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Associations Between Rejection Sensitivity, Aggression, and Victimization: A Meta-Analytic Review

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and Patrick Ip⁵ 

Abstract

Background: Rejection sensitivity (RS) is a personality disposition characterized by oversensitivity to social rejection; individuals who are sensitive to social rejection tend to anxiously or angrily expect, readily perceive, and overreact to it. The associations between (a) RS and aggression and (b) RS and victimization have been studied in recent years. However, the strength of these associations varied considerably between studies. This review aimed to synthesize the primary literature to improve our insight into these associations. **Method:** A comprehensive literature search yielded 52 studies (with a total of 66,405 participants and producing 203 effect sizes) on the RS-aggression and RS-victimization associations. Three-level meta-analytic models were used to synthesize effect sizes and to examine potential moderators of the RS-aggression association and the RS-victimization association, respectively. **Results:** There was a small but significant association between RS and aggression (pooled $r = .183$; $p < .001$) and a slightly below moderate and significant association between RS and victimization (pooled $r = .298$; $p < .001$). The RS-aggression association was stronger for angry RS than for anxious RS and stronger for reactive aggression than for proactive aggression. Similar results were obtained in analyzing the longitudinal associations only. **Conclusions:** RS is significantly associated with aggression and victimization. The implications of the results for clinical practice as well as directions for future research are discussed.

Keywords

domestic violence, mental health and violence, assessment, cultural contexts

Rejection sensitivity (RS) is defined as a personality disposition characterized by oversensitivity to social rejection; individuals who are sensitive to social rejection tend to anxiously or angrily expect, readily perceive, and intensely react to it (Downey & Feldman, 1996; Downey, Khouri, & Feldman, 1997). A growing body of literature has documented associations between RS and aggression and victimization (e.g., Rowe, Gembeck, Rudolph, & Nesdale, 2015; Webb et al., 2015; Zimmer-Gembeck, Nesdale, Webb, Khatibi, & Downey, 2016). However, the strength of these associations varied considerably between studies (from -0.07 , as reported by Croft & Zimmer-Gembeck, 2014, to 0.67 , as reported by Webb et al., 2015). The varying strengths and even directions of the associations between RS and aggression and victimization undoubtedly hinder our understanding on the issue. However, reliable estimates of the effect sizes by meta-analytic studies have been scarce.

RS may arise from previous rejection experiences including childhood maltreatment, exposure to family violence, emotional neglect, harsh discipline, and conditional parental love (Downey et al., 1997; Romero-Canyas, Downey, Berenson,

Ayduk, & Kang, 2010). The broad definition of rejection includes overt or covert, active or passive, or physical or emotional acts that communicate rejection (Romero-Canyas et al., 2010). Rejection sensitive individuals are thought to be especially attentive to social rejection cues and to have a lower threshold for reacting to them, which jointly lead to more intense emotional reactions (Romero-Canyas et al., 2010). RS

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has been measured predominantly by RS questionnaire (RSQ; Downey & Feldman, 1996) and versions thereof, and the interpersonal sensitivity measure (IPSM; Boyce & Parker, 1989). Individuals with high levels of RS refer to those who get high scores in RSQ or IPSM.

The defensive motivational system (DMS) has been proposed to account for the link between RS and aggression (Downey, Mougios, Ayduk, London, & Shoda, 2004; Romero-Canyas et al., 2010). According to the DMS, in situations in which rejection is a possibility, individuals with high levels of RS are more likely to act aggressively in self-defense (Romero-Canyas et al., 2010). This claim has been supported by the results of field and experimental studies. For example, in a longitudinal study, Zimmer-Gembeck, Nesdale, Webb, Khattibi, and Downey (2016) found that adolescents higher in the angry form of RS were more likely to engage in retribution, which in turn was associated with more overt/relational aggressive behavior at follow-up relative to baseline. There is also substantial experimental evidence showing that actual rejection experiences (or rejection cues) trigger hostile thoughts and aggressive behavior to a greater extent among people high in RS. In the study of Ayduk, Gyurak, and Luerssen (2008), the authors performed an experiment and found that relative to individuals with low levels of RS, individuals with high levels of RS behaved more aggressively toward the rejecter. A recent review qualitatively summarized some correlational evidence on the rejection–aggression link among high RS people (Romero-Canyas et al., 2010).

RS has also been correlated with increased risk of victimization. For example, Erozkhan (2015) examined the relationship between childhood trauma and RS in a group of late adolescents and found a positive relationship between RS and subdimensions of childhood trauma including physical abuse, emotional abuse, physical neglect, emotional neglect, and sexual abuse. In line with this, an Australian study has demonstrated that adolescents higher in relational victimization reported more loneliness and depressive symptoms, and part of this association was by way of their greater self-reports of RS and their peers' identification that they were higher in RS (Zimmer-Gembeck, Trevaskis, Nesdale, & Downey, 2014).

Proactive aggression and reactive aggression are different types of aggression that are differentially associated with RS (Bondü & Richter, 2016). There is evidence indicating that the relationship between RS and aggression differs by aggression type (Jacobs & Harper, 2013). Thus, it can be assumed that aggression type affects the strength of the association between RS and aggression. Anxiety and anger are viewed as alternative (but not mutually exclusive) responses that rejection-sensitive individuals can express in rejecting situations (Downey et al., 1997). Downey, Khouri, and Feldman (1997) argued that anxious and angry expectations of rejection may promote different behavioral responses to perceived rejection by rejection-sensitive individuals. In line with this, Croft and Zimmer-Gembeck (2014) found that adolescents higher in angry RS reported more anger and aggression and were less compromising in friendship conflict resolution, whereas anxious RS was

associated with being more obliging and compromising and with less aggression. In sum, both RS type and aggression type may influence the associations between RS, aggression, and victimization; therefore, these variables were tested as potential moderators in the present study. Besides these two moderators, several other study characteristics were examined as potential moderating variables.

To help understand the true associations between RS and aggression and victimization, this study aimed at revealing a reliable estimate of the effect size using the meta-analytic approach. In addition to that, this study also explored the moderating effects of gender and age on the associations between RS and aggression and victimization on the basis of the significant links of gender and age on those associations (Williams, Doorley, & Esposito-Smythers, 2017; Zimmer-Gembeck et al., 2016). Together, the present study aimed to statistically summarize the association between RS and aggression and between RS and victimization by conducting two meta-analyses. For each association, an overall effect was estimated, and several variables were tested as potential moderators of these associations. Based on prior theory and research, we hypothesized that RS is significantly associated with both aggression and victimization and that the associations between RS and aggression/victimization differ by RS type and aggression type.

Method

Search Strategy and Inclusion Criteria

We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement (Moher, Liberati, Tetzlaff, & Altman, 2009) to conduct this review. To systematically review the literature, a two-step literature search was conducted to identify relevant literature on RS and aggression and victimization. First, we searched for primary studies published between January 1, 1990, and August 10, 2018. The period was chosen as researchers have empirically studied RS since 1990s. We searched for the following five databases: PsycINFO, MEDLINE, ScienceDirect, Web of Science, and Google Scholar. Second, the reference lists of eligible studies and review articles (Gao, Assink, Cipriani, & Lin, 2017; Marin & Miller, 2013; Premkumar, 2012; Romero-Canyas et al., 2010) were searched manually to minimize the risk of missing relevant studies.

In the present study, we defined aggression as a forceful action, the practice of making attacks, or hostile or destructive behavior. Based on this definition and after scanning the literature on RS and aggression, the following two syntax components were used in searching the electronic databases: (“rejection sensitivity”) AND (“aggression” OR “violence” OR “aggressive retaliation” OR “retribution” OR “revenge” OR “hostility”). In this study, we defined victimization as the process of being victimized, from physical, psychological, moral, or sexual point of views. After scanning the literature on RS and victimization, the following two syntax components were used to search all the relevant literature: (“rejection

sensitivity”) AND (“victimization” OR “abuse” OR “teasing” OR “sexual victimization” OR “bullying victimization” OR “witness of marital violence” OR “perceived discrimination”).

Primary studies were included in the present review if they met the following criteria: (1) The study examined at least one measure of RS, (2) the study examined at least one measure of aggression and/or victimization, (3) the study was written in English, and (4) the study reported on sufficient statistical information to extract or calculate at least one bivariate effect size. Studies were excluded if the outcomes of aggression and victimization were measured using a broad variable such as conduct problems and externalizing and internalizing problems.

Coding of Studies and Quality Assessment

To meaningfully synthesize the results, each study was coded and evaluated on the basis of the following characteristics: (a) author(s), (b) year of publication, (c) research design (i.e., cross-sectional, longitudinal, or experimental), (d) country (grouped into four continents: Australia, North America, Europe, and Asia), (e) sample type (sample was coded as “clinical” when participants were recruited from clinical settings, and “community” when participants were recruited from general community settings), (f) sample size, (g) gender (i.e., percentage of females), (h) mean age—if mean age was not reported, the median age was coded, (i) age-group (samples were coded as “younger than 18 years of age” or “18 years of age or older”), (j) measurement of RS (i.e., RSQ and versions thereof, IPSM, or other measures of RS), (k) outcome (i.e., aggression or victimization), (l) type of RS (i.e., anxious RS or angry RS), (m) type of aggression (proactive aggression or reactive aggression), (n) type of effect size (i.e., baseline or follow-up), (o) length of follow-up (e.g., length between baseline and follow-up), and (p) effect size (i.e., the zero-order correlation coefficient). All extracted effect sizes were unadjusted effect sizes (i.e., study results not controlled for variables such as gender, age, etc.).

To minimize the possible bias of primary studies, the study quality of the included studies was assessed using the National Institutes of Health’s Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies (National Institutes of Health, 2014). Each study was assessed using 14 criteria and was rated using a 3-point scale (good, fair, and poor).

Statistical Analyses

We used the correlation coefficient as the common effect size in the present review. Prior to conducting the meta-analyses, all correlations were converted to the Fisher’s transformation of r (Z_r ; Card, 2012; Hedges & Olkin, 1985). After conducting all the analyses, the Fisher’s z values were retransformed into Pearson’s r for interpretability. If the Pearson’s correlation coefficient r was not reported, it was calculated whenever possible using the available data reported in the article (e.g., by using t statistics).

Most of the primary studies included in the present meta-analysis reported on multiple relevant effect sizes. However, extracting multiple effect sizes from a single primary study violates the assumption of effect size independency that is central to traditional meta-analytic approaches (Lipsey & Wilson, 2001). Therefore, we used a three-level meta-analytic model to synthesize the combined effect sizes and to conduct moderator analyses. The three-level random effects model examined three sources of variance: the sampling variance of the observed effect sizes (Level 1), the variance between effect sizes extracted from the same study (Level 2), and the variance between studies (Level 3; Cheung, 2014; Van den Noortgate, López-López, Marín-Martínez, & Sánchez-Meca, 2013, 2015). By using this three-level meta-analytic model, the dependency of effect sizes could be modeled, and all relevant information reported in the primary studies could be preserved. In addition, maximum power could be achieved in the statistical analyses. Therefore, relative to traditional meta-analytic techniques, the three-level approach to meta-analysis is quite strong (see also Assink & Wibbelink, 2016).

In this study, we first estimated an overall association between (a) RS and aggression and (b) RS and victimization by building two separate meta-analytic intercept-only models using only cross-sectional associations. In interpreting these overall associations, we followed Cohen’s (1992) guidelines, in which an r of at least .1 is a small effect, an r of at least .3 is a medium effect, and an r of at least .5 is a large effect. Second, using mixed-effect models, we conducted bivariate moderator analyses in which potential moderators of the association between RS and aggression and between RS and victimization were examined.

To assess publication bias, we visually inspected funnel plots of the effect sizes and conducted Duval and Tweedie’s trim-and-fill analysis (Duval & Tweedie, 2000). Using Duval and Tweedie’s trim-and-fill analysis, an adjusted overall effect can be estimated after adding the estimated missing effect sizes to the original data set. If the initial and adjusted overall effect sizes differ, this indicates that publication bias may be present in the meta-analysis.

All analyses were conducted in R version 3.3.2 (R Core Team, 2016) using the metafor package (Viechtbauer, 2010). The R syntax was written following Assink and Wibbelink’s (2016) tutorial. All model parameters were estimated using the restricted maximum likelihood method (Viechtbauer, 2005), and a two-tailed p value smaller than .05 was considered statistically significant.

In addition, using only the longitudinal associations extracted from the included primary studies, we performed meta-analyses on the RS-aggression and RS-victimization associations, respectively. For the purpose of these analyses, we defined longitudinal associations as correlations that were measured at different points in time (e.g., RS measured at baseline and victimization measured in a follow-up 1 year later). These longitudinal associations differed from cross-sectional associations as the former were measured at different time points, while the latter were measured at a single time point.

Table 1. Overall Effects in the Rejection Sensitivity (RS)-Aggression and RS-Victimization Meta-Analyses.

Outcome	# Studies	# ES	Mean z (SE)	95% CI	t Value (Significance)	Mean <i>r</i>	% Variance at Level 1	Level 2 Variance	% Variance at Level 2	Level 3 Variance	% Variance at Level 3
Prior to trim-and-fill analysis											
Aggression	23	92	.185 (.030)	.125, .245	6.153****	.183	9.8	.005***	22.8	.016***	67.4
Victimization	36	112	.307 (.020)	.267, .347	15.184***	.298	19.6	.008***	39.4	.009***	41.1
After trim-and-fill analysis ^a											
Victimization	51	131	.377 (.023)	.331, .422	16.288***	.360	13.9	.008***	25.2	.019***	60.9

Note. # studies = number of studies; # ES = number of effect sizes; mean z = mean effect size (Fisher's z); SE = standard error; CI = confidence interval; mean *r* = mean effect size expressed as a Pearson's correlation; Level 1 variance = sampling variance of observed effect sizes; Level 2 variance = variance between effect sizes extracted from the same study; Level 3 variance = variance between studies.

^aAccording to the results of the trim-and-fill analysis, no effect sizes were missing in the aggression data set, and thus a reestimation of the overall effect for the RS-aggression association was not performed.

****p* < .001.

Results

Literature Search and Study Characteristics

The flow chart of the study selection process is presented in Online Appendix A. We identified 1,246 studies in our electronic search of the five databases, following which 52 studies were included in the review. The study quality assessment showed that all the included studies were fair to good in quality. With regard to the continent in which primary studies were performed, 29 (55.8%) studies were conducted in North America, 4 (7.7%) in Europe, 16 (30.8%) in Australia, and 3 (5.8%) in Asia. Forty-seven (90.4%) studies used community samples, whereas five (9.6%) studies used clinical samples. The mean/median age ranged from 10.7 to 43.2 years old for participants in the included studies. All the studies included in this review are listed in Online Appendix B.

Overall Effect Sizes and Publication Bias

Table 1 displays an overview of the overall association between RS and aggression and between RS and victimization. Both overall associations were significant. The effect size magnitude was small for the RS-aggression association ($r = .183$) and only slightly below moderate for the RS-victimization association ($r = .298$) according to Cohen's (1992) criteria for interpreting the magnitude of effect sizes. The results of the likelihood-ratio tests revealed significant variance in the effect sizes extracted from the same study (i.e., significant Level 2 variance) and significant variance in the effect sizes extracted from different studies (i.e., significant Level 3 variance) for both the aggression and victimization meta-analyses. This implied heterogeneity in effect sizes, which allowed for conducting moderator analyses in order to determine the variables (such as study characteristics) that can explain Level 2 and Level 3 variance. Thus, we conducted moderator analyses in both the RS-aggression and RS-victimization meta-analyses.

The funnel plot shows that bias may have been present in the RS-victimization meta-analysis, as indicated by an asymmetrical distribution of effect sizes. However, it was not very likely that specifically publication bias was present in our data, as the trim-and-fill algorithm imputed effect sizes to the right of the

estimated overall effect. In case of publication bias, the trim-and-fill algorithm would have filled effect sizes to the left of the overall effect, as in particular small and nonsignificant effects are underrepresented in published literature. In other words, our estimated overall effect may have been an underestimation of the true overall effect. Therefore, a "corrected" overall effect size was estimated for the overall RS-victimization association. As shown in Table 1, the adjusted overall effect size was slightly higher ($r = .360$; $\Delta r = .062$) and still significant. For the association between RS and aggression, no effect sizes were missing according to the trim-and-fill analysis, and thus a reestimation of the overall effect was not performed. Figures 1 and 2 show the funnel plot for the RS-aggression and RS-victimization meta-analyses, respectively.

Moderator Analyses

The results of the moderator analyses performed in the RS-aggression meta-analysis are presented in Table 2. We found a significant moderating effect of type of RS on the association between RS and aggression, as shown by the results of the omnibus test, $F(1, 40) = 16.738$, $p < .001$. This suggests that the association between RS and aggression is stronger for angry RS (mean $r = .207$) than for anxious RS (mean $r = .121$). We also found a significant moderating effect of aggression type, as shown by the results of the omnibus test, $F(1, 23) = 11.326$, $p < .01$. This suggests that the association between RS and aggression is stronger for reactive aggression (mean $r = .234$) than for proactive aggression (mean $r = .094$). No significant moderating effects were found for the other variables that were tested as moderators.

The results of the moderator analyses performed in the RS-victimization meta-analysis are presented in Table 3. We found a significant moderating effect of the continent in which the primary study was performed, as shown by the results of the omnibus test, $F(3, 107) = 2.770$, $p < .05$. The mean effect reported in North American studies (mean $r = .261$) was significantly lower than the mean effect reported in Australian studies (mean $r = .366$), indicating that the RS-victimization association differs between countries. No significant moderating effects were found for other moderating variables.

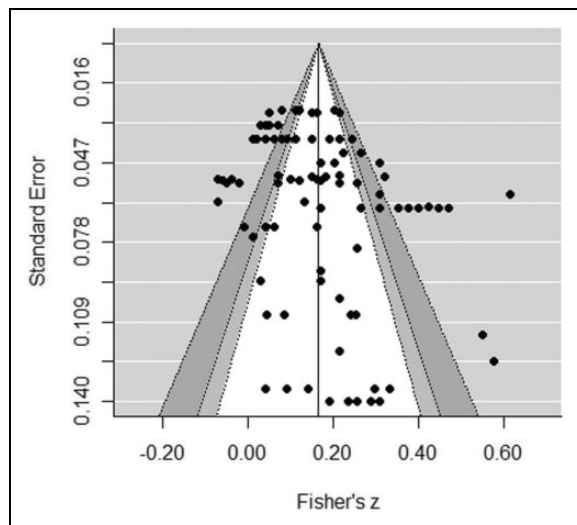


Figure 1. Trim-and-fill plot for the association between rejection sensitivity and aggression. A contour-enhanced funnel plot is presented for the RS-aggression associations, with the standard error on the y-axis and Fisher's z on the x-axis. The black dots denote the observed effect sizes. The solid vertical line represents the overall mean effect. From inside to outside, the dashed lines limit the 90%, 95%, and 99% pseudo confidence interval regions.

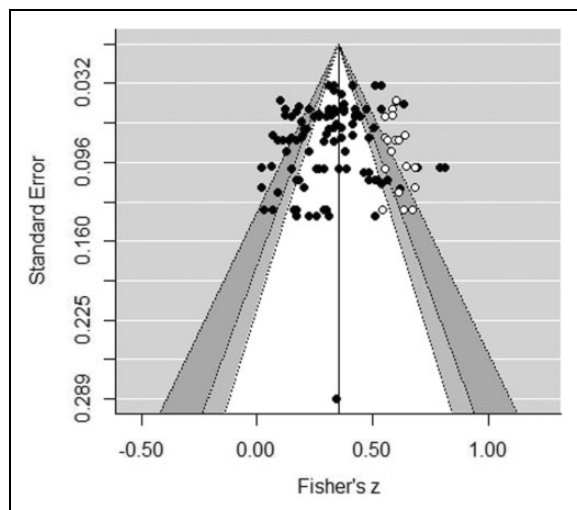


Figure 2. Trim-and-fill plot for the association between rejection sensitivity and victimization. A contour-enhanced funnel plot is presented for the RS-victimization association, with the standard error on the y-axis and Fisher's z on the x-axis. The black dots denote the observed effect sizes, whereas the white dots denote the filled effect sizes. The solid vertical line represents the overall mean effect. From inside to outside, the dashed lines limit the 90%, 95%, and 99% pseudo confidence interval regions.

Longitudinal Associations

As longitudinal effect sizes could be extracted in some studies included in this review (see Method section), we additionally estimated an overall effect for both the RS-aggression association and the RS-victimization association using only the

extracted longitudinal effect sizes. Six longitudinal primary studies examining the association between RS and aggression and between RS and victimization were used for these analyses. The results showed a significant overall RS-aggression association ($r = .132$) and a significant overall RS-victimization association ($r = .233$; see Table 4). These effects were considered small in size according to Cohen's (1992) criteria. When considering the potential bias in these results, the trim-and-fill analyses showed that the "corrected" overall effect size became smaller ($r = .044$; $\Delta r = .088$) for the RS-aggression association and slightly larger ($r = .300$; $\Delta r = .067$) for the RS-victimization association. No significant moderating effect was found for length of follow-up on either of these two associations.

Discussion

This quantitative review is a first attempt to systematically summarize the results of published studies that investigated the association between (a) RS and aggression and (b) RS and victimization. Fifty-two studies with a total sample size of 66,405 participants were included in the review and produced 203 effect sizes in total. Although primary studies are inconsistent in their reporting on the RS-aggression association (results range from $r = -.07$ to $.59$; Croft & Zimmer-Gembeck, 2014; Kahya, 2018) and the RS-victimization association (results range from $r = .02$ to $.67$; Webb et al., 2015), the results of our three-level meta-analyses show that RS is significantly associated with both aggression and victimization.

Overall Associations and Bias Assessment

The results of our meta-analyses showed a small but significant association between RS and aggression, which is consistent with the conclusions of Romero-Canyas, Downey, Berenson, Ayduk, and Kang (2010), who performed a review that was only qualitative in nature. This finding provides support for the DMS theory, suggesting that heightened RS is associated with more aggressive behavior. We did not find evident publication bias on the association between RS and aggression.

As expected, we found a significant association between RS and victimization. After adjusting for publication bias, the association between RS and victimization was still significant and even became somewhat larger. This finding adds new evidence to the victimization literature. Previous research has found that some personality profiles are more vulnerable to victimization than others. For example, it has been found that victims tend to be more anxious and neurotic, but less agreeable, conscientious, extravert (Glasø, Matthiesen, Nielsen, & Einarsen, 2007), and sad (Camodeca & Goossens, 2005), and to have lower self-esteem (Pollastri, Cardemil, & O'Donnell, 2010). The findings of the current review identified RS as another personality characteristic that predisposes individuals to victimization. Individuals with a high level of RS tend to expect rejection, and these rejection expectancies lead them to behave in ways that elicit rejection from others (Downey,

Table 2. Results of the Moderator Analyses in the RS-Aggression Meta-Analysis (Bivariate Models).

Moderator Variables	# Studies	# ES	Intercept/Mean z (95% CI)	β_1 (95% CI)	Mean <i>r</i>	<i>F</i> (<i>df</i> 1, <i>df</i> 2) ^a	<i>p</i> ^b	Level 2 Variance	Level 3 Variance
Sample descriptors									
Percentage of females	23	92	.186 (.125, .247)***	-.000 (-.001, .001)	—	<i>F</i> (1, 90) = 0.079	.780	.005***	.017***
Mean age of the sample	23	92	.169 (.107, .230)***	.008 (-.002, .018)	—	<i>F</i> (1, 90) = 2.693	.104	.005***	.015***
Type of sample						<i>F</i> (1, 90) = 2.958	.089	.005***	.014***
Community sample (RC)	21	90	.172 (.113, .232)***		.170				
Clinical sample	2	2	.386 (.146, .626)**	.214 (-.033, .461)	.368				
Participants' age (categorized)						<i>F</i> (1, 90) = 3.758	.056	.005***	.013***
18 years or older (RC)	9	20	.258 (.164, .353)***		.252				
Younger than 18 years	14	72	.144 (.074, .214)***	-.115 (-.232, .003)	.143				
Research design descriptors									
Measurement of RS									
RSQ (RC)	20	87	.169 (.107, .231)***		.167	<i>F</i> (2, 89) = 2.313	.105	.005***	.015***
IPSM	1	1	.549 (.188, .911)**	.380 (.013, .747)*	.500				
Other	2	4	.250 (.034, .466)*	.081 (-.144, .305)	.245				
Type of RS									
Anxious RS (RC)	7	21	.122 (.038, .207)**		.121	<i>F</i> (1, 40) = 16.738	.000***	.003***	.010***
Angry RS	7	21	.210 (.125, .294)***	.088 (.044, .131)***	.207				
Type of aggression									
Proactive aggression (RC)	3	6	.094 (-.014, .202)		.094	<i>F</i> (1, 23) = 11.326	.003**	.003***	.009***
Reactive aggression	6	19	.234 (.145, .323)***	.140 (.054, .226)**	.230				
Type of EF									
EF at baseline	22	69	.192 (.132, .253)***		.190	<i>F</i> (1, 90) = 2.420	.123	.005***	.016***
EF at follow-up	3	23	.134 (.046, .223)**	-.058 (-.132, .016)	.133				
Other descriptors									
Publication year	23	92	.183 (.120, .245)***	.005 (-.008, .019)	—	<i>F</i> (1, 90) = 0.583	.447	.005***	.017***
Continent						<i>F</i> (3, 88) = 0.738	.532	.005***	.017***
Australia (RC)	7	37	.167 (.060, .274)**		.165				
North America	11	33	.215 (.122, .307)***	.048 (-.094, .189)	.212				
Europe	3	19	.099 (-.062, .259)	-.068 (-.261, .125)	.099				
Asia	2	3	.267 (.049, .486)	.100 (-.143, .344)	.261				

Note. # studies = number of studies; # ES = number of effect sizes; mean z = mean effect size (Fisher's z); CI = confidence interval; β_1 = estimated regression coefficient; *r* = mean effect size expressed as a Pearson's correlation; *df* = degrees of freedom; Level 2 variance = variance between effect sizes extracted from the same study; Level 3 variance = variance between studies; RS = rejection sensitivity; RSQ = Rejection Sensitivity Questionnaire and versions thereof; IPSM = interpersonal sensitivity measure; ES = effect size.

^aOmnibus test of all regression coefficients in the model. ^b*p* value of the omnibus test.

p* < .05. *p* < .01. ****p* < .001.

Freitas, Michaelis, & Khouri, 1998). In turn, individuals who are rejected by peers are more susceptible to victimization (Dill, Vernberg, Fonagy, Twemlow, & Gamm, 2004).

Moderating Variables

With regard to moderating variables, we found a significant moderating effect of RS type on the association between RS and aggression. Specifically, this association was stronger for angry RS than for anxious RS. This result confirms the assumption of Downey et al. (1997), indicating that anxious and angry expectations of social rejection promote different behavioral responses to the perceived rejection in a rejection-sensitive person. Our finding is consistent with previous research, suggesting that anxious expectations of rejection are uniquely predictive of increased social anxiety and withdrawal, whereas

angry expectations of RS are uniquely predictive of increased aggression (London, Downey, Bonica, & Paltin, 2007).

We found a moderating effect of aggression type on the association between RS and aggression. In particular, our results indicated that the overall association between RS and aggression was larger for reactive aggression than for proactive aggression. This finding is in line with previous research showing that reactive-aggressive children, but not proactive-aggressive children, are more likely to demonstrate hostile biases in their attributions of peers' intentions in provocative situations and more likely to be motivated to undertake aggressive acts (Crick & Dodge, 1996). This finding provides evidence for the DMS theory (Romero-Canyas et al., 2010) in the sense that it suggests that RS serves the individual by triggering defensive responses when (perceived) social threats are present.

Table 3. Results of the Moderator Analyses in the RS-Victimization Meta-Analysis (Bivariate Models).

Moderator Variables	# Studies	# ES	Intercept/Mean z (95% CI)	β_1 (95% CI)	Mean <i>r</i>	<i>F</i> (<i>df</i> 1, <i>df</i> 2) ^a	<i>p</i> ^b	Level 2 Variance	Level 3 Variance
Sample descriptors									
Percentage of females	36	112	.307 (.267, .347) ^{***}	.000 (−.001, .001)	—	<i>F</i> (1, 110) = 0.080	.778	.009 ^{***}	.009 ^{***}
Mean age of the sample	36	112	.308 (.268, .348) ^{***}	−.002 (−.007, .003)	—	<i>F</i> (1, 110) = 0.721	.398	.008 ^{***}	.009 ^{***}
Type of sample						<i>F</i> (1, 101) = 0.039	.843	.009 ^{***}	.009 ^{***}
Community sample (RC)	32	101	.305 (.262, .347) ^{***}		.296				
Clinical sample	5	11	.323 (.201, .446) ^{***}	.018 (−.063, .099)	.312				
Participants' age (categorized)						<i>F</i> (1, 110) = 0.198	.657	.008 ^{***}	.009 ^{***}
18 years or older (RC)	20	58	.298 (.244, .353) ^{***}		.289				
Younger than 18 years	16	54	.317 (.256, .377) ^{***}	.021 (−.064, .105)	.307				
Research design descriptors									
Measurement of RS						<i>F</i> (2, 109) = 2.510	.086	.008 ^{***}	.007 ^{***}
RSQ (RC)	29	94	.327 (.285, .368) ^{***}		.316				
IPSM	4	13	.233 (.116, .350) ^{***}	−.094 (−.218, .030)	.229				
Other	3	5	.196 (.058, .334) ^{**}	−.131 (−.274, .013)	.194				
Type of RS						<i>F</i> (1, 8) = 0.841	.386	.000	.010
Anxious RS (RC)	2	5	.278 (.091, .465) ^{**}		.271				
Angry RS	2	5	.232 (.045, .419) [*]	−.046 (−.161, .070)	.228				
Type of EF						<i>F</i> (1, 110) = 1.590	.210	.009 ^{***}	.008 ^{***}
EF at baseline	34	96	.313 (.272, .353) ^{***}		.303				
EF at follow-up	4	16	.242 (.134, .351) ^{***}	−.070 (.181, .040)	.237				
Other descriptors									
Publication year	36	112	.304 (.264, .343) ^{***}	.006 (−.002, .013)	—	<i>F</i> (1, 110) = 2.434	.122	.008 ^{***}	.008 ^{**}
Continent						<i>F</i> (3, 108) = 2.789	.044	.009 ^{***}	.006 ^{***}
Australia (RC)	11	36	.366 (.303, .429) ^{***}		.350				
North America	22	62	.261 (.212, .309) ^{***}	−.105 (−.184, −.026) ^{**}	.255				
Europe	1	3	.402 (.149, .654) ^{**}	.036 (−.224, .296)	.382				
Asia	2	11	.363 (.236, .490) ^{***}	−.003 (−.145, .138)	.348				

Note. # studies = number of studies; # ES = number of effect sizes; mean z = mean effect size (Fisher's z); CI = confidence interval; β_1 = estimated regression coefficient; *r* = mean effect size expressed as a Pearson's correlation; *df* = degrees of freedom; Level 2 variance = variance between effect sizes extracted from the same study; Level 3 variance = variance between studies; RS = rejection sensitivity; RSQ = Rejection Sensitivity Questionnaire and versions thereof; IPSM = interpersonal sensitivity measure; ES = effect size.

^aOmnibus test of all regression coefficients in the model. ^b*p* value of the omnibus test.

p* < .05. *p* < .01. ****p* < .001.

We also found some evidence indicating that the association between RS and victimization differs by the continent in which primary studies were performed. Specifically, we found a weaker RS-victimization association in North America relative to Australia, which may imply that cultural aspects may affect the strength of this association. On the other hand, we found a significant RS-victimization association in each of the continents that were examined, indicating that the RS-victimization association is at least to some extent robust. However, there is a lack of research examining associations between RS and aggression/victimization between countries and in different cultural settings, so no firm conclusions can be drawn yet on the moderating effect of continent or cultural background. Therefore, future research studying cultural differences in RS and victimization in different countries is needed.

With respect to other variables that were tested as moderators, such as gender, age, sample type, measurement of RS, type of effect size, and publication year, the analyses yielded

no significant effects. Given the results, we argue that the strength of the RS-aggression and RS-victimization associations is constant across males and females and across people of different ages. However, this interpretation is made cautiously as the small number of studies on which the analyses were performed may have limited the statistical power that was required to detect true moderating effects. More primary research is needed to properly test variables as potential moderators.

Longitudinal Associations

In our meta-analysis of longitudinal associations only, we found a significant overall effect for both the RS-aggression and RS-victimization associations. After adjusting for potential bias, the association between RS and victimization was still significant, suggesting there may be a true association between RS and victimization. However, the association between RS

Table 4. Results for the Meta-Analyses of Longitudinal RS-Aggression and RS-Victimization Associations.

	# Studies	# ES	Mean z (SE)	95% CI	t Value (Significance)	Mean r	% Variance at Level 1	Level 2 Variance	% Variance at Level 2	Level 3 Variance	% Variance at Level 3
Overall associations (Prior to trim-and-fill analyses)											
Aggression	3	23	.133 (.046)	.038, .228	2.910**	.132	30.4	.002*	22.6	.005*	47.0
Victimization	4	16	.237 (.062)	.105, .368	3.839**	.233	37.5	.000	5.3	.013	62.5
Overall associations (After trim-and-fill analyses)											
Aggression	5	29	.044 (.068)	-.095, .183	0.648	.044	14.9	.002*	8.4	.019***	76.7
Victimization	5	17	.274 (.064)	.139, .409	4.272***	.300	32.5	.000	4.5e-08	.018	67.5
	# Studies	# ES	Intercept/Mean z (95% CI)	β_1 (95% CI)	$F(df1, df2)^a$	p^b	Level 2 Variance	Level 3 Variance			
Results of testing follow-up length as a potential moderator											
Aggression	3	23	.151 (-.000, .301)	-.002 (-.008, .005)	$F(1, 21) = 0.249$.623	.002*	.012*			
Victimization	4	16	.268 (.146, .389)***	-.002 (-.006, .001)	$F(1, 14) = 2.114$.168	.000	.009			

Note. # studies = number of studies; # ES = number of effect sizes; mean z = mean effect size (Fisher's z); SE = standard error; CI = confidence interval; mean r = mean effect size expressed as a Pearson's correlation; Level 1 variance = sampling variance of observed effect sizes; Level 2 variance = variance between effect sizes extracted from the same study; Level 3 variance = variance between studies.

^aOmnibus test of all regression coefficients in the model. ^bp value of the omnibus test.

* $p < .05$. ** $p < .01$. *** $p < .001$.

and aggression became nonsignificant after such adjustment. Moreover, no moderating effect was found for follow-up length on the RS-aggression and RS-victimization associations. Yet given the small number of longitudinal studies included in this meta-analysis (only three on RS-aggression and four on RS-victimization), this finding might not reflect the true longitudinal associations of RS and aggression and victimization. More longitudinal studies are certainly needed before we could provide more accurate estimates.

Limitations

Several limitations should be noted when interpreting the results of this study. First, as aggression and victimization were assessed using a variety of measurements, it was difficult to group these different types of measurements to examine their potential moderating effect. Second, the generalizability of the findings of this study is limited as the included primary studies were primarily conducted in the United States and Australia. To improve the generalizability of the findings, research conducted in other countries and cultures is essential. Third, as people from some groups (e.g., low socioeconomic status, ethnic minority, and disability) have a greater possibility of being rejected by others in life, it is likely that these groups of people are at increased risk of victimization. However, research investigating the RS-victimization association among these groups of people is scarce, and future research efforts are warranted in this area.

Implications for Research, Practice, and Policy

The findings of the present study provide valuable implications on aggression and victimization prevention and intervention in research, practice, and policy terms. In terms of research, this study extends on the previous review of the association

between RS and aggression by providing systematic and quantitative synthesis of available evidence. This study provides evidence for further research on the role of RS in aggression and victimization. As our study found that RS was significantly related to both aggression and victimization, future studies could examine the moderating and mediating factors between the associations, such as supportive relationships and self-regulatory skills (Romero-Canyas et al., 2010), on the RS-aggression and RS-victimization associations in attempts to break the cycle. Different forms of RS, such as personal RS (Downey & Feldman, 1996), gender-based RS (London, Downey, Romero-Canyas, Rattan, & Tyson, 2012), and appearance-based RS (Park, 2007), may influence the strength of the RS-aggression and RS-victimization associations. In addition, further research on the association between RS and aggression and between RS and victimization is warranted among marginalized and oppressed groups (e.g., ethnic minorities, those with special health needs). These groups are vulnerable to be discriminated or neglected by the social main stream and thus may have experienced more rejection throughout their life. Exploring their experience of being rejected and conducting comparative research on their RS with those of ethnic majorities or general population would offer new insights into our understanding of RS.

This study shows that individuals with high RS are more likely to behave aggressively or be victimized, and it is reasonable to expect that intervention programs that enhance individual's awareness of RS and provide skills to reduce RS may produce more enduring effects. Besides, individuals with high angry RS are more likely to behave aggressively compared to individuals with high anxious RS. Intervention efforts tailored for the group of individuals with high angry RS may probably be more effective. The link between high levels of RS and reactive aggression rather than proactive aggression may also

warrant intervention efforts that are focused on the group using reactive aggression could better meet needs of different groups.

Conclusions

This review quantitatively synthesized the association between RS and aggression and between RS and victimization using advanced three-level meta-analytic models. Our findings revealed that RS is significantly associated with both aggression and victimization, irrespective of gender and age. The association between RS and aggression seems larger for individuals engaging in reactive aggression compared to individuals engaging in proactive aggression. Also, the association between RS and aggression was stronger for individuals with angry RS than for those with anxious RS.

Summary of Critical Findings

- A total of 52 studies with 66,405 participants were included. North America studies (55.8%) and studies using a community sample (90.4%) were overrepresented.
- Rejection sensitivity was significantly associated with aggression ($r = .183$) and victimization ($r = .298$), irrespective of gender and age.
- The association between rejection sensitivity and aggression was stronger for participants showing reactive aggression than for those showing proactive aggression.
- The association between rejection sensitivity and aggression was larger for participants with angry rejection sensitivity than for those with anxious rejection sensitivity.
- When only analyzing longitudinal associations, small but still significant associations were found between rejection sensitivity and aggression ($r = .132$), and victimization ($r = .233$).

Summary of Implications for Practice, Research, and Policy

- Rejection sensitivity may be an important target in interventions aimed at preventing or reducing aggression and/or victimization.
- Interventions focusing on individuals showing reactive aggression may be more effective.
- For interventions targeting angry rejection sensitivity, the care needs of different groups of people need to be taken into account.
- Targeting rejection sensitivity in interventions is equally important for females and males across different ages.
- Future studies exploring variables that may buffer or mediate the RS-aggression and RS-victimization associations are recommended.
- Future research using a multiphase longitudinal design with sufficient follow-up assessments is imperative.



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Supplemental Material

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