat at T2 and were higher in RS anxious at T2. Greater social withdrawal was then associated with more depressive symptoms at T3 even after accounting for depressive symptoms at T1. For the externalizing process, adolescents higher in T1 RS angry were more likely to seek retribution in response to the threat of rejection at T2. Also, those who reported a greater tendency to blame their peers for rejection were more likely to seek retribution in response to the threat of rejection at T2 and were higher in RS angry at T2. Adolescents who sought more retribution reported more overt/relational aggressive behavior with peers at T3 even after adjusting for aggressive behavior at T1.

The findings support the importance of extending RS theory to include an angry form, in addition to the more commonly studied anxious form, while also incorporating the role of adolescents' causal attributions for rejection. In particular, the findings extend previous research that RS angry is more likely to lead to "fight" responses, such as retribution in response to stress (London et al. 2007). In the present model, there were unique associations of RS angry, rather than RS anxious, and peer-blame with later retribution responses to rejection threat and increasing aggressive behavior over time. Such results add the important element of blaming peers for rejection to earlier findings that identify aggressive young people as those who report more angry expectations of rejection (Downey et al. 1998a). Hence, blaming others for social problems makes retribution more likely when faced with rejection threat, and this retribution is a good identifier of adolescents who are likely to show relative increases in aggression (overt and/or relational) between preadolescence and the early years of adolescence. This suggests that feeling that others are to blame for social problems, in this case implied rejection, is an explanation for why some young people retaliate against others and continue to escalate their aggressive behavior over time (Prinstein and Cillessen 2003).

For the depressogenic process, self-blame has been described as an important response that covaries with elevated depressive affect in adolescents (Crick and Bigbee 1998; Taylor et al. 2013). In the present model, self-blame had a unique association with subsequent anticipated responses of social withdrawal when adolescents were presented with rejection threat vignettes. In turn, it was social withdrawal, rather than retribution, that was associated with later depressive symptoms. Hence, adolescents who blame themselves for social problems, in this case, actions that suggest rejection by others, more likely respond to such events with withdrawal and seek to isolate themselves from peers. Such isolation likely serves to limit their chances for relationship repair and support by others, damages their social status, and can exacerbate emotional distress, worry, and rumination, all of which have been linked to depression (Epkins and Heckler 2011; Hoglund and Leadbeater 2007; Leadbeater et al. 1995;

Nolen-Hoeksema 2001; Rose and Rudolph 2006; Zimmer-Gembeck and Skinner 2008, 2011), rather than providing avenues for positive coping responses. Together these actions foreshadow relative increases in depressive symptoms over time.

Key Findings

In addition to generally supporting the predicted model of depressogenic and externalizing processes, there were five other key findings to consider.

Prospective Effects of Depressive Symptoms and Aggressive Behavior

First, our model was even more strongly supported when earlier depressive symptoms and aggressive behavior were taken into account. Most of the original associations remained relevant, but it was clear that depressive symptoms and aggressive behavior also are important prospective correlates of adolescents' responses to rejection threat, just as are RS and attributions of cause. Moreover, these findings were also consistent with the idea of somewhat distinct depressogenic and externalizing processes related to rejection: adolescents higher in depressive symptoms at the start of the study reported more withdrawal in response to rejection threat and more RS anxious and expectations of rejection at the next time of measurement, whereas the other possible associations between depression, behavioral responses to rejection threat and RS (depression with retribution and depression with RS angry) were not found. Hence, depressed young people are at risk of increasing emotional disturbance partly because of how their depressive affect is correlated with their tendency to blame themselves for rejection and it impacts on their interpretations of others' behavior, their responses to it, and their increasing expectations and anxiety about rejection. These findings support the need to identify young people at risk for negative affect, self-blame and sensitivity to rejection, even prior to adolescence, in order to remedy this potentially downward spiral of emotional maladjustment.

Similar to the findings for depressive symptoms, aggressive behavior with peers seems to create a downward spiral of increasing behavior problems via blaming others for social rejection and retribution in response to perceived rejection threat. Aggressive adolescents have more confidence that they can enact retribution and respond with aggression easily, perhaps more readily than responding with adaptive or prosocial behaviors or trying to understand their peers' actions, and they use aggressive strategies increasingly and more generally over time (see also Crick and Dodge 1996; Crick et al. 2002; Guerra et al. 2004; Hoglund and Leadbeater 2007; Lochman and Dodge 1998). For both depressive and aggressive behavior, a focus on adolescents' relationships, including how they appraise, interpret and respond to acceptance and rejection, seems to be an important location for intervention efforts (e.g., see Rabiner and Coie 1989).

RS Anxious and Social Withdrawal

A second key finding was that we did not find evidence for the anticipated association between RS anxious and adolescents' withdrawal in response to rejection threat, either before or after accounting for depressive symptoms at the start of the study. This is inconsistent with the RS model. Moreover, it does not seem that this finding can be explained by overly high concurrent correlations with self-blame or depressive symptoms (i.e., leaving little unique role of RS anxious), and RS anxious clearly accompanies greater concurrent self-blame and elevated depressive symptoms, given the positive correlations found within T1 of the present study, and consistent with past cross-sectional research (e.g., Sandstrom et al. 2003; Zimmer-Gembeck and Nesdale 2013). Hence, our best explanation is the prospective design of this study. It may be that RS anxious has had its prospective impact on social withdrawal earlier in the lifespan and is no longer accounting for increasing difficulties over time by pre- and early adolescence. Instead, RS anxious may be associated with cognitive, rather than behavioral, maladaptive responses to rejection threat that were not assessed in the present study. Worry and rumination are risk factors for depressive symptom, which also increase during and following early adolescence (Epkins and Heckler 2011; Nolen-Hoeksema 2001; Rose and Rudolph 2006; Zimmer-Gembeck and Skinner 2008, 2011). It may be that these are the maladaptive responses that follow from RS anxious at this age, and future research could expand the effects model tested in the present study to include additional responses to rejection threat, which escalate beginning in early adolescence.

Self-Blame and Peer-Blame

A third key finding is that self-blame and peer-blame were associated with later social withdrawal. Hence, attributional effort, whether self-blame or peer-blame, when threatened with rejection seems indicative of the maladaptive response of withdrawal, rather than more specifically associated with withdrawal and retribution, respectively, as we had hypothesized. This suggests that focusing on the interpersonal aspects of rejection threat yields responses that may promote increased isolation and non-optimal interactions with peers over time. Perhaps attributional effort involving self- and other-blame are each related to a more overarching ruminative style, which leads to future emotional and behavioral problems. Alternatively, they may also reflect a general tendency to make fewer optimistic attributions for events, such as considering interpersonal problems as situational and unstable,

which places young people at risk for escalating problems over time.

Other factors could better explain these crossover links of causal attributions. For example, in their 2-wave longitudinal study of third grade US students, Guerra et al. (2004) found that boys' rejection in combination with aggression history and self- or other-blame for social failure were important to consider when explaining physically aggressive behavior over time. Aggression declined for rejected boys who self-blamed, but aggression increased for rejected boys who blamed others. Hence, attributions may have an association with aggression (and depression) that may depend on other factors, such as adolescents' sociometric status with peers. Also, it is possible that adolescents placed blame on neither the self nor peers. In the present study we did not capture additional attributions, such as luck or unknown causes. Future research might assess a broader range of attributions in order to determine if it is self- and peer-blame that are particularly relevant for understanding maladaptive responses to rejection threat or if other attributions are also relevant.

No Direct Associations Between T1 and T3 Measures

The fourth key finding is the lack of direct associations between T1 and T3 measures. The extended RS model led us to anticipate indirect effects of T1 RS on depressive symptoms and aggressive behavior working through attributions and behavioral responses to rejection threat. Although there were some indirect effects of RS on aggressive behavior, when combined with direct effects the total effects were not significant. Thus, our findings did not support this part of the model. Our models do, however, clearly support a chain of events with moderate effect sizes between each link across time, and there was a direct effect of T2 RS anxious on depressive symptoms at T3. Taking all findings together, they do suggest that responses to rejection threat that follow from RS, self-blame and peer-blame are maladaptive enough to warrant concern on their own, as are the associations found between responses to rejection threat and relative increases in depressive symptoms and aggression over time.

Although we did not find all of the anticipated significant effects of RS on later depression and aggression, there were some indirect effects in the effects model. In particular, rather than RS and self-blame, it was earlier symptoms and behavior that had both direct and indirect associations with later symptoms and behavior, with the indirect effects via responses to rejection threat (consistent with the idea of depressogenic versus externalizing processes). This strengthens the argument for assisting young people, even prior to adolescence, with how to respond when they face overt rejection and other interpersonal problems, but also when they confront situations where rejection is possible.

RS Expectations

A fifth key finding relates to our consideration of a third component of RS, referred to as RS expectations. RS expectations had not been examined separately in previous RS research with children or adolescents. Surprisingly, RS expectation was only weakly associated with RS anxious and RS angry, and T1 RS expectation had no unique association with any T2 or T3 measure in our final model. Yet, T2 RS expectation was associated with greater depressive symptoms by T3. This suggests that examining the three components of RS separately could be useful in studies that involve young adolescents. Future research might test whether this remains true for older adolescents and adults. One previous study has suggested that RS expectation may be more important to understanding responses to rejection in older age groups (Zimmer-Gembeck and Nesdale 2013). In this previous study, RS expectation had a unique association with greater social withdrawal and retribution in response to rejection threat in a sample of late adolescent university students.

Sex and Age Moderation

Pathways in the final model were compared to determine if they were moderated by child sex (boys vs. girls) or age (preadolescents, aged 9 to 10.5 vs. adolescents, aged 10.6 to 14 years). We had anticipated stronger links of older adolescents' RS with blame and maladaptive responses to rejection threat when compared to the links among preadolescents. We found only one path, between T1 depressive symptoms and T2 RS anxious, that showed a group difference by age and found no moderation by sex of the participants. Depressive symptoms reported by older participants was more strongly linked to higher RS anxious at T2 than it was for younger participants. This finding suggests that as children enter the first years of adolescence, depressive symptoms may become more of a driver of RS than it was previously. However, most strikingly, these findings indicate that moderation by sex and age of the participants are just about non-existent. This is consistent with the few related past studies on RS and emotional, behavioral or social correlates (Downey et al. 1998b; London et al. 2007; McLachlan et al. 2010). We did expect age to moderate associations in our model, but only one path differed between preadolescents and early adolescents. It is possible that more differences would be found if age groups were more disparate showing greater differences in cognitive development (Steinberg et al. 2006) and coping behavior (Zimmer-Gembeck and Skinner 2011). On the other hand, RS theory certainly implies the universal and similar importance of RS across age periods (e.g., see Levy et al. 2001 for a review) and our recent research finds similar associations of RS with behavioral responses to rejection threat in children as young as 7 (Nesdale et al. 2014; Zimmer-Gembeck et al. 2014a).

Implications and Recommendations for Future Research

The current findings have implications for RS theory and future research. In relation to RS theory, this study is the first to provide more complete support for different rejection-related processes involved in the development of depressive symptoms and aggressive behavior during preadolescence and the early years of adolescence, which at least involves RS angry but may also involve RS anxious if the model were to be extended to include additional responses to rejection threat. There are some limitations to consider, however. We used scenarios that threatened, but were not overt, about rejection to capture young people's anticipated responses of social withdrawal and retribution. In this way, the responses were from a standardized set of rejection threats that would have been impossible to control in a naturalistic study. Hence, our method had the advantage of presenting all participants with similar social stimuli and standardizing responses despite individual differences in participants' previous experience. This method was valuable for providing some standard way of assessing behavioral responses to threats of rejection among a very large sample, and is a commonly used approach for assessing threat appraisals and other responses to stressful events in other areas of research (Catterson and Hunter 2010; Crick 1995; Dodge et al. 2003; Graham et al. 2006; Hoglund and Leadbeater 2007; Hunter and Boyle 2004; Sandler et al. 2000; Sandstrom et al. 2003; Zimmer-Gembeck et al. 2011b; Zimmer-Gembeck and Nesdale 2013). There was a limitation to this method, however. The items that assessed social withdrawal and retribution captured anticipated responses, rather than reports of actual behavior. Anticipated responses to rejection threat may not always be an accurate reflection of actual behavior, but we purposely used typical events that most adolescents encounter in their everyday lives (Zimmer-Gembeck et al. 2011b; Pronk and Zimmer-Gembeck 2010).

Other limitations include the characteristics of the sample and the use of self-report only. First, although this study was the first of its kind and included a large sample, the participants were a majority white Australian. However, the range of scores was similar to previous research that included a large sample of inner city African American adolescents (Downey et al. 1998b). Second, all data were collected via self-report, which may have inflated some of the associations reported here. Although it is important to consider perceptions and personal reports of behavior when studying RS, blame and behavioral responses to rejection threat, research has demonstrated that there may be differences between correlates of perceptions and correlates of similar constructs based on other informants (Hoffman et al. 2000; Nuijens et al. 2009; Zimmer-Gembeck et al. 2007; Zimmer-Gembeck and Pronk 2012). However, standardized stimuli were provided to assess the adolescents' anticipated responses to rejection threat to improve validity and accuracy over retrospective recall (by self or peers) of actual events and reactions.

Finally, the lag between reports of self- and peer-blame for rejection at T1 and reports of the rejection responses of social withdrawal and retribution at T2 might pose a limitation of this study. Although the responses to stress we examined were consistent with the order proposed in many stress and coping theories (e.g., for a review see Zimmer-Gembeck and Skinner 2011), the 7-month lag between reports of blame for rejection and behavioral responses to rejection is longer than how stress responses would usually unfold. However, since participants were responding to the same rejection events at T1 and T2, we expected that their responses would be quite stable over time and associations would be similar to those that would be found if examined over a shorter period of time.

Conclusion

The present longitudinal results support the notion of differentiating depressogenic from externalizing processes by identifying particular forms of rejection sensitivity, causal attributions for rejection, and responses to the threat of rejection, all of which are important sequalae in the accumulation of ever more depressive symptoms or aggressive behavior over time at the transition to adolescence. In particular, angry sensitivity to rejection, as well as causal attributions for and responses to rejection threat, identified unique correlates of relative increases in depressive symptoms and aggressive behavior over time. Further, these different processes were even better identified by understanding young people's history of depressive symptoms and aggression, showing how earlier depressive symptoms are associated with the accrual of even more depressive symptoms over time partly because of the intervening links with the tendency to withdraw in response to rejection threat. Also, earlier aggressive behavior yields more aggressive behavior over time partly because of the intervening links with the tendency to seek retribution in response to rejection threat.

Overall, the present research showed that extending the investigation of how young people understand and react to rejection, even when it is implied or when there is the possibility or threat of it, will continue to be important for identifying why emotional and behavioral problems emerge, are maintained, or escalate over time. Future research is needed to expand our model to incorporate non-interpersonal attributions for rejection, test additional maladaptive (and adaptive) ways that young people might respond when they feel threatened by rejection, and to identify whether these pathways decrease or increase in strength among older adolescents, differ depending on peer status, or are influenced by relationship history outside the peer domain.

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Compliance with Ethical Standards

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

Ethical Approval Study procedures were in accordance with current guidelines for ethics in human research. Approval was obtained from the Griffith University Human Ethics Review Committee prior to conducting this research.

Informed Consent Informed consent was obtained from all parents. Following parent consent, adolescent participants were informed and able to decline participation. Withdrawal from the study was also possible.

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