

# How Much Does Love Really Hurt? A Meta-Analysis of the Association Between Romantic Relationship Quality, Breakups and Mental Health Outcomes in Adolescents and Young Adults

Anca Mirsu-Paun<sup>1</sup> and Jason A. Oliver<sup>2</sup>

<sup>1</sup>*Carol Davila University of Medicine and Pharmacy, Bucharest, Romania*

<sup>2</sup>*Duke University School of Medicine, Durham, North Carolina, USA*

A meta-analysis of 20 manuscripts reporting on 21 unique studies ( $N = 19,623$ ) was conducted to investigate the magnitude of the association between adolescent romantic relationship quality (RRQ), romantic relationship breakups (RRB) and mental health outcomes (i.e., depression, suicide ideation, deliberate self-harm, and suicide attempt). Potential moderators of these relationships were also explored. The sample included U.S. and non-U.S. adolescents (13–17 years old), and young adults (18–29 years old). Results indicated statistically significant but modest relationships between both RRQ and RRB and mental health, with the first showing a stronger association. There was some evidence suggesting this relationship may be stronger for women, but no evidence it differed as a function of nationality or age. Additional research is needed to address the distinction between clinical and non-clinical populations on specific outcomes and to further explore the role of mental health outcomes as related to romantic relationship quality and breakups. Implications for practice include the need for (a) services to individuals emotionally affected by romantic relationships, (b) relationship quality psycho-education, and (c) screenings of individuals at risk due to low romantic relationship quality or recent relationship breakup.

■ **Keywords:** romantic relationships, breakups, depression, self-harm, meta-analysis

Adolescent and young adult romantic relationships have significant implications for mental health (Collins, 2003). Yet, their importance has been evaluated on a continuum from the most common cause of strong positive and strong negative emotions, to transitory and irrelevant from a clinical perspective (Furman, 2002; Furman & Shaffer, 2003). This variety of opinions is unsurprising and may stem from the limited focus on adolescent and young adult romantic relationships, with most studies being focused on adult marital dissolution (Mastekaasa, 1997; Tschann, Johnston, & Wallerstein, 1989; Williams & Siegel, 1989).

*Romantic relationship quality* (RRQ) is defined as ‘the degree to which the relationship provides generally beneficent experiences [...] in which partners manifest intimacy, affection, and nurturance’ (Collins, 2003, pp. 10–11). RRQ has been referred to as a ‘relationship well-

being barometer’ with regard to an individual’s subjective experience of how satisfied they are in their relationship (Karney & Bradbury, 1995). Studies examining the associations between RRQ and mental health outcomes among early- and late-adolescent groups have rendered mixed results. On the one side, as one would expect, certain stressful features or experiences that occur within a romantic relationship may be associated with depression and/or suicide ideation or behaviours (Furman & Shaffer, 2003). For example, increased depression, especially among adolescent girls, was associated with: (a)

---

ADDRESS FOR CORRESPONDENCE: Anca Mirsu-Paun, Carol Davila University of Medicine and Pharmacy, 020021, Strada Dionisie Lupu 37, Bucharest 030167, Romania Bucharest, Romania. Email: [anca.mirsupaun@gmail.com](mailto:anca.mirsupaun@gmail.com)

the perception of inequality of emotional investment in a romantic relationship and/or in the relationship decision making (Galliher, Rostosky, Welsh, & Kawaguchi, 1999; La Greca & Harrison, 2005), (b) lower levels of intimacy in their romantic relationships (Williams, Connolly, & Segal, 2001), and (c) lower emotional support and higher relationship-related stress (Daley & Hammen, 2002). Other romantic relationship quality indicators associated with depression include conflict behaviours (e.g., verbal attacks) among young adult couples (Marchand-Reilly, 2009) and perceived maltreatment or hassles by partners (Gallaty & Zimmer-Gembeck, 2008). Thus, the association between involvement in romantic relationships and depression seems to be attributable to the characteristics of the relationship and/or of the partner rather than to romantic involvement per se (Collins, 2003). At the same time, other research studies proposed that romantic involvement in adolescence relates to increased risk for depression (Davila, 2008; Davila, Steinberg, Kachadourian, Cobb, & Fincham, 2004; Gotlib, Lewinsohn, & Seeley, 1998; Welsh, Grello, & Harper, 2003) even after controlling for initial depression levels (Joyner & Udry, 2000).

*Romantic relationships breakups* (RRB) are commonplace among adolescents and young adults, with 23% of adolescents having experienced a breakup in the past 6 months (Connolly & McIsaac, 2009) and 98% of adolescents having experienced a breakup at any time in the past (Morris & Reiber, 2011). Despite the view that adolescents and young adults are just learning about romantic relationships and that RRBs would thus be expected to take less of an emotional toll given their age-related normalcy (Brown, 2006), RRBs might in fact be associated with significant emotional difficulties, such as increased likelihood of experiencing the onset of a first major depressive episode (even after controlling for other life stressors; Monroe, Rhode, Seeley, & Lewinsohn, 1999) and medically serious suicide attempts among young adults (Donald, Dower, Correa-Velez, & Jones, 2005).

Age-related (i.e., developmentally influenced) differences regarding the ways relationships are defined might shape individuals' experiences of romantic relationships and breakups. Some have argued that the emotional impact of a RRB might be even stronger at younger versus older ages (Chen et al., 2009). However, the research evidence is scarce regarding the role of age as a moderator of the association between adolescent romance and depression or suicide ideation.

The existing literature also raises the question of gender differences regarding the association between romantic relationships and RRBs and depression. Females, as compared with males, might experience increased symptoms of depression following a RRB (Mearns, 1991; Monroe et al., 1999; Natsuaki et al., 2009). Yet, other findings indicate that young males' depressive symptoms were related more to breakups, while young females' depressive symp-

toms were related more to other elements of romantic relationships (Chen et al., 2009, p. 1287). Still, no significant differences were found between male and female college students regarding their emotional and physiological reactions to a RRB (Morris & Reiber, 2011).

In sum, there seems to be an agreement that an association between RRQ and/or RRB with mental health outcomes exists among adolescents and young adults. However, the magnitude of this association is still uncertain; the relative weight of RRB compared to RRQ has not been established, and moderators of this relationship such as age and gender are not well understood. One of the most comprehensive up-to-date articles on this topic — a literature review by Davila (2008) — only provided a theoretical framework for explaining the association between romantic breakups and depression and/or suicide ideation. We were not able to locate any meta-analyses on the proposed topic.

The present meta-analysis was conducted to examine the overall strength of the association between RRQ and RRB on one side, and mental health outcomes on the other side. We use 'mental health outcomes' as an umbrella term that includes depression, suicide ideation, deliberate self-harm, and suicide attempts. While recognising these are discrete concepts, they are undeniably interrelated and often treated as relatively synonymous within the existing literature on this topic. In addition, we examined whether the strength of this association varied as a function of gender and age. This meta-analysis included only adolescents (13–17 years old) and young adults (18–29 years old) in an attempt to fill the existing literature gap regarding adolescent and young adult romantic relationships as associated with mental health outcomes.

The specific research questions addressed by the present meta-analysis were:

1. What is the overall strength of the association between measures of mental health outcomes (i.e., depression, suicide ideation, deliberate self-harm, and suicide attempts) and (a) the experience of romantic breakup(s); and (b) the quality of one's romantic relationship among adolescents and young adults?
2. Do gender, age, nationality, or the nature of the assessment measures employed moderate the strength of this association, and if yes, what is their weighted significance?

## Method

### Study Selection and Coding

An extensive literature search was conducted in order to identify studies that met the following inclusion criteria: (1) a sample of participants who were either adolescents (13–17 years old) or young adults (18–29 years old); (2) assessments of depression, suicide ideation, suicide

attempts, or deliberate self-harm, as well as a measure of romantic breakups or romantic relationship quality; (3) written in English; and (4) examined normal, developmental romantic relationships (as opposed to specifically targeting negative or abusive relationships). Measures of relationship quality were broadly defined for the purpose of this study to encompass both cognitive (e.g., security of attachment, satisfaction) and behavioural (e.g., conflict resolution) dimensions. Studies were excluded if focused on clinical samples of adolescents or young adults with a diagnosed mental health disorder and a prior history of receiving psychiatric services.

As a first step, literature searches for articles published in peer-reviewed journals and for unpublished dissertations, starting at January 1990, were conducted. An initial search was conducted in PsycINFO, Academic Search Premier, Social Work Abstracts, Web of Science, and Sociological Abstracts. The initial search terms were: (teenag\* or adolesc\* or youth or young) and (suicid\* or 'suicide ideation' or 'self-harm' or 'self harm' or depress\*) and (romantic or 'break-up' or breakup or reject\*) not (bipolar or 'mental illness' or crisis or homeless or jail or 'personality disorder' or alcohol or substance or borderline or brain or medication or schizophrenia or bully\*). In a second step, search terms were slightly modified to: 'relationship termination' or breakup or 'relationship dissolution' and depression or 'major depression' or suicide or 'attempted suicide' or 'suicide ideation' or 'self-destructive behaviors' or 'affective disorders' or 'major depression' or 'self-mutilation' or 'self-destructive behaviors' and the age groups selected were adolescence (13–17 years old) and young adulthood (18–29 years old). The search of sociological abstracts also excluded articles with 'relationship violence' in the title or abstract due to the large number of such articles obtained through an initial search. Results from all searches were combined, duplicates were removed, and titles/abstracts were scanned for irrelevant studies. The reference sections of eligible articles, as well as a recent qualitative review (Davila, 2008), were also examined to identify additional studies.

Zero-order correlation coefficients were the effect size of primary interest and were extracted from all articles deemed eligible for inclusion. Effect sizes presented in other metrics (e.g., Cohen's  $d$ , odds ratios; Cohen, 1992) were converted using standard formulas. When only adjusted coefficients were available (e.g., standardised multiple regression coefficients, adjusted odds ratios), zero-order effects were imputed using the formula outlined in Peterson and Brown (2005). If the information provided in the article or dissertation was insufficient, the authors were contacted via email to obtain the necessary information.

In addition to effect size, studies were coded for study location, mean age of participants, percentage of participants who were female, the type of relationship measure (quality or breakup), the type and name of clinical

measure (depression or self-harm), and whether the relationship measure was designed to measure positive (e.g., satisfaction) or negative (e.g., maltreatment) aspects of the relationship. If multiple measures from a single study were relevant, all were retained and the mean relationship was used in analyses.

An overview of the assessments included in the articles used for the meta-analysis is presented in Tables 1 and 2.

### Data Analysis

Analyses were conducted using Comprehensive Meta-Analysis Version 2.0 (Biostat, Inc.; Englewood, NJ). The overall summary parameters were computed using a random effects model, allowing the true effect size to vary across studies and providing a more conservative test of hypotheses. Heterogeneity of effect sizes was examined using Cochran's  $Q$  statistic, which allows for formal significance testing of the presence of heterogeneity using a  $\chi^2$  test. Both  $T^2$  and  $I^2$  statistics were also computed to provide more readily interpretable information about heterogeneity.  $T^2$  reflects the between-studies variance (in the metric of the effect size) and  $I^2$  is the ratio of between-study heterogeneity to total observed variance, providing a standard convention on which to interpret findings (25% low heterogeneity, 50% moderate heterogeneity, and 75% high heterogeneity). Examination of subgroups utilised a mixed effects approach, with random effects within subgroups and fixed effects across subgroups;  $\tau^2$  estimates were computed separately for each subgroup. Meta-regression using a method of moments approach (DerSimonian & Laird, 1986) was used for continuous moderators (age, gender).

Multiple procedures were used to assess for publication bias. A fail-safe  $N$  (Rosenthal, 1979) was computed, which provides information about the number of studies with null effects needed to render the observed effect non-significant. A funnel plot, which examines the relationship between standard error and effect size, was also created. Asymmetry in this plot suggests the potential for publication bias. Egger's regression intercept (Egger, Davey Smith, Schneider, & Minder, 1997) was used to test for the presence of asymmetry. We also used the trim-and-fill method of Duval and Tweedie (2000), which imputes additional studies to compensate for those identified as responsible for the asymmetry, creating an adjusted effect size.

## Results

### Study Characteristics

See Figure 1 for a flowchart detailing the study selection process. A total of 20 manuscripts reporting on 21 unique studies ( $N = 19,623$ ) were identified in the search. The majority of studies ( $k = 14$ ) took place in the United States (U.S.), with no other location appearing more than twice, so analyses examining location were limited to a

**TABLE 1**

Information about the Studies Included in the Meta-Analysis

Study	Location	Relationship measure (# measures)	Relationship quality direction	Clinical measure (# measures)	N	Mean age	Percent female
Cramer (2004)	U.K.	Quality (1)	Positive	Depression (1)	100	19.76	0.76
Drew et al. (2004) – Study 1	U.S.A.	Break-up (1)	—	Depression (2)	257	21.00	0.68
Drew et al. (2004) – Study 2	U.S.A.	Break-up (1)	—	Depression (2)	172	19.70	0.69
Fleming et al. (2010) <sup>a</sup>	U.S.A.	Break-up (1)	—	Depression (1)	821–868	18.69	0.47
Fruth (2007)	U.S.A.	Quality (4)	Both	Depression (1)	421	16.52	0.57
Gallaty & Zimmer-Gembeck (2008)	Australia	Quality (1)	Negative	Depression (1)	67	18.82	0.7
Gibb et al. (2011)	New Zealand	Break-up (1)	—	Both (2)	1,265	25.33 <sup>d</sup>	0.50 <sup>d</sup>
Greene (2008)	U.S.A.	Quality (1)	Negative	Depression (1)	107	20.00	0.58
Ha et al. (2014)	Netherlands	Quality (2)	Positive	Depression (1)	160	15.48	0.50
La Greca & Harrison (2005)	U.S.A.	Quality (2)	Both	Depression (1)	230	16.50	0.57
Levesque et al. (2010)	Canada	Quality (1)	Negative	Self-Harm (2)	537	19.47	0.80
Marchand-Reilly (2009)	U.S.A.	Quality (2)	Both	Depression (1)	110	19.85	0.75
Moore et al. (2012) <sup>b</sup>	Multiple	Both (2)	Positive	Depression (1)	232–585	21.62	0.74
Puckett (2009)	U.S.A.	Quality (1)	Negative	Depression (1)	371	13.95	0.58
Remen & Chambless (2001)	U.S.A.	Quality (1)	Positive	Depression (2)	145	19.27	0.59
Reyes-Rodriguez et al. (2013) <sup>c</sup>	U.S.A.	Break-up (1)	—	Depression (1)	2,163	18.26	0.66
Rizzo et al. (2006)	U.S.A.	Quality (1)	Negative	Depression (1)	24	16.13	1.00
Segrin et al. (2003)	U.S.A.	Quality (1)	Positive	Depression (1)	202	21.12	0.50
Tolpin et al. (2006)	U.S.A.	Quality (1)	Positive	Depression (1)	119	—	0.65
Whitton & Kuryluk (2012)	U.S.A.	Quality (1)	Positive	Depression (1)	484	19.13	0.74
Wichström & Rossow (2002) <sup>c</sup>	Norway	Break-up (1)	—	Both (2)	11,236	16.00	0.50 <sup>d</sup>

Note: <sup>a</sup>Study included three time points so the mean of these values was used for analyses. <sup>b</sup>Results included a contrast of those who experienced a recent breakup vs. those who had not ( $n = 585$ ), as well as a measure of relationship quality among those currently in a relationship ( $n = 232$ ). <sup>c</sup>Effect size was presented as standardised beta and required conversion. <sup>d</sup>Value was inferred/imputed from available information.

contrast of U.S. and non-U.S. samples. A total of fourteen studies exclusively examined relationship quality, six exclusively reported on the effects of relationship dissolution and one study examined both. Only three studies included separate measures of suicidal ideation or deliberate self-harm. These were coded as distinct so they could be examined separately in analyses. The age of the samples varied substantially within the targeted range, as did the gender composition of the samples (47–100% female). One study did not report a mean age but did report a range of ages for participants, so the midpoint was used as the mean. One additional study included no information regarding the age of participants, so was excluded from analyses involving age. Two studies did not include information on the gender of participants. However, both were large-scale, population-based studies, so these values were imputed as 0.5 (50%).

### Meta-Analysis Results

An overall model combining both relationship quality and breakup yielded a highly significant association between relationship measures and depression/self-harm (see Table 3 and Figure 2). The strength of this relationship was modest ( $r = .229$ ), falling between the conventional standards for small and medium effect sizes [40]. However, there was substantial evidence of heterogeneity, suggesting the potential for this relationship to be affected by one or more moderators. Indeed, the strength of the association between depression/self-harm and relationship quality ( $r = .279$ ) was statistically different ( $p = .006$ ) from the strength of the association between depression/self-harm and relationship dissolution ( $r = .145$ ). In contrast, clinical measure (depression vs. self-harm) did not affect the estimated strength of these associations, nor did the nature of the relationship measure

**TABLE 2**

Assessments Included in the Meta-Analysis Papers

Paper	Depression measure	Relationship measure
Cramer (2004)	Depression Subscale of the revised Symptom Checklist (SCL-90-R; Derogatis, 1983)	Relationship Assessment Scale (Hendrick, 1988)
Drew (2004)	Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979) Depressive Experiences Questionnaire (Blatt et al., 1976) — Dependency subscale	Breakup (yes/no)
Fleming (2010)	Short form of the Hamilton Depression Inventory (Reynolds & Kobak, 1995)	Breakup (yes/no)
Fruth (2007)	Center for Epidemiological Studies' depressive symptoms scale (CES-D; 7-item)	The following items: Partner's Caring and Trust Heightened Emotionality Partner's Instrumental Support Partner's Exclusivity Conflict With Partner Partner Jealous
Gallaty (2008)	The Reynolds Adolescent Depression Scale (RADS, Reynolds, 1987)	Psychological Maltreatment of Women Inventory (Tolman, 1989) modified by Kasian and Painter (1992) — university students and adolescents version
Gibb (2011)	Composite International Diagnostic Interview (CIDI) — Depression Subscale (WHO, 1993) Participant report of suicidal ideation (contemplating, considering, or planning suicide) or suicide attempt during the prior 12 months (interview-based, Fergusson & Lynskey, 1995)	Separation in past 12 months (from cohabiting partner only)
Greene (2008)	The Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977); the 20-item version.	Adolescent to Adult Personality Functioning Assessment (Ad-APFA; Naughton, Oppenheim, & Hill, 1996)
La Greca (2005)	Revised Beck Depression Inventory (Beck & Steer, 1987)	Network of Relationship Inventory — Revised (Furman & Buhrmester, 1985) — Romantic Positive Qualities & Negative Qualities
Levesque (2010)	The Ottawa Self-Injury Inventory (OSI; Cloutier and Nixon, 2003) Thought Frequency Subscale Behavior Frequency Subscale Thought Frequency Subscale Behavior Frequency Subscale	The Revised Conflict Tactics Scales (CTS2; Straus et al., 1996) — Intimate Partner Violence subscale
Marchand-Reilly (2009)	The Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977)	The Conflict-Resolution Behavior Questionnaire (CRBQ; Rubenstein & Feldman, 1993) — Attacking Subscale and Compromising Subscale
Puckett (2009)	Children's Depression Inventory (CDI; Kovacs, 1985)	Network of Relationship Inventory (NRI; Furman & Buhrmester, 1985) — Partner subscale
Remen (2001)	Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979) Center for Epidemiological Studies' depressive symptoms scale (CES-D)	Relationship Assessment Scale (Hendrick, 1988)
Rizzo (2006)	Structured Clinical Interview for DSM-IV (KID-SCID; Hien et al., 1999; Matzner et al., 1997).	Chronic Strain Interview (Hammen et al., 1987) — Romantic
Tolpin (2006)	Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977; 20-item)	Dyadic Adjustment Scale (DAS; Spanier, 1976)
Wichstrom (2002)	Suicide Attempt (yes/no) Depressive Mood Inventory (Kandel & Davies, 1982)	'Past' relationship contrasted with never (yes/no)
Segrin (2003)	The Beck Depression Inventory (Beck, Rush, Shaw, & Emery, 1979)	Relationship Assessment Scale (RAS; Hendrick, 1988; Hendrick, Dicke, & Hendrick, 1998)
Whitton (2012)	Center for Epidemiological Studies — Depression Scale (CESD; Radloff, 1977)	Couples Satisfaction Index (CSI-16; Funk & Rogge, 2007)



**TABLE 3**  
Summary of Overall and Subgroup Meta-Analysis Results

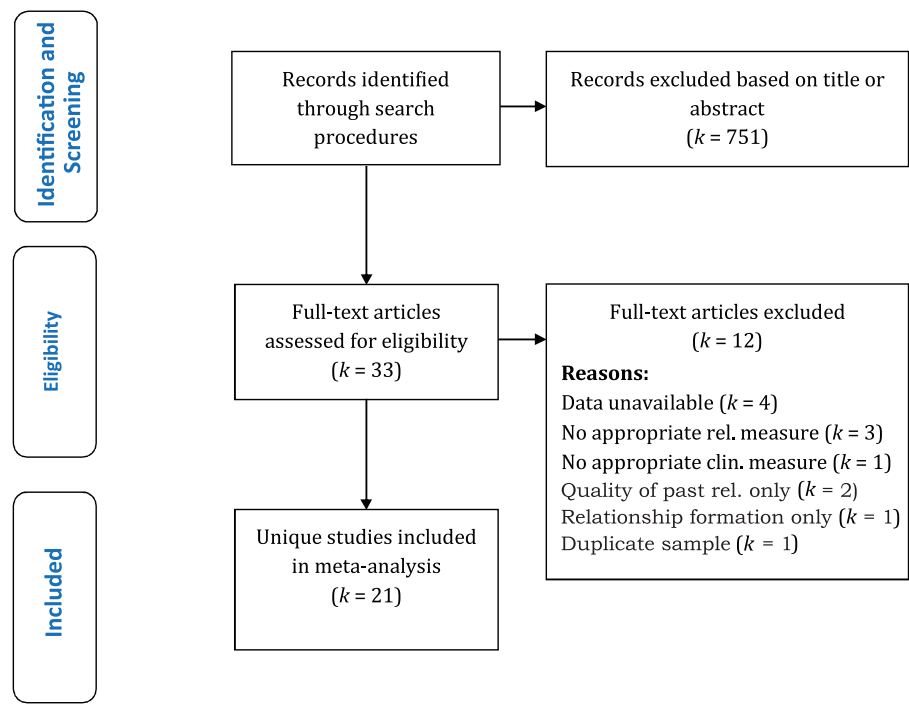
Comparison	<i>k</i>	<i>r</i>	LL	UL	<i>z</i>	<i>p</i>	<i>Q</i>	<i>p<sub>Q</sub></i>	<i>I</i> <sup>2</sup>	<i>T</i> <sup>2</sup>
Overall sample	21	.229	.179	.278	8.675	<.0001	105.52	<.0001	81.05	.010
Moderators										
Relationship measure							7.41	.006		
Break-up	7	.145	.071	.217	3.814	<.001	47.88	<.0001	87.47	.008
Quality	15	.279	.215	.341	8.195	<.0001	48.71	<.0001	71.26	.012
Clinical measure							0.01	.923		
Depression	20	.234	.177	.289	7.938	<.0001	159.03	<.0001	88.05	.013
Self-Harm	3	.220	.106	.328	3.748	<.001	12.69	.002	84.24	.009
Relationship quality direction							0.19	.666		
Negative	8	.283	.171	.387	4.834	<.0001	38.21	<.0001	81.68	.021
Positive	10	.253	.170	.332	5.832	<.0001	35.28	<.001	74.49	.014
Location							0.00	.986		
Non-U.S.A.	7	.228	.159	.296	6.292	<.0001	19.80	.003	69.69	.006
U.S.A.	14	.229	.156	.300	5.974	<.0001	84.69	<.0001	84.65	.016

Note: When multiple measures of different types were available, these were treated independently in the analysis to provide a more conservative estimate of differences. Accordingly, *k* is reflective of the number of measures and thus may exceed the total number of studies for moderator analyses. LL = lower limit of confidence interval; UL = upper limit of confidence interval.

(positively vs. negatively worded). Location of the study (U.S. vs. non-U.S.) also had no effect. Table 3 presents effect sizes and detailed reporting of the results of these analyses.

Meta-regression analyses did not provide any indication that age affected the strength of the association between relationship measures and depression/self-harm ( $B = -0.005$ , 95% CI [-0.026, 0.016],  $p = .647$ ). This effect remained non-significant when examining only

those studies reporting on relationship quality ( $p = .576$ ). There was weak evidence that the gender composition of the sample moderated the relationship between relationship measures and depression/self-harm ( $B = .160$ , 95% CI [-0.021, 0.340],  $p = .083$ ), with studies containing a larger proportion of women participants generally reporting a stronger association. This effect remained a trend when including only reports of relationship quality ( $p = .080$ ).



**FIGURE 1**  
Flow diagram of study selection.

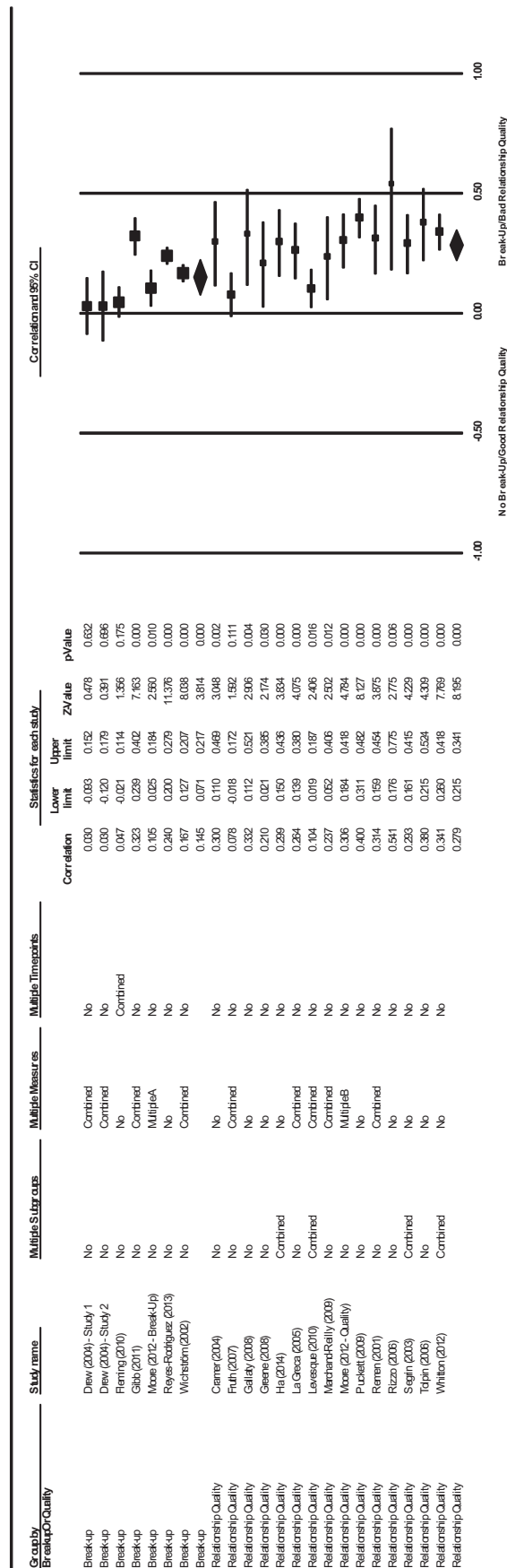
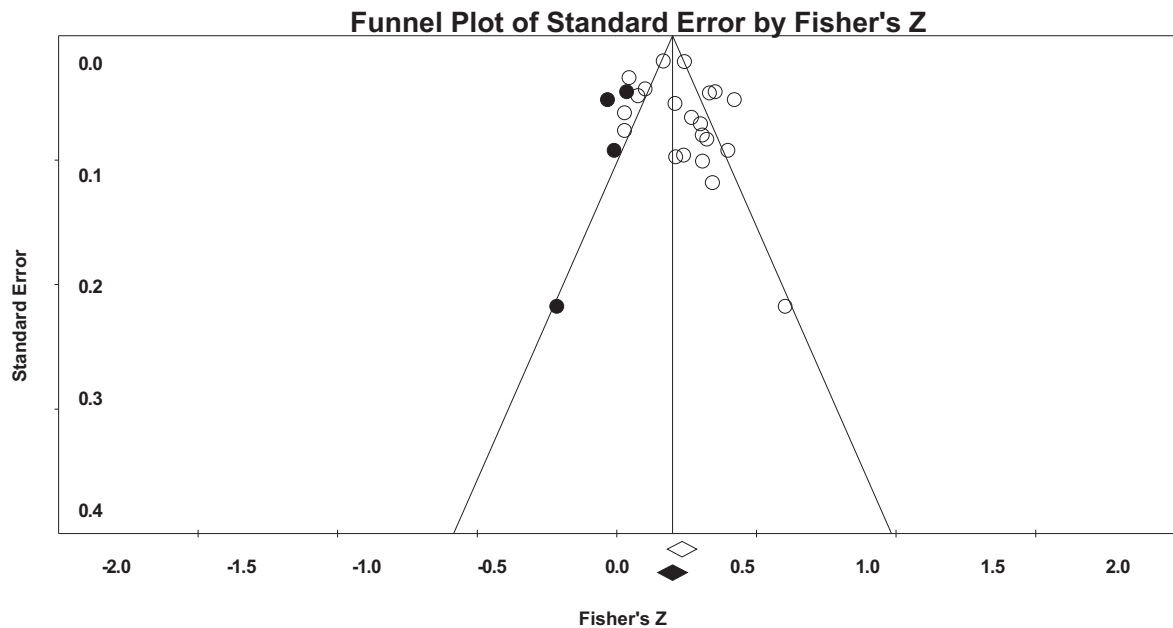


FIGURE 2

Forest plot of included studies.

**FIGURE 3**

Funnel plot.

### Publication Bias

The fail-safe  $N$  indicated that an extremely large number of studies with null results ( $k = 1,916$ ) would be needed to reduce the overall effect below the threshold of significance. A funnel plot of the data is presented in Figure 3. Egger's regression intercept did not suggest the presence of bias,  $t(19) = 1.22$ ,  $p = .236$ . However, the trim-and-fill method did suggest the imputation of four additional studies, though this resulted in only a minor reduction in the overall point estimate ( $r = .197$ ).

### Discussion

Based on the 21 studies included in our meta-analysis, the association between mental health outcomes and relationship variables is only modest in strength. Nonetheless, this association was statistically significant and should not be presumed inconsequential. This meta-analysis provides evidence that both negative RRQ and RRB are associated with mental health outcomes among adolescents and young adults. The relatively modest effect sizes might be due, in part, to the great heterogeneity of individual differences and contexts surrounding these relationships. Further research is needed to identify specific circumstances that moderate the strength of this association. For instance, the professional literature has long recognised that ability to cope with a stressful situation — and thus emotional responses to that situation — are associated with cognitive appraisals of the situation (Lazarus & Folkman, 1984), and to self-efficacy beliefs and perceived resources and abilities to cope (Bandura, 1977, 1982).

All these psychological factors could be further examined as possible moderators of the associations between RRQ/RRB and mental health outcomes.

One particularly critical finding was that relationship quality was more strongly associated with mental health outcomes than was relationship dissolution. There are several possible explanations for this difference. First, RRB is a common occurrence in this population (Connolly & McIsaac, 2009), which could indeed dampen any impact on mental health outcomes. Similarly, mental health may be less likely to contribute to RRB in adolescents and young adults due to the somewhat more short-lived and transient nature of these relationships. Consequently, developing and staying in unsatisfying romantic relationships might represent a more accurate indicator of emotional difficulties, particularly at younger ages. In addition, a relationship dissolution may be a more sudden and drastic change in psychosocial environment and thus be more likely to motivate help-seeking behaviours that enhance mental health outcomes. In contrast, those maintaining low quality relationships may be in even greater need of clinical services but less likely to pursue them. Available evidence suggests that poor-quality relationships and relationship dissolutions are stressors that contribute to the onset of depressive symptoms and yet it is also plausible that low-quality relationships are a consequence of depression, rather than a cause — an issue that has been discussed at length in the adult relationship literature (Vujeva & Furman, 2011). Regardless of the causal direction, the presence of a significant association indicates that relationships and relationship quality are



clinically relevant and may reflect a critical measurable factor associated with depression or self-harm. Finally, while the majority of our sample included non-clinical populations, it might be the case that relationship dissolution would be found to have a greater impact among individuals who have already been experiencing documented mental health difficulties and who are expected to be less equipped for dealing with acute stress. In addition, much of the existing literature on this topic has not fully accounted for whether a RRB was self-initiated, partner-initiated, or mutual. This has the strong potential to moderate the association between RRB and mental health outcomes and thus is a key topic for exploration in future research.

There was weak evidence that the association between RRQ/RRB and depression/self-harm may be stronger for women. Gender roles, prioritisation of relationship status for women in society, and/or increased likelihood to acknowledge negative emotions represent factors that could affect this finding. The differential impact of relationship characteristics and relationship dissolution on women could contribute to the increased rate of depression observed among women, particularly among adolescent and young women (Nolen-Hoeksema, 2001).

In contrast, the association between relationship variables and depression/self-harm was robust with respect to nationality and age. The important role that romantic relationships may play in mental health thus appears to be relatively universal, rather than culturally bound. Nonetheless, extreme caution should be used when generalising findings to nationalities or groups not explicitly captured by the included studies. There was no evidence to suggest that the strength of these associations differed as a function of age. However, these findings should be interpreted with caution given prior mixed findings regarding age and the limited power to detect such an effect in the current study. Future studies should examine these associations across discrete age groups to enhance our understanding of how these associations change across developmental windows. Regardless, our findings support the need for professional services tailored to the developmental and cognitive-emotional needs of adolescents and young adults. Clinicians should not discount the important role that romantic relationships may play in mental health status, even among younger individuals whose relationships may appear transient and less meaningful. In addition, future research is needed to address a number of other potential moderators of these associations that could not be examined in the present investigation due to limited prior research, including relationship history (e.g., number of age-related past breakups and positive/negative relationships) and attachment style. The latter is of particular interest, as it has the potential to serve in either a moderating role (i.e., relationships perceived as 'high quality' may only be associated with positive outcomes for those with secure attachments), or

as a mediator of this association (i.e., low-quality relationships lead to insecure attachment, which is the principle cause of poorer outcomes). Most studies do not consider the role of attachment, but it may have a profound impact on both the nature of the relationship and the ability of the individual to deal with a RRB (Kirkpatrick & Davis, 1994; Simpson, 1990).

A few limitations should be mentioned, including the relatively small number of studies, which may have limited power to detect differences among studies in moderator analyses, and the significant variability in how relationship dissolution, relationship quality, and depression were measured across studies. Unfortunately, this variability precluded us from conducting a more refined assessment of measures as a moderator of the effect size. Future studies are needed on more homogenous populations, including a distinction between clinical and non-clinical populations. Longitudinal research on specific age groups would also shed additional light regarding the role of developmental factors, while mixed-model studies inclusive of qualitative data might offer valuable information regarding moderating variables.

Clearly, one size does not fit all when it comes to love in adolescence and young adulthood. However, despite the methodological difficulties inherent to exploring such complex interrelations, the present study adds to the literature and defines venues for further research regarding adolescent and young adult romantic relationships and their impact on mental health.

## Article References

- Bandura, A. (1977). Self-efficacy theory: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191–215.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37, 122–147.
- Beck, A.T., & Steer, R.A. (1987). *Manual for the Revised Beck Depression Inventory*. San Antonio, TX: Psychological Corporation.
- Beck, A.T., Rush, A.J., Shaw, B.F., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford Press.
- Blatt, S.J., D'Afflitti, J.P., & Quinlan, D.M. (1976). Experiences of depression in normal young adults. *Journal of Abnormal Psychology*, 85, 383–389.
- Brown, B.B. (2006). A few 'course corrections' to Collins and Van Dulmen's 'The course of true love'. In A.C. Crouter & A. Booth (Eds.), *Romance and sex in adolescence and emerging adulthood: Risks and opportunities* (pp. 113–123). Mahwah, NJ: Lawrence Erlbaum.
- Chen, Z., Guo, F., Yang, X., Li, X., Duan, Q., Zhang, J., & Ge, X. (2009). Emotional and behavioral effects of romantic relationships in Chinese adolescents. *Journal of Youth Adolescence*, 38, 1282–1293.
- Cloutier, P.F., & Nixon, M.K. (2003). The Ottawa Self-Injury Inventory: A preliminary evaluation (Abstracts). *European Child & Adolescent Psychiatry*, 12(Suppl 1), I/94.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112, 155–159.

- Collins, W.A. (2003). More than myth: The developmental significance of romantic relationships during adolescence. *Journal of Research on Adolescence*, 13, 1–24.
- Connolly, J., & McIsaac, C. (2009). Adolescents' explanations for romantic dissolutions: a developmental perspective. *Journal of Adolescence*, 32, 1209–1223.
- Daley, S., & Hammen, C. (2002). Depressive symptoms and close relationships in late adolescence: Perspectives from dysphoric young women, their best friends, and their romantic partners. *Journal of Consulting and Clinical Psychology*, 70, 129–141.
- Davila, J. (2008). Depressive symptoms and adolescent romance: Theory, research, and implications. *Child Development Perspectives*, 2, 26–31.
- Davila, J., Steinberg, S., Kachadourian, L., Cobb, R., & Fincham, F. (2004). Romantic involvement and depressive symptoms in early and late adolescence: The role of a preoccupied relational style. *Personal Relationships*, 11, 161–178.
- Derogatis, L.R. (1983). *SCL-90-R: Administration, scoring & procedures manual-II*. Towson, MD: Clinical Psychometric Research.
- DerSimonian, R., & Laird, N. (1986). Meta-analysis in clinical trials. *Controlled Clinical Trials*, 7, 177–188.
- Donald, M., Dower, J., Correa-Velez, I., & Jones, M. (2005). Risk and protective factors for medically serious suicide attempts: A comparison of hospital-based with population-based samples of young adults. *Australian and New Zealand Journal of Psychiatry*, 40, 87–96.
- Duval, S., & Tweedie, R. (2000). Trim and fill: A simple funnel-plot-based method of testing and adjusting for publication bias in meta-analysis. *Biometrics*, 56, 455–463.
- Egger, M.G., Davey Smith, G., Schneider, M., & Minder, C. (1997). Bias in meta-analysis detected by a simple, graphical test. *British Medical Journal*, 315, 629–634.
- Fergusson, D.M., & Lynskey, M.T. (1995). Childhood circumstances, adolescent adjustment and suicide attempts in a New Zealand birth cohort. *Journal of the American Academy of Child and Adolescent Psychiatry*, 34, 612–622.
- Funk, J.L., & Rogge, R.D. (2007). Testing the ruler with item response theory: Increasing precision of measurement for relationship satisfaction with the couples satisfaction index. *Journal of Family Psychology*, 21, 572–583.
- Furman, W. (2002). The emerging field of adolescent romantic relationships. *Current Directions in Psychological Science*, 11, 177–180.
- Furman, W., & Buhrmester, D. (1985). Children's perceptions of the personal relationships in their social networks. *Developmental Psychology*, 21, 1016–1024.
- Furman, W., & Shaffer, L. (2003). The role of romantic relationships in adolescent development. In P. Florsheim (Ed.), *Adolescent romantic relations and sexual behavior* (pp. 3–22). Mahwah, NJ: Lawrence Erlbaum.
- Gallaty, K., & Zimmer-Gembeck, M.J. (2008). The social and emotional worlds of adolescents who are psychologically maltreated by their partners. *Journal of Youth and Adolescence*, 37, 310–323.
- Gallagher, R.V., Rostosky, S.S., Welsh, D.P., & Kawaguchi, M.C. (1999). Power and psychological well-being in late adolescent romantic relationships. *Sex Roles*, 40, 689–710.
- Gotlib, I., Lewinsohn, P., & Seeley, J. (1998). Consequences of depression during adolescence: Marital status and marital functioning in early adulthood. *Journal of Abnormal Psychology*, 107, 686–690.
- Hammen, C., Adrian, C., Gordon, D., Burge, D., Jaenicke, C., & Hiroto, D. (1987). Children of depressed mothers: Maternal strain and symptom predictors of dysfunction. *Journal of Abnormal Psychology*, 96, 190–198.
- Hendrick, S.S. (1988). A generic measure of relationship satisfaction. *Journal of Marriage and the Family*, 50, 93–98.
- Hendrick, S.S., Dicke, A., & Hendrick, C. (1998). The relationship assessment scale. *Journal of Social and Personal Relationships*, 15, 137–142.
- Hien, D., Matzner, J.J., First, M.B., Spitzer, R.L., Gibbon, M., & Williams, J.B.W. (1999). *Structured Clinical Interview for DSM-IV — Child Edition (KID-SCID version 1.0)*. New York, NY: Columbia University.
- Joyner, K., & Udry, J.R. (2000). You don't bring me anything but down: Adolescent romance and depression. *Journal of Health and Social Behavior*, 41, 369–391.
- Kandel, D.B., & Davies, M. (1982). Epidemiology of depressed mood in adolescents. An empirical study. *Archives of General Psychiatry*, 39, 1205–1212.
- Karney, B.R., & Bradbury, T.N. (1995). The longitudinal course of marital quality and stability: A review of theory, method, and research. *Psychological Bulletin*, 118, 3–34.
- Kasian, M., & Painter, S.L. (1992). Frequency and severity of psychological abuse in a dating population. *Journal of Interpersonal Violence*, 7, 350–364.
- Kirkpatrick, L.A., & Davis, K.E. (1994). Attachment style, gender, and relationship stability: A longitudinal analysis. *Journal of Personality and Social Psychology*, 66, 502–512.
- Kovacs, M. (1985). The Children's Depression Inventory (CDI). *Psychopharmacology Bulletin*, 21, 995–998.
- La Greca, A., & Harrison, H.M. (2005). Adolescent peer relations, friendships, and romantic relationships: Do they predict social anxiety and depression? *Journal of Clinical Child and Adolescent Psychology*, 34, 49–61.
- Lazarus, R.S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Marchand-Reilly, J.F. (2009). Depressive symptoms in young adults: The role of attachment orientations and romantic relationship conflict. *Journal of Adult Development*, 16, 31–38.
- Mastekaasa, A. (1997). Marital dissolution as a stressor: Some evidence on psychological, physical, and behavioral changes during the pre-separation period. *Journal of Divorce and Remarriage*, 26, 155–183.
- Matzner, F., Silva, R., Silvan, M., Chowdhury, M., & Nastasi, L. (1997, May). Preliminary test-retest reliability of the KID-SCID. Paper presented at the 150th annual meeting of the American Psychiatric Association, San Diego, CA.
- Mearns, J. (1991). Coping with a breakup: Negative mood regulation expectancies and depression following the end of a romantic relationship. *Journal of Personality and Social Psychology*, 60, 327–334.
- Monroe, S.M., Rohde, P., Seeley, J.R., & Lewinsohn, P.M. (1999). Life events and depression in adolescence: Relationship loss as a prospective risk factor for first onset major depressive disorder. *Journal of Abnormal Psychology*, 108, 606–614.
- Morris, C.E., & Reiber, C. (2011). Frequency, intensity and expression of post-relationship grief. *EvoS Journal*, 31, 1–11.

- Natsuaki, M.N., Klimes-Dougan, B., Ge, X., Shirtcliff, E.A., Hastings, P., & Zahn-Waxler, C. (2009). Early pubertal maturation and internalizing problems: Sex differences in the role of cortisol reactivity to social stress. *Journal of Clinical Child and Adolescent Psychology*, 38, 1–12.
- Naughton, M., Oppenheim, A., & Hill, J. (1996). Assessment of personality functioning in the transition from adolescent to adult life: Preliminary findings. *British Journal of Psychiatry*, 168, 33–37.
- Nolen-Hoeksema, S. (2001). Gender differences in depression. *Current Directions in Psychological Science*, 10, 173–176.
- Peterson, R.A., & Brown, S.P. (2005). On the use of beta coefficients in meta-analysis. *Journal of Applied Psychology*, 90, 175–181.
- Radloff, L. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385–401.
- Reynolds, W.M. (1987). *Reynold's Adolescent Depression Scale: Professional manual*. Odessa, FL: Psychological Assessment Resources.
- Reynolds, W.M., & Kobak, K.A. (1995). Reliability and validity of the Hamilton Depression Inventory: A paper-and-pencil version of the Hamilton Depression Rating Scale Clinical Interview. *Psychological Assessment*, 7, 472–483.
- Rosenthal, R. (1979). The 'file drawer problem' and tolerance for null results. *Psychological Bulletin*, 86, 638–641.
- Rubenstein, J.L., & Feldman, S.S. (1993). Conflict-resolution behavior in adolescent boys: Antecedents and adaptational correlates. *Journal of Research on Adolescence*, 3, 41–66.
- Simpson, J.A. (1990). Influence of attachment styles on romantic relationships. *Journal of Personality and Social Psychology*, 59, 971–980.
- Spanier, G.B. (1976). Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family*, 38, 15–28.
- Straus, M.A., Hamby, S.L., Boney-McCoy, S., & Sugarman, D.B. (1996). The revised conflict tactics scales (CTS2): Development and preliminary psychometric data. *Journal of Family Issues*, 17, 283–316.
- Tolman, R.M. (1989). The development of a measure of psychological maltreatment of women by their male partners. *Violence and Victims*, 4, 159–177.
- Tschann, J.M., Johnston, J.R., & Wallerstein, J.S. (1989). Resources, stressors, and attachment as predictors of adult adjustment after divorce: A longitudinal study. *Journal of Marriage and Family*, 51, 1033–1046.
- Vujeva, H.M. & Furman, W. (2011). Depressive symptoms and romantic relationship qualities from adolescence through emerging adulthood: A longitudinal examination of influences. *Journal of Clinical Child and Adolescent Psychology*, 40, 123–135.
- Welsh, D.P., Grello, C.M., & Harper, M.S. (2003). When love hurts: Depression and adolescent romantic relationships. In P. Florsheim (Ed.), *Adolescent romantic relations and sexual behavior: Theory, research and practical implications* (pp. 185–211). Mahwah, NJ: Lawrence Erlbaum.
- Williams, J.S., & Siegel, J.P. (1989). Marital disruption and physical illness: The impact of divorce and spouse death on illness. *Journal of Traumatic Stress*, 2, 1–8.
- Williams, S., Connolly, J., & Segal, Z.V. (2001). Intimacy in relationships and cognitive vulnerability to depression in adolescent girls. *Cognitive Therapy Research*, 25, 477–496.
- World Health Organization (WHO) 1993. *Composite International Diagnostic Interview (CIDI)*. Geneva: Author.

## Meta-Analysis References

- Cramer, D. (2004) Satisfaction with a romantic relationship, depression, support and conflict. *Psychology and Psychotherapy: Theory, Research and Practice*, 77, 449–461.
- Drew, S.S., Heesacker, M., Frost, H.M., & Oelke, L.E. (2004). The role of relationship loss and self-loss in women's and men's dysphoria. *Journal of Social and Personal Relationships*, 21, 381–397.
- Fleming, C.B., White, H.R., Oesterle, S., Haggerty, K.P., & Catalano, R.F. (2010). Romantic relationship status changes and substance use among 18- to 20-year-olds. *Journal of Studies on Alcohol and Drugs*, 71, 847–856.
- Fruth, A.L. (2007). *Dating and adolescents' well-being* (Unpublished doctoral dissertation). Bowling Green State University, Bowling Green, OH.
- Gallaty, K. & Zimmer-Gembeck, M.E. (2008). The daily social and emotional worlds of adolescents who are psychologically maltreated by their romantic partners. *Journal of Youth and Adolescence*, 37, 310–323.
- Gibb, S.J., Fergusson, D.M., & Horwood, L.J. (2011). Relationship separation and mental health problems: Findings from a 30-year longitudinal study. *Australian and New Zealand Journal of Psychiatry*, 45, 163–169.
- Greene, J.G. (2008). *Contributions of peer, romantic partner, and nonparental adult relationships to adolescent adaptive functioning* (Unpublished doctoral dissertation). Boston University, Boston, MA.
- Ha, T., Dishion, T.J., Overbeek, G., Burk, W.J., Engels, R.C.M.E. (2014). The blues of adolescent romance: Observed affective interactions in adolescent romantic relationships associated with depressive symptoms. *Journal of Abnormal Child Psychology*, 42, 551–562.
- La Greca, A.M., & Harrison, H.M. (2005). Adolescent peer relations, friendships, and romantic relationships: Do they predict social anxiety and depression? *Journal of Clinical Child and Adolescent Psychology*, 34, 49–61.
- Levesque, C., Lafontaine, M.F., Bureau, J.F., Cloutier, P., & Dandurand, C. (2010). The influence of romantic attachment and intimate partner violence on non-suicidal self-injury in young adults. *Journal of Youth and Adolescence*, 39, 474–483.
- Merchand-Reilly, J.F. (2009). Depressive symptoms in young adults: The role of attachment orientations and romantic relationship conflict. *Journal of Adult Development*, 16, 31–38.
- Moore, S., Leung, C., Karnilowicz, W., & Lung, C.L. (2012). Characteristics and predictors of romantic relationships in late adolescence and young adulthood in Hong Kong and Australia. *Australian Psychologist*, 47, 108–117.
- Puckett, M.B. (2009). *Rejection sensitivity and interpersonal relationship difficulties: Depression, loneliness, and self-esteem and mediating factors* (Unpublished doctoral dissertation). University of Connecticut, Storrs, CT.

- Remen, A.L., & Chambless, D.L. (2001). Predicting dysphoria and relationship adjustment: Gender differences in their longitudinal relationship. *Sex Roles, 44*, 45–60.
- Reyes-Rodriguez, M.L., Rivera-Medina, C.L., Camara-Fuentes, L., Suarez-Torres, A., & Bernal, G. (2013). Depression symptoms and stressful life events among college students in Puerto Rico. *Journal of Affective Disorders, 145*, 324–330.
- Rizzo, C.J., Daley, S.E., & Gunderson, B.H. (2006). Interpersonal sensitivity, romantic stress, and the prediction of depression: A study of inner-city, minority adolescent girls. *Journal of Youth and Adolescence, 35*, 444–453.
- Segrin, C., Powell, H.L., Givertz, M., & Brackin, A. (2003). Symptoms of depression, relational quality, and loneliness in dating relationships. *Personal Relationships, 10*, 25–36.
- Tolpin, L.H., Cohen, L.H., Gunthert, K.C., & Farrehi, A. (2006). Unique effects of depressive symptoms and relationship satisfaction on exposure and reactivity to daily romantic relationship stress. *Journal of Social and Clinical Psychology, 25*, 565–583.
- Whitton, S.W., & Kuryluk, A.D. (2012). Relationship satisfaction and depressive symptoms in emerging adults: Cross-sectional associations and moderating effects of relationship characteristics. *Journal of Family Psychology, 1*–10.
- Wichström, L., & Rossow, I. (2002). Explaining the gender difference in self-reported suicide attempts: A nationally representative study of Norwegian adolescents. *Suicide and Life-Threatening Behavior, 32*, 101–116.