Social-Experience and Temperamental Predictors of Rejection Sensitivity: A Prospective Study

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Abstract

Rejection sensitivity (RS) is the tendency for individuals to anxiously expect, readily perceive, and overreact to interpersonal rejection. Existing theory presumes that early experiences of rejection cause RS, although few studies have assessed this prospectively. Also relatively unstudied are individual differences in temperament that may contribute to RS. In a longitudinal study, we examined whether early social experiences and individual differences in temperament predict RS assessed subsequently. Results showed that positive early social experiences (ages 6 and 9 parents' relationship quality and age 9 peer support) negatively predicted RS and that negative affect (ages 6 and 9) positively predicted age 12 RS. These findings may have important implications for RS-reduction efforts and for understanding the many domain-specific manifestations of RS.

KEYWORDS: Rejection Sensitivity; Temperament; Negative Affectivity

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Experiences of interpersonal acceptance and rejection are among the most motivationally significant events people encounter in life (Baumeister & Leary, 1995; Williams, 2007). Because of the powerful human desire for social acceptance, the threat of social rejection is an effective social motivator (Romero-Canyas, Downey, Berenson, Ayduk, & Kang, 2010). To understand how people interpret and form expectancies pertaining to social rejection, Downey and colleagues have developed a model of rejection sensitivity (RS; Downey & Feldman 1996), which refers to individual differences in the tendency for people to anxiously expect, readily perceive, and overreact to interpersonal rejection. The fundamental assumptions of the RS model are that social acceptance and rejection are inherently motivating and that RS is a byproduct of biopsychosocial aspects of one's early life (Romero-Canyas et al., 2010). The RS model and its associated research are predominantly driven by the notion that direct experiences of social rejection from significant others (e.g., parents, peers) during early developmental periods leads people to anxiously anticipate that they will experience similar rejection in future social interactions (Romero-Canyas et al., 2010), although observing conflict among close others, such as caregivers, also has been theorized to the lead to the development of RS (Feldman & Downey, 1994).

Extensive research has examined RS as a precursor to maladaptation; findings from this work suggest that RS is correlated positively with difficulties in interpersonal relationships (e.g., Downey, Feldman, & Ayduk, 2000; Downey, Freitas, Michaelis, & Khouri, 1998; Hafen, Spilker, Chango, Marston, & Allen, 2014) and with psychological distress and other issues (e.g., Ayduk et al., 2008; Ayduk, Downey, & Kim, 2001; London, Downey, Bonica, & Paltin, 2007; Marston, Hare, & Allen, 2010). Contrasting with the large literature on RS as a presumed cause

of concurrent or future outcomes, there have been few prospective studies of direct rejection and indirect social experiences predicting subsequent RS. Early adolescence is an important developmental period in which to study RS, given the heightened salience of peer acceptance and rejection during this time (Crone & Dahl, 2012), and experiences of social acceptance/rejection from childhood through adolescence appear particularly impactful for social adjustment (Pedersen, Vitaro, Barker, & Borge, 2007), yet no research of which we are aware has examined relations between rejection and other social experiences in childhood and RS in early adolescence. Finally, little work has assessed whether individual differences in temperament prospectively predict RS. To address the limited understanding of the etiology of RS, we examined potential precursors of early-adolescence (age 12) RS in early (age 6) and middle (age 9) childhood. Our goals were to assess the predictive utility of (1) early rejection experiences, (2) indirect social experiences, and (3) individual differences in temperament in accounting for later RS.

Theoretical Accounts of the Social-Experiential Etiology of Rejection Sensitivity

The RS model proposes that early rejection in relationships with significant others can shape one's working model of relationships, culminating in a tendency to anticipate interpersonal rejection and to react strongly to perceived instances of it (Pietrzak, Downey, & Ayduk, 2005). Building on research and theorizing from the attachment literature (e.g., Sroufe, 1990), the RS model posits that when children seek attachment and close connections to primary caregivers and peers but experience conditional affection, isolation, and direct rejection, they come to expect others will treat them in a similarly rejecting manner (Downey & Feldman, 1996). As children make associations between rejection experiences and rejection cues, they develop a propensity for RS that leads them to anticipate rejection experiences through heightened perceptions of

threat and to respond strongly to anticipated rejection (Downey & Feldman, 1996; Downey, Khouri, & Feldman, 1997).

Research supports the notion that rejection experiences contribute to RS. In a longitudinal study of middle-school students, peer rejection at the beginning of the semester was associated with an increase in anxious and hostile rejection expectations four months later, whereas peer support was associated with a reduction in RS (London et al., 2007). A significant correlation also has been observed between 8th-grade peer rejection and 9th-grade RS among adolescents who valued social relationships (Wang, McDonald, Rubin, & Laursen, 2012). Other research suggests that childhood teasing is associated with higher RS, whereas childhood social support is not (Butler, Doherty, & Potter, 2007). In general, a number of studies have observed associations between direct rejection experiences and RS (e.g. Ferguson & Zimmer-Gembeck, 2014).

As with direct rejection experiences, when a child observes conflict or rejection (e.g., aggression; Feldman & Downey, 1994) amongst close caregivers, the child may learn to expect similar rejection, suggesting that indirect social experiences also may contribute to RS. For example, parent-child relationships are increasingly negative when parents' marital relationships are negative (Erel & Burman, 1995), marital dissatisfaction can impact child maladjustment due to disengagement toward the child (Katz & Gottman, 1996), and perceived lack of social support among mothers is associated with higher risk of rejection toward the child (Colletta, 1981). Such familial experiences may be perceived by a child as insensitive, variability of which correlates with negative reactivity in young children (Crockenberg & Leerkes, 2006). Other indirect social experiences also may contribute to the development of RS. It may be that observations of parents' positive social relations with significant others are associated with decreased expectations of rejection or with less rejection sensitivity, given that children acquire social skills

and working models of close relationships through observational learning (Conger, Cui, Bryant, & Elder, 2000); however, no research of which we are aware has examined indirect social experiences as prospective predictors of RS.

An important methodological issue in studying RS has been the use of retrospective designs, such as in Feldman and Downey's (1994) study of college students' recollections of events from early childhood. Retrospective studies do not provide strong tests of the RS model for two reasons. First, retrospective reports may be biased by subjective reappraisals of early experiences, such that one's current level of RS may lead one to interpret previous social interactions in terms of rejection. Second, retrospective reports of early childhood events also can be expected to be of poor quality (Henry, Moffitt, Capsi, Langley, & Silva, 1994; Howe & Courage, 1993), yet early experiences in relationships do predict later functioning (Zayas, Mischel, Shoda, & Aber, 2011), indicating a need for assessing childhood experiences at the time when they transpire rather than later, through memory. These issues indicate the insufficiency of retrospective tests of RS theorizing, highlighting the need for longitudinal tests of relations between experiences related to direct rejection (i.e., parental acceptance/rejection and peer support/exclusion) as well as indirect social experiences (i.e., parents' relationship quality and parents' perceived social support from others) and subsequent RS.

Temperament and Rejection Sensitivity

An understudied potential predictor of subsequent RS may be individual differences in temperament. Temperament refers to biologically based individual differences in reactivity and self-regulation that can be altered through experience across time (Rothbart & Bates, 2006; Rothbart & Derryberry, 1981; Zentner & Bates, 2008). One temperament trait that may act as a precursor to RS is negative affectivity (NA), which reflects a propensity to experience sad,

anxious, and angry moods, the tendency to perceive oneself and one's experiences in a negative manner, and a heightened reactivity to stress (Watson & Clark, 1984), and is thought to be the temperamental precursor and affective core of the personality trait of neuroticism (Caspi & Shiner, 2006; Rothbart, Ahadi, Hershey, & Fisher, 2001; Watson & Clark, 1984, 1992). Individual differences in temperament also may shape a child's social experiences. For example, some research suggests that parents may react negatively in response to a child's NA (e.g., Cook, Kenny, & Goldstein, 199; Eisenberg et al., 1999), although other work indicates that parents react to children's NA with sensitivity and responsiveness (e.g., Paulussen-Hoogeboom, Stams, Hermanns, & Peetsma, 2008). A child's high level of NA also could reduce his or her attractiveness as a playmate, confidant, and friend (cf. Coyne, 1976; Fabes et al., 2009; Lyubomirsky, King, & Diener, 2005; Sallquist et al., 2009), leading to rejection by others; these experiences of rejection then could give rise to anticipating subsequent interpersonal rejection.

Considering the negative perceptions and sensitivity to stress associated with such a disposition and that temperamental attributes may influence one's social experiences, people high in NA may be particularly vulnerable to RS. Indeed, some cross-sectional studies show that NA-related personality traits are correlated with RS (e.g., neuroticism; Ayduk et al., 2008; Downey & Feldman, 1996) and interpersonal sensitivity (Wilhelm, Boyce, & Brownhill, 2004) in adults. Downey and Feldman (1996) considered the extent to which RS is associated with neuroticism by assessing the concurrent relation between neuroticism and RS; they found that, although RS and neuroticism were correlated, RS predicted unique variance in interpersonal problems, over and above the effect of neuroticism, suggesting these constructs are not simply corollaries of one another. These findings highlight the importance of understanding how NA may contribute to the development of RS. To our knowledge, however, individual differences in

NA have not been explored as prospective predictors of subsequent RS. Accordingly, we examined whether temperament, with a particular focus on NA, in early and middle childhood predicted RS in early adolescence.

The Present Study

In summary, RS is presumed to originate in early rejection experiences, and individual differences in temperament also may play an important role in the development of RS; however, there is a paucity of prospective data from childhood regarding either of these putative antecedents to RS in adolescence, a time of complex social interrelations, particularly among peers, as adolescents become highly attuned to input about how others perceive them (Somerville, 2013). Our goals were to examine direct rejection experiences and indirect social experiences as prospective predictors of subsequent RS and to examine temperamental NA as an individual difference variable that also may predict RS. We addressed these aims with a longitudinal design. Following Downey and colleagues' theorizing, we tested whether experiences of direct acceptance and rejection from parents and peers and/or indirect social experiences, such as the quality of parents' dyadic relations and parents' perceived social support would be associated with children's subsequent levels of RS. We also examined whether individual differences in NA would be associated with children's subsequent levels of RS. We assessed correlations between our primary variables of interest at ages 6 and 9 with RS at age 12, as noted in Table 1 (for the pre-registered analysis plan created before the first author received the data analyzed for this paper, see https://osf.io/q9zrb/?view_only=89d37f0d9ff44b42953db717822201a1).

Method

Participants

Data were drawn from the Stony Brook Temperament Study, an ongoing longitudinal study examining early temperament as a precursor to psychiatric and emotional disorders (Klein & Finsaas, 2017). Participants were children and their parents recruited from the community surrounding Stony Brook University via a commercial mailing list. Children were eligible if they were between 3-4 years old with no significant physical or developmental impairments, and if at least one English-speaking biological parent lived with the child. The initial wave of the study included 559 children who were roughly 3 years old and their parents. When the children were 6 years old, an additional 50 children were recruited to increase diversity of the sample, resulting in a total of 609 (332 Male, 277 Female) participants (Dougherty et al., 2016). At least one of the measures in the present study was completed for 502 children at age 6 and 483 children at age 9; at age 12, the measure of RS was completed by 447 children. Reported ethnicity for the sample was 87.7% Non-Hispanic and 12.3% Hispanic, and reported race was 89.0% White, 7.9% Black, 2.3% Asian, .70% Other, and .20% Native American. Approximately 95% of children lived with both parents; in roughly 95% of cases, the parent who participated in lab visits was the mother (Olino, Klein, Dyson, Rose, & Durbin, 2010); the other 5% of laboratory visits were attended by the father. Sample size was determined prior to the initiation of the study via a power analysis considering the overall aims of the larger longitudinal study.

Procedure

The three waves of data collected when children were aged 6, 9, and 12 years were used to test our primary hypotheses. Data collected when participants were aged 3 was used to assess associations between age 3 variables and age 12 RS for any variables corresponding to those at age 6 which were correlated significantly with RS at age 12[1]. Only the age-12 wave included measures of RS; these data had not been analyzed previously. Data collection at the various ages

involved laboratory visits attended by one parent and the child, home visits, and/or phone interviews. Questionnaires were completed by co-parents who did not attend laboratory sessions.

Measures

At age 6, we assessed parent-reported parental acceptance and rejection, parent-reported parents' social support from others, parent-reported parents' relationship quality, and both parent-reported and observed negative affect of the child. At age 9, we measured child-reported parental acceptance, teacher-reported peer exclusion, child-reported peer support, and children's negative affect as reported both by parents and by the child. At age 12, we measured RS.

Described below are measures of only those ages 6 and 9 variables that correlated significantly with RS at age 12; for detailed information regarding all other variables, please see the online supplementary material included with this article. With one exception, scores correlated at |.30| or above from mothers and fathers were averaged to provide a single index of the child's experiences and temperament[2]; accordingly, descriptive information about each measure below reflects the combined mother/father scores. For all measures administered to both parents, at least 78% of participants had scores from both mothers and fathers.

Social-Experience Measures

***Parents' Relationship Quality*.** Parents' relationship quality at ages 6 and 9 was assessed using the 4-item Dyadic Adjustment Scale (Sabourin, Valois, & Lussier, 2005. Parents reported how often they discussed divorce or separation, how often they thought things between them and their partner were going well, whether they confided in their mate, and their general degree of relationship happiness. Higher scores indicate better relationship quality; $N = 444$, $M = 15.99$, $SD = 3.68$, $\alpha = .85$ (age 6) and $N = 432$, $M = 15.76$, $SD = 3.65$, $\alpha = .87$ (age 9).

***Peer Support*.** Peer support was measured at age 9 using the 15-item peer-support

subscale of the Survey of Children's Social Support scale (Dubow & Ullman, 1989). Children responded on a scale from 1(*never true*) to 5(*always true*) to questions about peer social support (e.g., "Are you well-liked by your classmates?"; "Do you feel like nobody in your class cares about you?" [reverse-scored]), with higher values reflecting increased peer support; $N = 481$, $M = 67.45$, $SD = 6.50$, $\alpha = .82$.

Temperamental Measures

Negative Affectivity (NA). At age 6, parents reported NA using the Children's Behavior Questionnaire (Rothbart et al., 2001), which assesses temperament in children ages 3 to 7 as reported by a child's caregiver. The NA factor includes the 62 items in the discomfort, fear, anger/frustration, sadness, and soothability subscales. Caregivers rate items (e.g., "Is likely to cry when even a little bit hurt"; "Is rarely frightened by 'monsters' seen on TV or at movies" [reverse-scored]; "My child sometimes appears downcast for no reason"; "If upset, cheers up quickly when s/he thinks about something else" [reverse-scored]) from 1(*extremely untrue of your child*) to 7(*extremely true of your child*), and higher scores indicate greater NA; $N = 477$, $M = 3.77$, $SD = .54$, $\alpha = .77$.

Negative affectivity at age 9 was assessed via both parent and child report. Parent-reported NA was assessed using the 44-item NA factor scale of the Temperament in Middle Childhood Questionnaire (Simonds & Rothbart, 2004); this factor is comprised of the anger/frustration, discomfort, fear, sadness, and soothability subscales. Parents rated items (e.g., "Gets angry when s/he makes a mistake"; "Cries when given an injection"; "Is afraid of heights"; "Tends to feel sad even when others are happy") from 1(*almost always untrue of your child*) to 5(*almost always true of your child*). Higher scores reflect more NA; $N = 483$, $M = 22.11$, $SD = 2.59$, $\alpha = .93$. Child-reported NA was assessed with the 8-item NA subscale of the Affect and

Arousal Scale (Chorpita, Daleiden, Moffitt, Yim, & Umemoto, 2000). Children rated on a scale from 1(*never true*) to 4(*always true*) items such as "I get upset easily" and "I can't calm down once I am upset," with higher scores indicating more NA; $N = 481$, $M = 6.48$, $SD = 3.83$, $\alpha = .73$.

Outcome Measure

***Rejection Sensitivity*.** Rejection sensitivity was assessed at age 12 using a slightly modified version of the 24-item Child Rejection Sensitivity Questionnaire (Downey, Lebolt, Rincón, & Freitas, 1998), which includes two subscales assessing angry and anxious expectations of rejection. Our modifications entailed changing items that referred to contexts, such as being sent to the store to buy milk, more relevant to the urban sample for which the scale originally was developed than to the presently studied suburban sample. Participants responded to potentially rejecting situations by indicating the degrees to which they would feel anger and anxiety about the outcome and would believe the other person in the encounter would respond with rejection. Children were instructed to imagine themselves in each of several situations (e.g., "Imagine you are the last to leave your classroom for lunch one day. As you're running down the stairs to get to the cafeteria, you hear some kids whispering on the stairs below you. You wonder if they are talking about YOU."). Children answered three questions about each scenario indicating (1) how nervous and (2) how mad they would be, as well as (3) their expectation regarding the outcome of each situation (e.g., "Do you think they were saying bad things about you?). Items were rated from 1(*not nervous; not mad; YES!!! definitely*, respectively) to 6(*very, very nervous; very, very mad; NO!!! definitely NOT*, respectively). The subscales of angry and anxious expectations of rejection each were calculated by multiplying the scores on the mad items by the reversed expected outcome questions (angry expectations) and the scores on the nervous items by the reversed expected outcome questions (anxious expectations) and then

summing the scores for each and dividing by the total number of scenarios. Finally, the angry and anxious subscales were averaged to create a total RS score, with higher values reflecting greater RS; $N = 447$, $M = 6.99$, $SD = 3.17$, $\alpha = .91$.

Results

Our pre-registered analyses took place in two stages. First, we computed Pearson product-moment correlation coefficients between age 12 RS and each of the predictor variables listed in Table 1. Second, we conducted a simultaneous multiple regression analysis including the predictor variables that were significantly correlated with age 12 RS to assess the unique predictive utility of these variables in the context of the other significant predictors.

Table 1.

Hypotheses relating pre-registered predictor variables to age 12 rejection sensitivity (RS).

Variable	Predicted Sign of Relationship to RS	Observed Relationship to RS
Social Experience		
Acceptance (Age 6–Parent Report)	-	- and ns.
Rejection (Age 6–Parent Report)	+	+ and ns.
Acceptance (Age 9–Child Report)	-	- and ns.
PSS (Age 6–Parent Report)	-	- and ns.
PRQ (Age 6–Parent Report)	-	- and sig.
PRQ (Age 9–Parent Report)	-	- and sig.
PS (Age 9–Child Report)	-	- and sig.
PE (Age 9–Teacher Report)	+	+ and ns.
Temperament		
NA (Age 6–Parent Report)	+	+ and sig.
NA (Age 6–Observed)	+	- and ns.
NA (Age 9–Parent Report)	+	+ and sig.
NA (Age 9–Child Report)	+	+ and sig.

Note: PSS = Parents' Social Support; PRQ = Parents' Relationship Quality; PS = Peer Support; PE = Peer Exclusion; NA = Negative Affectivity; ns. = non-significant; sig. = significant at $p < .05$. In this manuscript, measures are described for only those variables that were significantly correlated with RS at age 12. For detailed information about the measures of variables not significantly associated with RS, please see the online supplemental material associated with this article.

Correlations between our variables of interest and RS were assessed via one-tailed, $p < .05$ tests of statistical significance, and a sequentially rejective multiple-test correction procedure (Holm, 1979) was applied to adjust for our multiple correlations. Correlations among all variables are presented in Table 2. Parents' relationship quality at ages 6 and 9, peer support at age 9, parent-reported NA at ages 6 and 9, and child-reported NA at age 9 correlated significantly with age 12 RS.

Table 2.

Correlations among predictor variables and RS.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Social Experience															
Parent-Child Relation															
1. Acceptance (Age 6–Parent PSDQ)															
2. Acceptance (Age 6–Mother PPM)	-.32***														
3. Acceptance (Age 6–Father PPM)	-.46***	.20***													
4. Rejection (Age 6–Parent PSDQ)	-.24***	.17***	.16**												
5. Rejection (Age 6–Parent PPM)	.26***	-.18***	-.21***	-.64***											
6. Acceptance (Age 9–Child CRPBI)	.10*	-.09*	-.11*	-.10*	.14**										
Parental Relations															
7. PSS (Age 6–Parent SPS)	.18***	-.04	-.08	-.09*	.04	.06									
8. PRQ (Age 6–Parent DAS)	.13**	-.07	-.18***	-.18***	.19***	.15**	.28***								
9. PRQ (Age 9–Parent DAS)	.08	-.06	-.13*	-.14**	.17***	.16**	.22***	.74***							
Peer Relations															
10. PS (Age 9–Child SOCCS)	-.04	-.04	-.04	.03	-.01	.39***	-.03	.12**	.17***						
11. PE (Age 9–Teacher CBS-EP)	.02	.03	-.05	.03	-.04	-.16**	-.05	-.14*	-.01	-.20***					
Temperament															
12. NA (Age 6–Parent CBQ)	-.11*	.10*	.08	.22***	-.30***	-.03	-.07	-.17***	-.08	.03	.13*				
13. NA (Age 6–Observed Lab-TAB)	.08*	-.09*	.03	-.06**	.06	-.04	.04	.03	.03	-.09*	.13*	.02			
14. NA (Age 9–Parent TMCQ)	-.09*	.10*	.06	.17***	-.23***	-.01	-.09*	-.11*	-.14**	-.06	.05	.61***	-.04		
15. NA (Age 9–Child AFARS)	-.04	-.00	-.04	.04	-.15**	-.05	-.03	-.00	-.06	-.26***	.19***	.17***	.06	.18***	
Rejection Sensitivity (Age 12-Child RSQ)	-.03	.12	.06	.03	-.07	-.10	-.12	-.15*	-.13*	-.18**	.05	.16*	-.06	.17**	.19**
95% CI for RS correlations	-.12,.07	.02,.21	-.05,.16	-.07,.13	-.17,.02	-.19,-.01	-.22,-.02	-.25,-.05	-.23,-.03	-.27,-.08	-.07,.17	.06,.25	-.16,.04	.08,.26	.10,.28
Corrected *p*-values	.289	.073	.626	.522	.413	.135	.071	.017	.043	.002	.591	.010	.566	.003	.000
Uncorrected *p*-values	.289	.009	.156	.261	.069	.019	.008	.002	.004	.000	.197	.001	.113	.000	.000

Note: Pearson's Product-Moment Correlations (R) are presented. PSDQ = Parenting Styles and Dimensions Questionnaire; PPM = Preschool Parenting Measure; CRPBI = Children's Report of Parental Behavior Inventory; PSS = Parents' Social Support; SPS = Social Provisions Scale; PRQ = Parents' Relationship Quality; DAS = Dyadic Adjustment Scale; PS = Peer Support; SOCCS = Survey of Children's Social Support Scale; PE = Peer Exclusion; CBS-EP = Child Behavioral Scale-Excluded by Peers; NA = Negative Affectivity; CBQ = Children's Behavior Questionnaire; Lab-TAB = Laboratory Temperament Assessment Battery; TMCQ = Temperament in Middle Childhood Questionnaire; AFARS = Affect and Arousal Scale; RSQ = Rejection Sensitivity Questionnaire. The PSDQ and PPM are oppositely scored, hence their negative correlation on acceptance and positive correlation on rejection. One-tailed *p*-values are reported. *$p < .05$, **$p < .01$, ***$p < .001$

To assess the unique predictive utility of our significant predictors of RS, parents' relationship quality at ages 6 and 9, peer support at age 9, parent-reported NA at ages 6 and 9, and child-reported NA at age 9 were entered into a simultaneous multiple regression (see Table 3). The model accounted for 9% of the variance in age 12 RS (R^2 = .09, $F(6, 332) = 5.21$, $p <$ .001). In the context of all six predictors, child-reported age-9 peer support (β = -.12, t = -2.15, p = .016) and child-reported age-9 NA (β = .13, t = 2.26, p = .013) remained statistically significant predictors of age-12 RS.

Table 3.

Simultaneous multiple regression analysis for age 12 RS.

	B	SE	*β*	*t*	*p*	95% CI
Social Experience						
Parental Relations						
PRQ (Age 6–Parent Report DAS)	-.03	.08	-.03	-.36	.360	-.18, .12
PRQ (Age 9–Parent Report DAS)	-.07	.07	-.09	-1.08	.141	-.21, .06
Peer Relations						
PS (Age 9–Child Report SOCCS)	-.06	.03	**-.12**	-2.15	.016	-.12, -.01
Temperament						
NA (Age 6–Parent Report CBQ)	.30	.43	.05	.70	.241	-.54, 1.15
NA (Age 9–Parent Report TMCQ)	.14	.09	.11	1.57	.060	-.04, .31
NA (Age 9–Child Report AFARS)	.11	.05	**.13**	2.26	.012	.01, .20

Note: PRQ = Parents' Relationship Quality; DAS = Dyadic Adjustment Scale; PS = Peer Support; SOCCS = Survey of Children's Social Support Scale; NA = Negative Affectivity; CBQ = Children's Behavior Questionnaire; TMCQ = Temperament in Middle Childhood Questionnaire; AFARS = Affect and Arousal Scale. Significant standardized betas are bolded. One-tailed *p*-values are reported.

Finally, given RS theorizing related to person by situation interactions (Romero-Canyas et al., 2010) and our finding that the age 6 variables no longer significantly predicted age 12 RS in the context of the age 9 variables, we conducted exploratory follow-up analyses considering several more complex models to test interactions between indirect social experience and

temperamental variables and to examine the possibility that age 9 variables mediated relationships between age 6 variables and age 12 RS. We tested (1) the interaction between age 9 child-reported NA and age 9 peer support on age 12 RS; (2) the interaction between age 9 child-reported NA and age 9 parents' relationship quality on age 12 RS; (3) age 9 child-reported NA as a mediator of the relationship between age 6 parents' relationship quality and age 12 RS; and (4) age 9 peer support as a mediator of the relationship between age 6 NA and age 12 RS. None of these tests yielded statistically significant results.

Discussion

Due to the many adverse psychological and interpersonal outcomes associated with RS, understanding its origins is important. The present findings enhance this understanding in three ways. First, our longitudinal/prospective design allowed the clearest test of which we are aware of the RS model's chief claim that experiences in early childhood predict later RS. We found that direct experiences of social acceptance, in the form of peer support at age 9, related negatively to RS in adolescence. Moreover, higher quality of parents' relationships assessed as early as age 6 predicted lower levels of RS assessed at age 12, providing evidence that children's indirect experiences of acceptance and rejection can contribute to their subsequent degree of RS. Unexpectedly, we did not find that direct experiences of parental acceptance and rejection were significantly associated with subsequent RS, which is a basic prediction of RS theory. Given that these non-significant associations were in the directions predicted by RS theory, and given that the present work is the only work yet to assess these relations prospectively, additional longitudinal work clearly is needed assessing relations between caregiver acceptance/rejection and children's subsequent RS.

These results add to a small but growing number of longitudinal studies of RS. One prior

study assessed in adulthood the interaction of a composite measure of anxious-attachment as a proxy for RS with delayed gratification assessed in childhood to predict functioning in childhood and in adulthood (Ayduk et al., 2000). Although that study was longitudinal, RS was not assessed as an outcome, and the authors did not assess predictors of later RS. In another study, associations between adolescents' (ages 9 and 13) direct-rejection experiences and RS were assessed at two time points, 14 months apart; parental rejection was significantly associated with concurrent and subsequent RS, providing some prospective evidence of rejection predicting RS (Rowe, Gembeck, Rudolph, & Nesdale; 2015). The present study, however, offers insight into direct and indirect social experiences measured 3 and 6 years prior to RS as predictors of later RS; thus, this longitudinal design eliminates the possibility that RS unduly colored participants' reports of their experiences or that children were unable to accurately recall their early experiences.

Second, this is the first prospective study of which we are aware of the role of temperament in predicting RS. We observed that NA assessed as early as age 6 predicted RS assessed at age 12, a finding that contributes substantially to the RS literature, which has thus far primarily focused on interpersonal experiences of rejection as an antecedent to RS. Third, our results point to the intriguing possibility of social experiences and individual differences in NA as distinct precursors to RS. We found that social-experience (peer support) and temperament (NA) variables assessed at age 9 each uniquely explained RS assessed at age 12. This is important to the RS model because it addresses the alternative possibility that no unique variance between RS and early social experiences of rejection or acceptance would remain when considering temperamental NA, which itself can be expected to undermine both the quality of one's interpersonal interactions and the tenor of one's social expectancies. At the same time, the

unique relation between NA and subsequent RS highlights the need for a greater understanding of how temperament contributes to RS, particularly in early life stages. It may be that dispositional NA fosters interpreting experiences negatively and reacting strongly to stress, which may manifest as RS in adolescence when peer associations and interpersonal stressors become more salient.

Only child-reported variables at age 9 remained significant predictors of child-reported RS at age 12 in our simultaneous multiple regression analysis. This pattern likely reflects the influence of common method variance, which advantages child-reports over other measures, given that RS is child-reported; however, it is important to note that zero-order associations exist between both parent-reported parents' relationship quality and parent-reported NA at ages 6 and 9 and child-reported RS at age 12.

Limitations and Future Directions

We consider this work a first step in understanding the role of temperament in the development of RS. One limitation, however, is that RS was not measured until age 12. Future longitudinal studies assessing RS at earlier time points would provide additional information about the trajectory of RS over time. Another limitation is the use of different measures to assess the same constructs at different time points. Although consistency among measures is ideal, such an approach often is not feasible in developmental research, given that children and adolescents of different ages have different capacities for comprehending and responding to questionnaires and that they may be differentially able to express issues or discomfort related to research experiences (Eiser & Morse, 2001). Nonetheless, greater uniformity in measurements across time points could help provide stronger support for the present findings.

Implications and Conclusions

The RS model predicts an effect of early rejection/acceptance experience on later RS (Downey & Feldman, 1996; Feldman & Downey, 1994), and clear conceptual bases also exist for predicting an effect of NA on later RS. Accordingly, our work tested a central tenet of the RS model, while also assessing an alternative possibility that early social experiences would not account for subsequent RS independent of childhood temperament, which itself could lead both to particular sorts of social experiences and to the development of RS. Consistent with the RS model, peer support uniquely predicted RS, and the significant association between parents' relationship quality and children's subsequent RS also indicates that indirect social experiences may contribute to the development of RS. Moreover, these results suggest that it is possible to trace the trajectory of RS as it stems from early social experiences that occur several years earlier into childhood than has been examined previously.

The present work also illuminates the importance of studying individual differences in temperament in the study of RS and its antecedents. For example, NA predicting later RS has implications for RS research in other domains. Gender- (London, Downey, Romero-Canyas, Rattan, & Tyson, 2012), race- (Chan & Mendoza-Denton, 2008), and appearance-based RS (Park, Calogero, Young, & Diraddo, 2010) all have been examined based on the predominant RS theory that these forms of RS stem from past experiences of rejection based on domain-specific characteristics. The current findings, however, illuminate a separable etiological role of temperament. More work is needed to understand NA and other temperamental variables as predictors of RS, as well as the repercussions of this temperamental link for domain-specific RS and related outcomes. Regarding application, our evidence that relatively stable temperamental characteristics such as NA predict RS indicates that interventions may be useful that adopt a coping approach, with social skills development aimed at providing high-RS individuals tools for

minimizing deleterious consequences of anxiously expecting rejection, even if such expectancies cannot themselves be eradicated completely.

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Footnotes

[1]Consistent with our pre-registration, we assessed associations between age 3 social-experience and temperamental predictors and age 12 RS for the corresponding predictors at age 6 that correlated significantly with RS. Parents' relationship quality (r = -.04, p = .247, N =360) and negative affect (r = -.01, p = .464, N = 396) at age 3 were not significantly correlated with RS. Although the RS model posits that early (age 3) experiences of direct rejection would predict RS, the variables that are significant predictors of RS in our study are those associated with indirect social experiences (parents' relationship quality at ages 6 and 9), which may be more difficult for children aged 3 to comprehend than for children ages 6 and 9. Temperament was assessed by the same observational measure used at age 6, the only temperamental measure at age 6 not significantly correlated with RS, so the lack of association between age 3 NA and age 12 RS is consistent with the non-significant effect in the subsequent wave at age 6. Given that our pre-registered analysis plan emphasized more proximal, rather than distal, predictors of RS, we do not focus on the age 3 variables in the manuscript.

[2]Inter-parent agreement regarding a child's temperament tends to be moderate (e.g., approximately .30; Achenbach, McConaughy, & Howell, 1987; Duhig, Renk, Epstein, & Phares, 2000). As it is common in the literature to average across informants' reports to reduce informant-specific biases, we aggregated all measures in which mother and father reports correlated at .30 and above. Scores for all but acceptance measured by the Preschool Parenting Measure correlated above |.30| and were averaged.