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Love Hurts (in More Ways Than One): Specificity of Psychological Symptoms as Predictors and Consequences of Romantic Activity Among Early Adolescent Girls*

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Abstract

Objective—Research has linked adolescent romantic and sexual activities to depressive symptoms. The current study examines whether such activities are uniquely linked to depressive symptoms versus symptoms of other disorders (including anxiety, externalizing, and eating disorders), and whether co-occurring symptoms more precisely account for the association between depressive symptoms and romantic involvement.

Method—Early adolescent girls ($N = 83$; mean age = 13.45) participated in baseline and 1-year follow up data collection.

Results—Romantic (i.e., dating and sexual) activities were longitudinally related to numerous types of symptoms. The association between depressive symptoms and romantic variables remained when considering co-occurring symptoms. Girls with more comorbid disorders reported more romantic activities.

Conclusions—Results suggest that the maladaptive consequences and precipitants of adolescent romantic activities extend beyond depression, but also imply that this association is not secondary to comorbid symptoms. Future work should clarify causal pathways.

Keywords

adolescence; romantic involvement; sexual activity; depression; specificity

The emergence of romantic relationships in adolescence is a developmentally normative occurrence and an important context for the acquisition of relationship skills. However,

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evidence indicates that romantic involvement might have deleterious trade-offs. Romantic relationships might challenge adolescents' coping resources and might expose them to stressors that require significant emotion regulation skills, thereby increasing the likelihood that romantic activities will be associated with negative affect (see Davila, 2008). Indeed, numerous studies have demonstrated a positive association between adolescent romance and depressive symptoms. Specifically, research consistently demonstrates that greater involvement in adolescent romantic activities (including both dating experiences, such as going on dates or being in a relationship, as well as sexual experiences, including intercourse and nonintercourse behaviors) (a) is concurrently associated with reports of greater depressive symptoms, (b) predicts increases in depressive symptoms over time, and (c) is predicted by prior depressive symptoms (e.g., Compian, Gowen, & Hayward, 2004; Davila, 2008; Davila, Steinberg, Kachadourian, Cobb, & Fincham, 2004; Davila, Stroud et al., 2009; Joyner & Udry, 2000).

The association between early adolescent romantic activities and depression has been interpreted as evidence that romantic experiences are particularly, and perhaps uniquely, linked to depression (see Davila, 2008). It is unclear if this is actually the case, however, because the specificity of this association has never been tested, a critical limitation of the literature. Diagnostic *specificity* refers to the extent to which a variable's association with a syndrome cannot be better accounted for by a co-occurring symptom or diagnosis. If an association is not diagnostically specific, it is instead *spurious*, meaning that other factors more precisely account for its existence (see Joiner, Metalsky, Katz, & Beach, 1999).

Compared with research on depression, considerably less research has examined the relation between adolescent romantic experiences and other types of psychological symptoms, and existing studies have generally not controlled for symptoms of co-occurring disorders. There are several compelling reasons to examine adolescent romantic activity in relation to a range of psychological symptoms. First, depressive symptoms rarely occur in isolation. Over 70% of adolescents with a depressive disorder have an additional Axis I disorder (Karlsson et al., 2006), with depression showing pronounced co-occurrence with a broad range of clinical disorders and subthreshold symptoms (Essau, Conradt, & Petermann, 1999; Karlsson et al.; Sanford, Szatmari, Spinner, & Munroe-Blum, 1995; Wittchen, Stein, & Kessler, 1999). Comorbidity might produce spurious associations between depression and romantic experiences, as their relation might be more precisely accounted for by symptoms of a co-occurring disorder. Likewise, the relation between other types of symptoms and romantic experiences might be best accounted for by co-occurring depressive symptoms, and thus analyses should control for depression. In the current study, we do so by examining associations among romantic experiences, depressive symptoms, and symptoms of anxiety, externalizing, and eating disorders. Determining specificity and nonspuriousness is an important component of evaluating risk factors for (and consequences of) psychopathology (Garber & Hollon, 1991; Hollon, Kendall, & Lumry, 1986).

In addition, exploring romantic activities within a broader context of psychological symptoms might more accurately reflect interrelated associations. Along similar lines, Jessor and colleagues (Donovan & Jessor, 1985; Donovan, Jessor, & Costa, 1988, 1991; Jessor, 1992, 1993; Jessor & Jessor, 1977; Jessor et al., 2003) delineated a model of problem behaviors in adolescence to explain why adolescent oppositional behaviors, substance abuse, and risky health decisions tend to co-occur, suggesting that interrelated risk factors, such as low self-esteem and poor familial and social environments, provoke a wide range of problem behaviors. In turn, these behaviors lead to common negative outcomes, such as depression and early sexual activity. As a result, disparate problem behaviors tend to cluster together in adolescence, comprising a single, multifaceted syndrome. In the context of this model, it is possible that romantic experiences, rather than being uniquely associated with

depressive symptoms, fit within a wider net of experiences linked to several types of psychological problems through a shared set of pathways. As such, examining several types of symptoms at once, rather than focusing exclusively on depressive symptoms, might provide a fuller view of how these processes unfold.

The current state of the literature does not clearly identify which types of adolescent psychopathology, in addition to depressive symptoms, are linked to romantic involvement. As explained below, several types of psychological symptoms are conceptually likely to relate to adolescent romantic experiences. Here, we examine three types of symptoms, in addition to depressive symptoms: anxiety, externalizing symptoms, and eating disorder symptoms.

Anxiety

Anxiety and anxiety disorders are prevalent in adolescence, particularly among girls (Lewinsohn, Hops, Roberts, & Seeley, 1993). Anxiety disorders frequently co-occur with depression; in fact, anxiety disorders are more likely to co-occur with depressive disorders than they are with each other, and depression without co-occurring anxiety is a relatively unusual phenomenon (Brady & Kendall, 1992; Essau, 2003; Lewinsohn, Zinbarg, Seeley, Lewinsohn, & Sack, 1997). Thus, a link between anxiety and romantic experience might confound the association between romantic experience and depressive symptoms (and vice versa), and as such, it is important to examine whether the link between depressive symptoms and romantic activities is better accounted for by anxiety.

Anxiety could potentially relate to adolescent romantic experiences in two basic ways. First, because anxiety is defined by avoidance, anxious teens might avoid entering relationships, producing a negative relationship between anxiety and later dating experiences. Alternatively, anxiety could demonstrate a positive association with some romantic activities. Among adults, anxiety has been linked to dependence, submission, and clinging within relationships (Darcy, Davila, & Beck, 2005; Davila & Beck, 2002). These features might lead anxious teens to engage in sexual activity even when feeling ambivalent to preserve their existing relationships. Similarly, anxious youth might feel reluctant to turn down unwanted dates or other romantic opportunities for fear of negative evaluation. In addition, the challenges and uncertainties of dating might be anxiety-inducing for some teens; thus, the anxiety might both predict and be predicted by romantic activities. Few studies have examined anxiety within the context of adolescent romantic experiences, and those that have largely focused on social anxiety. La Greca and Harrison (2005) found that the presence of a dating partner protected against development of social anxiety symptoms in an adolescent sample, suggesting that some types of anxiety might be negatively associated with romantic experiences, but also showed that negative romantic relationship qualities were related to social anxiety, implying that in certain circumstances, romantic experiences might put adolescents at risk for the development of anxiety.

Externalizing Symptoms

Substantial research using mixed gender samples supports the existence of a bidirectional link between externalizing symptoms and sexual activity across the span of adolescence (e.g., Arndorfer & Stormshak, 2008; Crockett, Bingham, Chopak, & Vicary, 1996; Donenberg, Bryant, Emerson, Wilson, & Pasch, 2003), particularly casual sex (i.e., outside of a romantic relationship; Grello, Welsh, Harper, & Dickson, 2003) and sex in early adolescence, when it is less developmentally normative (Armour & Haynie, 2007). The association between early sexual activity and externalizing symptoms makes sense conceptually. Precocious sexual activity fits within the larger net of rule-breaking and risky behaviors, and might be used as a mechanism of rebellion, a means of gaining acceptance

within deviant peer groups, or an attempt to regulate negative affect. Furthermore, the marked impulsivity that underlies many externalizing disorders might lead adolescents to engage in sexual activity without sufficiently considering the potential consequences.

Although fewer studies have examined the relation between externalizing symptoms and normative romantic activities (e.g., dating), existing community studies have suggested an association. For example, adolescent boys and girls with romantic partners show higher levels of externalizing behaviors (Joyner & Udry, 2000; Zimmer-Gembeck, Siebenbruner, & Collins, 2001), particularly for those who place a high degree of importance on dating or their dating partners (Kiesner, Kerr, & Stattin, 2004), have poor security with their dating partners (e.g., van Dulmen, Gony, Haydon, & Collins, 2008), or are unpopular with same-sex peers (Brendgen, Vitaro, Doyle, Markiewicz, & Bukowski, 2002). Much adolescent antisocial behavior occurs within the context of romantic relationships (Shortt, Capaldi, Dishion, Bank, & Owen, 2003), and there is typically concordance between partners' antisocial behaviors (Kim & Capaldi, 2004), suggesting that romantic relationships might serve as vehicles for externalizing symptom contagion from partner to partner. Taken together, these studies suggest that externalizing symptoms are positively associated with romantic activities, particularly sexual activity, and that this association might be reciprocal (with externalizing symptoms predicting romantic and sexual initiation, which in turn might predict greater engagement in externalizing behaviors). However, most previous research has not accounted for co-occurring depressive symptoms, despite significant comorbidity between depression and disruptive behavior disorders (Lewinsohn et al., 1993). Thus, once again, it is unclear whether the association between externalizing symptoms and romantic activities is secondary to the association between depression and romantic activities, or vice versa (i.e., that the relation between depressive symptoms and romantic activities is driven by an underlying shared relation with externalizing symptoms), or if romantic activities are specifically linked to each.

Eating Disorder Symptoms

Girls become more vulnerable to eating disorders and body image problems in adolescence (Ruuska, Kaltiala-Heino, Koivisto, & Rantanen, 2003), coinciding with pubertal accumulation of body fat, the emergence of romantic relationships, and the corresponding increased focus on physical appearance (Attie & Brooks-Gunn, 1989; O'Dea & Abraham, 1999). Disordered eating might relate to romantic experiences in a number of ways. First, romantic and sexual involvement might provoke eating disorder symptoms. Given the centrality of physical appearance in dating and partner selection, being involved romantically might attune adolescents to their physical appearance, provoking insecurities where teens feel they fall short of their ideals. Supporting this idea, Cauffman and Steinberg (1996) found that girls with high levels of involvement in heterosexual social and sexual activities tended to report higher tendencies to disordered eating and dieting than their peers (also see Compian et al., 2004). Similarly, the belief that thinness is important for dating success is associated with dietary restraint, body dissatisfaction, and bulimic symptoms (Paxton, Wertheim, Gibbons, & Szmulker, 1991). The link between disordered eating and dating might be particularly strong for early adolescents (Gralen, Levine, Smolak, & Murnen, 1990) who are undergoing pubertal changes. Second, eating disorder symptoms might predict decreases in romantic involvement, as adolescents with body image concerns might choose to withdraw from romantic experiences, perhaps feeling inadequate or lacking confidence in their ability to attract a partner. In addition, adolescents with negative body image might be less apt to engage in sexual activity, perhaps feeling embarrassed and reluctant to allow others to touch or see their bodies. Once again, existing studies are limited and have generally not controlled for co-occurring symptoms or disorders, so even in cases

where links between romantic or sexual experiences have been demonstrated, the specificity of these associations is unclear.

Overall, existing research provides some evidence that depressive symptoms are not alone in their association with adolescent romantic and sexual activities; indeed, adolescent sexual involvement (and perhaps also romantic involvement) might be related to other symptoms of psychopathology. However, few of these studies have considered the potentially confounding effects of co-occurring symptoms, leaving the specificity of these associations unexamined. In an exception, one recent study showed that, when controlling for co-occurring psychopathology, externalizing symptoms predicted risky sexual behavior more robustly than internalizing symptoms (Caminis, Henrich, Ruchkin, Schwab-Stone, & Martin, 2007; this study did not examine romantic involvement). Clearly, greater examination of the specificity of associations between psychological symptoms and adolescent romantic involvement is needed. Furthermore, an important limitation of previous research is that most studies have relied on cross-sectional samples, leaving directions of effect unclear. As conceptual reasons exist for both romantic experiences predicting psychological symptoms and psychological symptoms predicting romantic experiences, longitudinal designs are ideal for shedding light on temporal associations.

The Current Study

The current analyses addressed the related questions of (a) whether the bidirectional association between romantic activities and psychological distress is unique to depressive symptoms or might also be found in symptoms of other disorders, and (b) whether the association between symptoms of each individual disorder and romantic activities can be better accounted for by co-occurring symptoms of other disorders. We examined the relation between romantic activities and psychological symptoms in several different ways. First, we examined cross-sectional associations between romantic variables and symptoms. Based on previous research, we expected romantic variables to be significantly and positively correlated with a broad range of psychological symptoms, including depressive, anxiety, eating, and externalizing symptoms.

Next, we evaluated the longitudinal associations between symptoms and romantic experience. In doing so, we tested two sets of models. The first set of longitudinal models examined whether depressive, externalizing, anxiety, and eating disorder symptoms predicted increases in romantic activities. With limited research to guide predictions, we largely refrained from making hypotheses about specific symptoms and directions of effect. However, based on the logic detailed above, we anticipated that externalizing symptoms would lead to increases in romantic involvement, whereas eating disorder symptoms and anxiety could conceivably lead to increases or decreases in romantic activities. We also tested two competing hypotheses about specificity versus spuriousness of depressive symptoms: that (a) depressive symptoms would independently predict romantic variables and (b) depressive symptoms would no longer predict romantic experiences when accounting for co-occurring symptoms.

In the second set of longitudinal models, we tested analogous hypotheses for the opposite direction of effect, examining whether romantic experiences predicted increases in depressive, externalizing, anxiety, and eating disorder symptoms, with comorbid symptoms simultaneously included. We anticipated that romantic experiences would lead to increases in a broad range of psychological symptoms, although again we did not make specific predictions about different types of symptoms because of the lack of existing research. Regarding specificity to depressive symptoms, we tested two alternative hypotheses: (a) romantic experiences would specifically predict depressive symptoms (i.e., their association

would hold when simultaneously considering other symptoms), or (b) romantic experiences would no longer predict depressive symptoms when accounting for other psychological symptoms.

We examined these models in a community sample of early adolescent girls. Early adolescent relationships predict adult relationship functioning, and romantic behaviors in early adolescence are generally understudied (Brown, Feiring, & Furman, 1999). Furthermore, although depression has been linked to romantic involvement in both early and late adolescence (Davila et al., 2004), associations might be strongest in early adolescence, when romantic and sexual behaviors are less normative (Welsh, Rostosky, & Kawaguchi, 2000). In addition, investigating the link in early adolescent girls is particularly informative as, compared with boys, girls are more vulnerable to depression, anxiety, and eating disorders, and these gender differences widen during adolescence (Howell, Castle, & Yonkers, 2006; Lewinsohn et al., 1993; Nolen-Hoeksema & Girgus, 1994). Further, girls are more attuned to relationships as compared with boys (Compton, Nelson, & March, 2000; Nolen-Hoeksema & Girgus; Rose & Rudolph, 2006), and the link between depressive symptoms and adolescent romantic experience appears to be stronger for girls than boys (Joyner & Udry, 2000; Starr & Davila, 2008b). Although disruptive behavior is more common in boys relative to girls (Lewinsohn et al., 1993), externalizing problems in girls are important to understand and have been understudied.

Method

Participants

Seventh-grade and eighth-grade girls from a Northeastern, suburban county participated in this study along with their primary caregivers. Girls were recruited from a larger questionnaire study on adolescent relationships, which drew participants from seventh-graders and eighth-graders in three socioeconomically diverse school districts (participants in the questionnaire study were initially recruited using mailed packets sent to all seventh-graders and eighth-graders in the three participating school districts, with 7% of school district families providing usable data, consent, and assent). Parents of all female study participants ($n = 173$) were contacted and asked to participate in the current study. Of these, 80 families were scheduled and 64 families opted to participate. To recruit additional participants, a flyer was included with a monthly school newsletter, resulting in 19 additional participants, for a total of 83 participants at Time 1 (T1).

T1 data were collected on an ongoing basis over the course of early 2004 through summer 2005. At T1, 45% of participants were eighth-graders and mean age was 13.45 (standard deviation [SD] = .68). Of those who chose to report ethnicity, 89% were Caucasian, although this varied by school district (100%, 95%, and 61%) in a manner corresponding to the demographics of each district (96%, 91%, and 64% Caucasian respectively, according to 2006 reports). Median parental income was in the range of \$53,000 to \$127,000, which is representative of income within the sampled school districts (http://www.emsc.nysed.gov/reprcd2002/c58_dist.html). Parents reported a wide range of educational levels, with 42% having a high school education or less. One year later, families were contacted to participate again, and 89% ($n = 74$) of the sample did so. Girls who participated at T2 did not differ from girls who did not participate at T2 on key variables measured at T1 (including symptom and romantic variables). The [Stony Brook University] University Committee on Research Involving Human Subjects approved this research. These data have resulted in several other publications, although none evaluated the research questions examined here (Davila et al., 2009; Hershenberg & Davila, 2010; Hershenberg, et al., 2011; Starr & Davila, 2008a; Starr & Davila, 2009; Steinberg & Davila, 2008; Stroud & Davila, 2008).

Measures

Psychological symptoms—Symptoms of major depression, anxiety disorders, externalizing disorders, and eating disorders were assessed using the Schedule for Affective Disorders and Schizophrenia for School Age Children—Present and Lifetime Version (K-SADS-PL; Kaufman, Birmaher, Brent, & Rao, 1997), a semistructured interview that is widely used in clinical research and which has demonstrated strong reliability and validity (Kaufman et al.). At T1, lifetime symptoms were assessed; at T2, symptoms were assessed for the past year (since T1). To capture subsyndromal symptoms in addition to disorders, interviewers rated each disorder on a 4-point scale: 0 (*no symptoms*), 1 (*mild symptoms*), 2 (*moderate, sub-threshold symptoms*), 3 (*DSM-IV criteria met*). Audiotaped interviews were re-coded by a second interviewer on the same 4-point scale. Symptoms of the following disorders were assessed (with interrater reliability as noted): major depression (intraclass correlation (ICC) = .82, alpha = .90), panic disorder (ICC = 1.00, alpha = 1.00), separation anxiety disorder (ICC = .78, alpha = .87), generalized anxiety disorder (GAD; ICC = .64, alpha = .78), obsessive compulsive disorder (OCD; ICC = 1.00, alpha = 1.00), specific phobia (ICC = .70, alpha = .82), social phobia (ICC = .68, alpha = .80), anorexia nervosa (ICC = 1.00, alpha = 1.00), attention-deficit hyperactivity disorder (ADHD; ICC = 1.00, alpha = 1.00), oppositional defiant disorder (ODD; ICC = 1.00, alpha = 1.00), conduct disorder (CD; ICC = 1.00, alpha = 1.00), and posttraumatic stress disorder (PTSD; ICC = 1.00, alpha = 1.00). We also assessed for symptoms of substance use disorders and bulimia, but there was little to no variance at T1 on these disorders so we dropped these variables from analyses.

The Eating Disorder Inventory (EDI; Garner, Olmstead, & Polivy, 1983) was used to assess self-reported attitudes and behaviors associated with eating and weight. We included 23 items, which specifically assessed *drive for thinness* (alpha = .89; e.g., “if I gain a pound, I worry that I will keep gaining”), *bulimia* (alpha = .88; e.g., “I have gone on eating binges where I felt that I could not stop”), and *body dissatisfaction* (alpha = .78; e.g., “I think that my stomach is too big”). Reliability and validity of the EDI have been widely established (e.g., Cachelin, Striegel-Moore, & Paget, 1997; Garner et al.; Tylka & Subich, 1999; e.g., Welch, Hall, & Norring, 1990).

Because self-reported externalizing symptoms are often under-reported by adolescents (Edelbrock, 1986), we supplemented K-SADS-PL ratings with a parent-report measure. Specifically, we utilized the externalizing scale of the Child Behavior Checklist (CBCL; Achenbach, 1991), which assesses conflicts with other people and expectations for the child’s behavior (in contrast to the internalizing scale, which assesses problems within the self, including anxiety, depression, somatic complaints, and social withdrawal). The CBCL is widely used and has demonstrated excellent psychometric properties (Achenbach). The CBCL was used only in cross-sectional analyses to provide supplemental informant data.

To simplify analyses, we grouped symptoms into four categories, based on the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) grouping: depression, anxiety (including symptoms of panic disorder, separation anxiety disorder, social phobia, OCD, GAD, specific phobia, and PTSD), externalizing symptoms (including ADHD, ODD and CD), and eating disorders (including the three EDI subscales and K-SADS anorexia nervosa symptoms; these measures were Z-transformed to correct for differing scales). For anxiety, externalizing, and eating disorder symptom scales, the score of the highest-rated disorder was used as the scale’s score. To illustrate, if a participant was rated one on ADHD, three on ODD and zero on CD, her externalizing score would be a three (based on her ODD score). We took this approach, rather than using mean or total scores, to simplify analyses, particularly because some disorders (e.g., ODD and CD) follow hierarchical diagnosis rules, which could artificially deflate scores. Note, however, that the simplicity of this system is at

the expense of specificity, as this coding system might mask differential effects of individual disorders, which future research should examine. Still, given the lack of research in this area, exploring broad patterns of diagnostic comorbidity can serve as an important precursor to examining disorder-specific associations.

Romantic experiences—We used a self-report measure designed by Steinberg, Fincham, and Davila (2005) to assess the degree to which participants had engaged in sexual and romantic activities, which we administered both at T1 and T2. The scale lists several types of romantic and sexual experiences and asks participants to rate the frequency with which they have engaged in each, ranging from 1 (*never*) to 4 (*many times*), in their lifetimes at T1, or since the T1 assessment at T2 (i.e., past year). As in previous studies (Davila, Stroud, et al., 2009; Starr & Davila, 2009; Steinberg & Davila, 2008; Stroud & Davila, 2008), we used several specific subscales assessing romantic and sexual activities. To assess the degree to which adolescents engage in *dating activities*, we summed responses to the following items, which reflect experiences that are relatively common and developmentally normative in early adolescence: having been asked out on a date, having asked someone out on a date, having gone on a good date, having flirted with someone, having been romantically attracted to someone, and having kissed a date or romantic partner. Cronbach's alpha for this scale was .78.

To assess sexual experiences, we asked adolescents to report the frequency, ranging from 1 (*never*) to 4 (*many times*), in their lifetimes (or since T1, at T2 assessment) with which they have engaged in (a) sexual intercourse with a date or romantic partner and (b) other sexual relations with a date or romantic partner (more than kissing, but not intercourse). These items were summed to create a total *sexual activities* score. Note that relatively few girls endorsed these items: at T1, 11 girls reported engaging in sexual activities; at T2, 16 did. Although the low frequency of sexual activities is not surprising given the age of our sample, our results should be interpreted with caution.

Pubertal stage—Pubertal maturation is associated with heightened risk (especially among girls) for symptoms of several disorders, including depressive, externalizing, and eating disorder symptoms, as well as increased romantic involvement (Compian et al., 2004; Cyranowski, Frank, Young, & Shear, 2000; Earls, 1987; Ge, Brody, Conger, & Simons, 2006; O'Dea & Abraham, 1999; Smolak, Levine, & Gralen, 1993) and thus could potentially confound analyses. To control for its impact, pubertal maturation was assessed at T1 using the Pubertal Development Scale (PDS; Petersen, Crockett, Richards, & Boxer, 1988) a five-item self-report inventory that measures physiological changes associated with puberty, including rapid height changes, skin changes, body hair growth, breast development, and menarche. Items are rated on 4-point scales, ranging from 1 (*no development*) to 4 (*development seems completed*), except for menarche, which is assessed dichotomously (1 = has not begun; 4 = has begun). A mean of all items are taken for a total score. Research has supported the validity and reliability of the PDS (Brooks-Gunn, Warren, Rosso, & Gargiulo, 1987; Petersen et al.).

Procedure

At T1, participants came to the laboratory with a primary caregiver for in-person data collection conducted over two separate 2-hour to 3-hour sessions. During the first session, girls and their parents provided assent, consent, and demographic data (as well as other data not relevant to the current study) and girls were interviewed about psychological symptoms. During the second session, they completed questionnaires measuring romantic experiences, psychological symptoms and other variables not relevant to the current study. The girls and their parents were paid \$35 each for participation in the first session and \$40 each for the

second session. At T2, girls were interviewed over the phone about their symptoms (phone interviews produce results comparable to in-person interviews; Rohde, Lewinsohn, & Seeley, 1997). To ensure confidentiality of girls' interview responses at T2, girls were asked to go to a private room with the door closed or to schedule the interview during a time when other family members would not be home. Additionally, girls completed online questionnaires, from home, assessing romantic experiences, psychological symptoms, and other variables unrelated to the current study. The questionnaire website was completely secure, and participants were given unique identification numbers over the phone to log on to the website. Participants and their parents were each paid \$75 for participation in T2.

Results

Bivariate correlations between study variables, as well as all means and standard deviations, are presented in Table 1. At T1, dating activities were significantly, positively correlated with depressive symptoms and parent-reported (but not interview-assessed) externalizing symptoms. Sexual activities were positively related to depressive symptoms, anxiety symptoms, parent-reported externalizing symptoms, and eating disorder symptoms. Note that, as one might expect, the dating and sexual variables were also associated with one another. Pubertal stage was positively correlated with both dating activities and parent-reported externalizing symptoms.

Tests of Longitudinal Models

To test the two sets of models (symptoms predicting dating /sexual activities and dating/sexual activities predicting symptoms), we used path analysis with measured (not latent) variables. Path analysis (an application of the general linear model) provides a parsimonious way to control for multiple variables (e.g., multiple symptom variables) at once in the context of regression based analyses. Because no latent variables were included, power requirements are similar to those for regression analyses. The analyses were conducted with Amos 16.0 (Arbuckle, 2007). Note that fit criteria are not applicable in these analyses, as saturated models always show perfect fit. Missingness (at T2) was not associated with T1 study variables (including symptoms, romantic and sexual activities, and puberty) or demographic variables and were assumed to be missing completely at random (Rubin, 1976). Therefore, means and intercepts were estimated in Amos using full information maximum likelihood estimation (Anderson, 1957; see Arbuckle).

Symptoms predicting dating /sexual activities—To examine whether T1 symptoms predicted changes in each of the two dating /sexual variables at T2, we evaluated two models. As shown in Figure 1, each of these models included as predictor variables T1 depressive symptoms, T1 anxiety, T1 externalizing symptoms, T1 eating disorder symptoms, and a T1 romantic variable. We ran separate models for each of the two romantic variables: (a) dating activities and (b) sexual activities. The outcome variable was the corresponding T2 romantic variable. We specified saturated models for all analyses, as there were no a priori hypotheses that any of the paths should be constrained to zero. To specify a saturated model, all paths between T1 and T2 variables are included, as are all correlations between T1 variables. In these as well as all analyses, we initially included pubertal stage in our analyses, but as it did not predict any study variables (possibly because of this sample's restricted age range; although the total range for the sample on the PDS was 1.2–4, 80% of the sample fell within one *SD* [.60] of the mean [3.00]) and did not substantially affect results, we dropped it from the model.

Results are presented in Table 2. For simplicity, and to reduce redundancy with the correlations presented in Table 1, we present only the data for the paths reflecting

longitudinal associations between T1 and T2 variables. In the first model predicting dating activities, there were no significant associations between T1 symptoms and T2 dating activities, although eating disorder symptoms marginally predicted decreases in dating activities. In the second model predicting sexual activities, both externalizing symptoms and depressive symptoms were significant predictors, but anxiety and eating disorder symptoms were not.

Dating /sexual activities predicting symptoms—To examine whether dating/sexual activities predicted symptoms, we again evaluated two models, one for each of the dating/sexual variables. For these models, the predictor variables included the T1 romantic variable (dating activities or sexual activities), T1 depressive symptoms, T1 anxiety, T1 eating disorder symptoms, and T1 externalizing symptoms (to control for baseline symptom levels). The outcome variables were T2 depressive symptoms, T2 anxiety, T2 eating disorder symptoms, and T2 externalizing symptoms. As Figure 2 illustrates, we again evaluated a saturated model, wherein all potential pathways were included (including the correlations between the T1 variables and the correlated errors for the T2 variables). Again, for simplicity and to limit redundancy, only the data for the paths reflecting longitudinal associations between T1 and T2 variables are presented in Table 3.

In the first model, which included dating activities, these experiences predicted increases in depressive symptoms, anxiety, and externalizing symptoms. In the second model, sexual activities predicted increases in externalizing symptoms and eating disorder symptoms, but not in depressive or anxiety symptoms. Note that, as presented elsewhere (Davila, Stroud, et al., 2009), even without controlling for comorbid symptoms, sexual activities did not predict increases in depressive symptoms.

Supplemental Analyses

In addition to testing our original hypotheses, based on previous research suggesting that comorbidity has implications for psychosocial functioning (Lewinsohn, Rohde, & Seeley, 1995), we examined whether girls who met criteria for a greater number of comorbid disorders would report a greater amount of dating and sexual experiences. We counted the number of DSM-IV disorders for which each girl met full current criteria and found that the presence of concurrent comorbid disorders was positively correlated with dating activities ($r = .26, p = .021$) and sexual activities ($r = .47, p < .001$).

Discussion

Previous research has shown that engagement in adolescent dating and sexual activities is linked to greater depressive symptoms (Davila, 2008; Davila, Stroud, et al., 2009; Grello et al., 2003; Joyner & Udry, 2000). In this study, we examined two related questions regarding the uniqueness and specificity of this association. First, are romantic activities uniquely linked to depressive symptoms or instead broadly associated with a range of psychological symptoms? We found greater support for the latter: romantic activities were linked to several types of symptoms, including anxiety, externalizing, and eating disorder symptoms, in addition to depressive symptoms. Furthermore, these associations were evident to some extent for both directions of effect (symptoms predicting activities and activities predicting symptoms). Second, is the relationship between depressive symptoms and romantic activities accounted for by co-occurring disorders? Our results suggest not: depression maintained its association with romantic experiences even when comorbid symptoms were simultaneously included in analyses.

Although other studies have demonstrated a link between romantic experiences and various forms of psychological symptoms (Brendgen et al., 2002; Cauffman & Steinberg, 1996;

Davila, 2008; Davila, Stroud, et al., 2009; Gralen et al., 1990; Joyner & Udry, 2000; Kiesner et al., 2004; van Dulmen et al., 2008; Zimmer-Gembeck et al., 2001), previous research has generally analyzed one disorder at a time, rather than considering the concurrent implications of adolescent romance across multiple forms of psychopathology (see also Caminis et al., 2007). Our results highlight the importance of examining multiple aspects of emotional dysfunction, particularly because high rates of co-occurrence between disorders have the potential to introduce spurious relations between symptoms and interpersonal variables (Starr & Davila, 2008a, 2009). As depressive symptoms generally maintained their relation to romantic activities, even when comorbid symptoms were simultaneously considered, their association is likely not spurious, at least with regard to the diagnostic categories included in our model. Demonstrating non-spuriousness is an important step toward determining whether romantic involvement acts as a causal risk factor toward the development of depressive symptoms (Garber & Hollon, 1991). This is especially important because much research has been implicitly rooted in the assumption that the relation between depression and romantic behavior is diagnostically nonspurious. Note, however, that associations could still be spurious with regard to variables not measured in the current study (e.g., familial variables or exposure to deviant peers).

Although the link between depressive symptoms and romantic involvement does not appear to be secondary to associations with comorbid symptoms, the relationship between psychological distress and adolescent romantic involvement does not appear to be unique to depressive symptoms. Instead, results suggested that several types of symptoms might be independently and bidirectionally linked to adolescent romantic activities.

Psychological Symptoms as Predictors of Dating and Sexual Outcomes

Unexpectedly, no categories of symptoms predicted dating involvement. Perhaps symptoms are more predictive of dating involvement under certain circumstances, such as stressful family backgrounds or personality traits (e.g., Davila, Stroud, et al., 2009), and future research would benefit from identifying these conditions. Alternatively, our analyses might have been somewhat underpowered. Future studies should use larger samples to examine whether psychological symptoms predict dating activities. In addition, because symptoms might cluster together with risky behaviors, they might be less predictive of behaviors that are relatively normative in this age group, such as dating. In line with this notion and consistent with hypotheses, both depressive and externalizing symptoms predicted prospective increases in sexual activities, which are less normative at this age (although replication of results will be important). That both depressive and externalizing symptoms predict increases in sexual activities suggests that they might do so via shared pathways (Jessor, 1992, 1993; Jessor & Jessor, 1977). As speculation, for example, depressive symptoms and disruptive behaviors might be rooted in chaotic familial environments. In turn, adolescents might seek out sexual experiences to compensate for poor familial relationships. Indeed, using the current sample, Davila and colleagues (2009) showed that parent-child chronic stress moderated the relationship between depressive symptoms and later sexual intercourse, such that depression was more predictive of intercourse among adolescents with more stressful parent-child relationships. Similarly, Rink, Tricker, and Harvey (2007) found that depressed adolescents with close parent-child relationships were less likely to have sex than were depressed adolescents with nonclose parental relationships. On the other hand, depression and externalizing disorders might have separate reasons for leading to sexual activities. For example, dysphoric youth might rely on sexual activities to boost their self-esteem or seek approval from others, whereas externalizing teens might engage in early sexual activities within the context of their rule-breaking, risky behaviors. These ideas are purely speculative; more research is needed to distinguish between these and other possibilities.

Psychological Symptoms as Outcomes of Dating and Sexual Involvement

Dating activities predicted prospective increases in not only depressive symptoms but also in anxiety and externalizing symptoms. Though developmentally normative, adolescent romance might nonetheless be stressful, thereby conferring risk for psychological symptoms (Davila, 2008). Further, sexual activities predicted increases in externalizing symptoms and eating disorder symptoms. Should these findings be replicated, it might suggest that these disorders share a common etiological root in romantic experiences, although this is purely speculative. However, it is again unclear whether these associations occur through similar or differing pathways. Perhaps early sexual experience leads to greater externalizing behavior because it fits within the larger nomological net of rule-breaking, risky behaviors (Jessor, 1992, 1993; Jessor & Jessor, 1977) or perhaps because it signals inclusion in deviant peer groups. On the other hand, sexual experience might lead to greater eating disorder symptoms because girls become more attuned to their bodies as they attempt to conform to the perceived standards of their desired romantic partners, and thus become more apt to find fault in their body types. Again, further research should clarify these mechanisms.

If dating and sexual experiences act as common risk factors for several different types of symptoms, it could, in turn, help explain why symptoms tend to co-occur in adolescence. Converging with this idea, we also found that girls with a greater number of co-occurring disorders reported higher levels of romantic activities, again offering preliminary support for the idea that romantic experiences act as common risk factors and help generate symptom co-occurrence. Alternatively, romantic behaviors might be a consequence of comorbidity. Comorbid youth might seek out romantic relationships and sexual intimacy as a means of distracting themselves from their distress, obtaining support or peer approval, or enhancing self-esteem. Comorbidity in adolescence leads to a number of negative consequences, including greater general distress, poorer academic functioning, greater parental conflict, greater likelihood of suicide attempt, and poorer treatment outcomes (Essau, 2003; Lewinsohn et al., 1995; Young, Mufson, & Davies, 2006). Of course, unlike these outcomes, romantic involvement is not an inherently negative consequence. It might be that distressed youth with comorbid disorders are ill-prepared for the challenges of young romance, so their romantic activities might, at times, have negative implications. Furthermore, precocious sexual activity might be a maladaptive coping mechanism for early adolescents struggling with multiple disorders and might lead to exacerbation and prolonging of symptoms, especially given the potential for negative consequences associated with sexual activity (e.g., unplanned pregnancy, sexually transmitted infections).

This study showed that several different types of psychological symptoms predicted and were predicted by romantic experiences. Given that the sample size was fairly small and that the base rate of sexual activities was relatively low, it will be important to replicate these results. Following replication, an important additional direction will be to identify variables that moderate these relationships. For example, it stands to reason that teens in higher quality relationships (e.g., reciprocal and with low conflict and high satisfaction) would be less likely to develop psychological problems. Similarly, adolescents who are more competent in dealing with romantic and other interpersonal challenges might be buffered from the potential maladaptive consequences of romantic involvement (Buhrmester, Furman, Wittenberg, & Reis, 1988; Davila, Steinberg, et al., 2009; Grover, Nangle, & Zeff, 2005). Additionally, teens with strong and supportive peer or familial relationships might be better equipped to deal with the difficulties of romance (and thus less vulnerable to their maladaptive effects; Steinberg & Davila, 2008). Having supportive relationships also might help psychologically distressed youth manage their symptoms without seeking romantic or sexual company.

Notably, the bidirectional relationship between aspects of romantic activities and psychological symptoms might suggest a circular causality chain, wherein psychological symptoms lead to greater engagement in romantic activities, which in turn exacerbate psychological symptoms, and so on. This dynamic interplay could ultimately lead to deteriorating psychological health, overreliance on romantic activities as a coping mechanism, and engagement in risky sexual behaviors. Multiwave longitudinal research should examine the cross-lagged associations between romantic and sexual activities and psychological symptoms over the course of adolescence.

This study had several limitations that merit note. First, as previously noted, it will be important to replicate these findings in larger samples. Second, as our sample was recruited from a nonrandom, self-selected pool within the community, the majority of the participants had low levels of psychopathology, and most symptoms were subsyndromal, although symptom levels were roughly comparable to those in other adolescent community samples (Lewinsohn et al., 1993). The lack of research on adolescent romantic functioning in clinical samples is a shortcoming of the literature. Subsyndromal symptoms are important to study, however, as they are often accompanied by clinically significant impairment and frequently lead to later psychopathology (Judd et al., 1998). In addition, relatively few of our participants reported having engaged in sexual activities. Although this would be expected in this age group, the sexual activities results should be interpreted with caution. Furthermore, our sexual experience measures did not assess whether the sexual activities were within the context of romantic relationships. This is an important distinction, as casual sex appears to have more deleterious effects, including elevations in depression and delinquent behavior, than does sex within committed relationships (Grello et al., 2003). Future research should examine whether early sexual activities predict and are predicted by a range of disorders, or whether these associations are limited to casual sex. Finally, although the racial composition of our sample was representative of the community from which participants were drawn, future research should explore the precipitants and consequences of romantic activity in more ethnically diverse populations.

Our use of an all-female sample represents both a strength and limitation. On one hand, compared with boys, girls are most vulnerable to depression, anxiety, and eating disorders (Lewinsohn et al., 1993; Nolen-Hoeksema & Girgus, 1994), and are more likely to experience depressive symptoms when romantically involved (Joyner & Udry, 2000; Starr & Davila, 2008b). Thus, the analyses presented here might be most relevant for girls. On the other hand, our all-female sample precluded the examination of gender differences. Would boys show similar associations between symptoms and romantic/sexual variables? Sexual activity, particularly at young ages, is considered a greater taboo for girls than for boys; thus, the meaning and implications of sexual involvement might differ across gender. Girls are also both more relationally attuned and more sensitive to interpersonal stressors (Compton et al., 2000; Nolen-Hoeksema & Girgus, 1994; Rose & Rudolph, 2006; Rudolph, 2002), and consequently might be more likely than boys to react to romantic stressors with psychological distress. Similarly, girls seek social support more often than boys, and pursuing romantic or sexual company might be another form of support seeking. These questions demand future empirical attention.

Our study also focused exclusively on early adolescents, and it remains unclear whether associations persist into later adolescence. Romantic activities and depression have also been linked among older adolescents (Davila et al., 2004); however, we suspect that the association between romantic experiences and psychological symptoms diminishes as romance and sex become more normative and commonplace (and some evidence suggests that this is in fact the case; Neemann, Hubbard, & Masten, 1995). Again, this is an empirical question that warrants further examination. The current study's 1-year follow-up period

might also mask the effects of processes that unfold over longer spans of time, and it is unclear whether girls who engage in romantic behaviors at early ages continue to experience emotional difficulties throughout adolescence and early adulthood, or if these effects instead dissipate over time.

This research suggests that early romantic activities might, for some adolescents, have maladaptive consequences. We also believe, however, that romance is a normative and developmentally meaningful component of adolescence that offers teens the opportunity to learn and practice crucial relationship skills. Future research needs to better distinguish between healthy sexual and romantic exploration and risky behaviors and better identify those adolescents who are most at risk for negative consequences (see Welsh et al., 2000). Thus, rather than recommending that young adolescents avoid romantic and sexual relationships altogether, we hope that parents and teachers will help instill interpersonal and emotional competencies that help youth navigate the many intricacies of teen growth and development.

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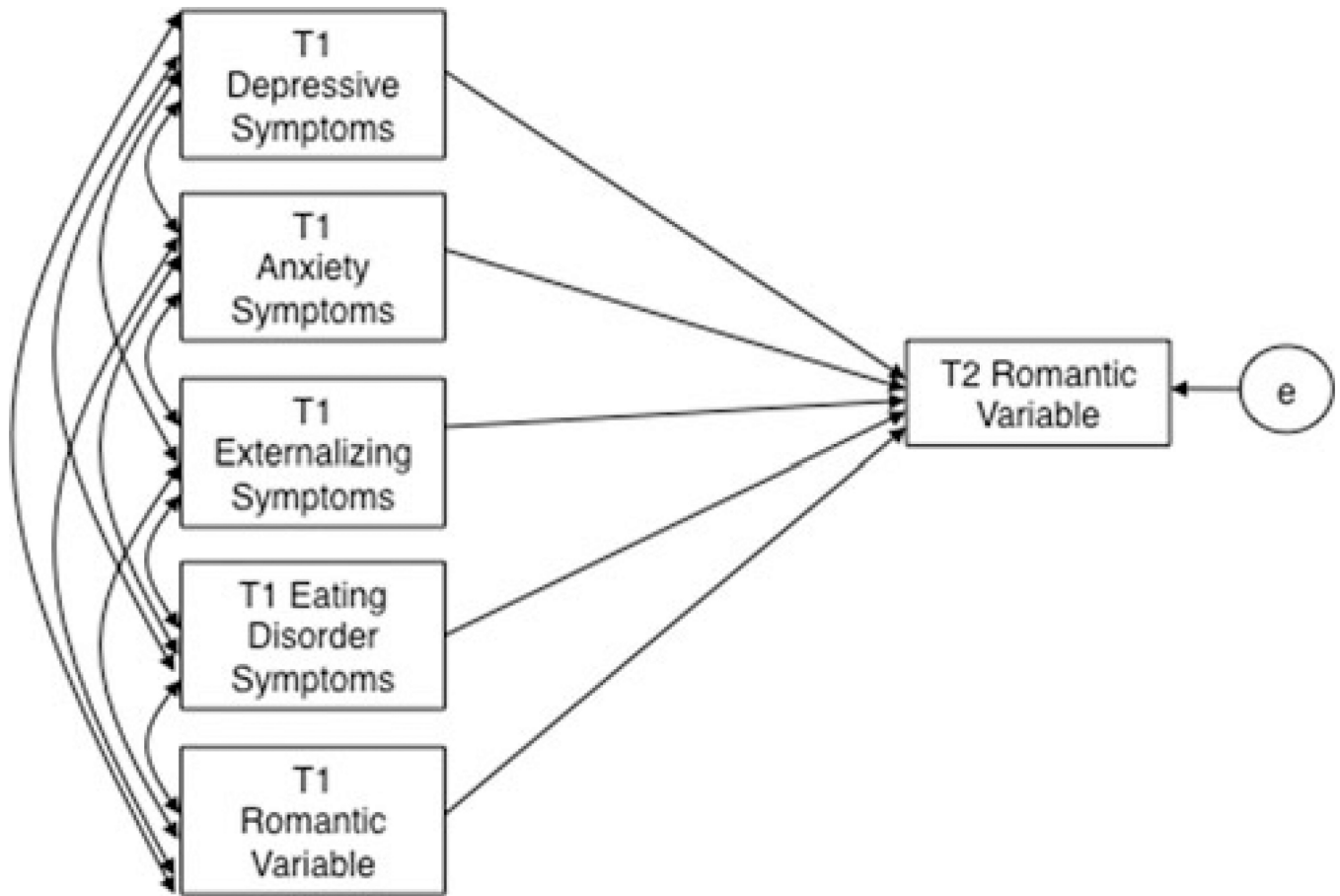


Figure 1. Model for path analyses of depressive, anxiety, externalizing, and eating disorder symptoms predicting romantic variables.
Note. Romantic variables = dating activities and sexual activities (each analyzed in separate model).

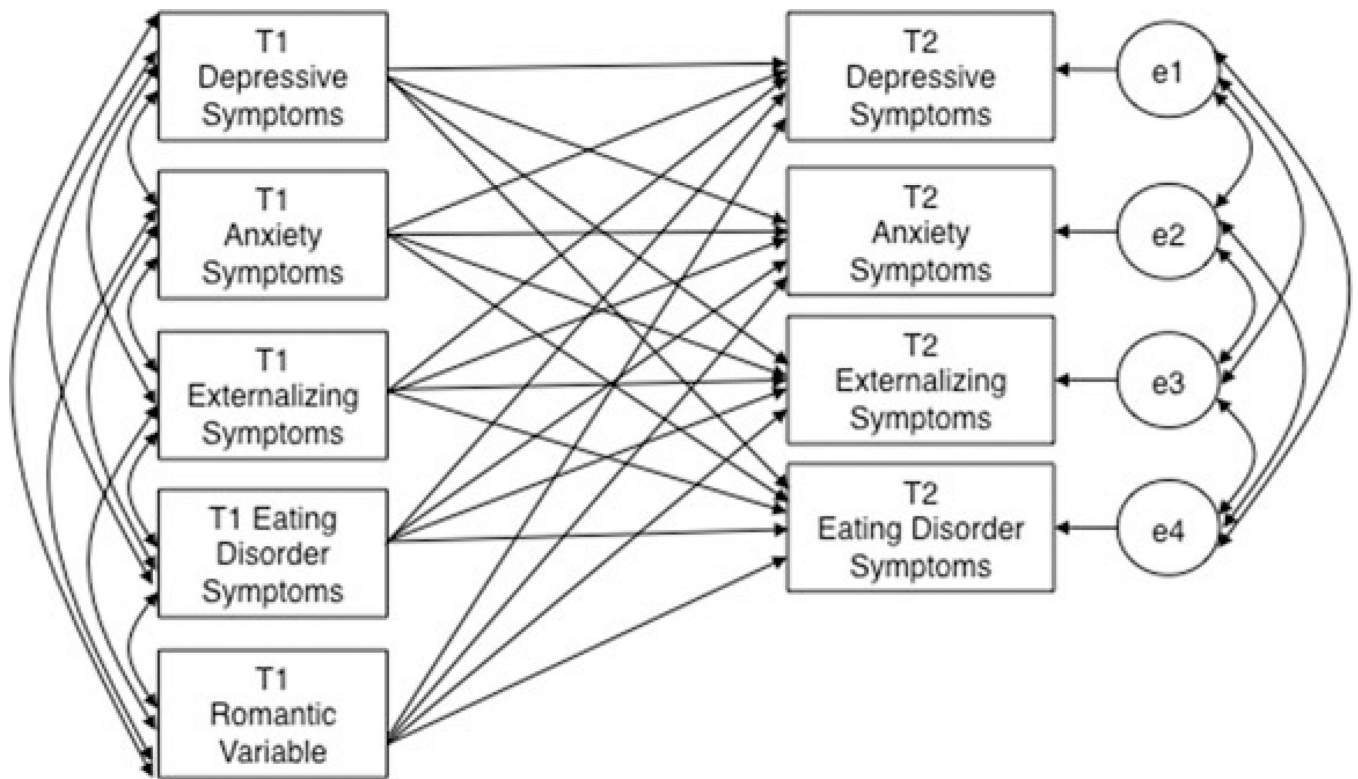


Figure 2. Model for path analyses of romantic variables predicting depressive, anxiety, externalizing, and eating disorder symptoms.
Note. Romantic variables = dating activities and sexual activities (each analyzed in separate model).

Table 1

Zero-Order Correlations Between Study Variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. T1 Dep	—													
2. T1 Anx	.19	—												
3. T1 Ext	.21*	.41**	—											
4. T1 Ext (CBCL)	.28**	.23*	.36**	—										
5. T1 Eating	.25*	.05	.07	.16	—									
6. T1 Dating	.33**	.11	.13	.30**	.17	—								
7. T1 Sexual activities	.32**	.31**	.18	.26*	.24*	.39**	—							
8. T1 Pubertal stage	.17	-.05	.11	.24*	.15	.41**	.12	—						
9. T2 Dep	.48**	.28*	.18	.27*	.34**	.40**	.26*	.16	—					
10. T2 Anx	.40**	.60**	.32**	.18	.10	.35**	.32**	.13	.47**	—				
11. T2 Ext	.19	.40**	.79**	.32**	.03	.28*	.30*	.16	.33**	.42**	—			
12. T2 Eating	.21	.08	-.03	-.09	.12	.00	.32**	-.11	.03	.12	.17	—		
13. T2 Dating	.26*	.00	.11	.01	.00	.81**	.21	.31**	.30*	.21	.24	-.10	—	
14. T2 Sexual activities	.37**	.27*	.52**	.29*	.15	.44**	.43**	.19	.51**	.42**	.51**	-.06	.39**	—
Mean	1.18	1.49	0.20	46.63	0.79	2.42	2.16	3.00	0.81	1.26	0.27	0.84	2.49	2.42
SD	1.01	1.05	0.56	11.85	1.14	0.74	.46	0.60	1.07	1.02	0.73	0.92	0.78	1.00

Note. CBCL = Child Behavior Checklist; Dep = depressive symptoms, Anx = anxiety symptoms, Ext = externalizing symptoms, Eating = eating disorder symptoms. See measure descriptions for more information.

* $p < .05$.

** $p < .01$.

Table 2
Standardized Regression Weights and Significance Levels of Pathways for T1 Symptoms Predicting Changes in Romantic Outcomes at T2

Predictor Variable	Outcome Variable					
	Model 1: T2 Dating activities			Model 2: T2 Sexual activities		
	Weight	SE	p	Weight	SE	p
T1 Depressive Sx	.05	.06	.54	.18	.09	.02
T1 Anxiety Sx	-.05	.06	.51	-.08	.08	.34
T1 Externalizing Sx	.03	.11	.73	.42	.16	<.001
T1 Eating disorder Sx	-.13	.05	.06	.02	.07	.85
T1 Romantic variable	.82	.08	<.01	.51	.18	<.001

Note. SE = standard error.

Table 3

Standardized Regression Weights, Standard Errors, and Significance Levels of Pathways for Romantic Variables Predicting Later Symptoms

Romantic variable included in this model:		Model 1 Dating activities			Model 2 Sexual activities		
T1 Predictor	T2 Outcome	Weight	SE	p	Weight	SE	p
Romantic variable	→ Depress	.24	.15	.02	.11	.25	.33
Romantic variable	→ Anxiety	.19	.13	.03	.12	.21	.20
Romantic variable	→ Extern	.19	.07	.01	.28	.12	<.001
Romantic variable	→ Eating	-.08	.15	.52	.32	.25	.008
Depress	→ Depress	.32	.11	<.01	.38	.11	<.001
Depress	→ Anxiety	.26	.09	.01	.30	.09	<.001
Depress	→ Extern	-.01	.05	.91	.01	.05	.83
Depress	→ Eating	.22	.11	.07	.16	.11	.18
Anxiety	→ Anxiety	.52	.09	<.01	.49	.09	<.001
Anxiety	→ Depress	.17	.11	.10	.15	.11	.17
Anxiety	→ Extern	.09	.05	.25	.02	.05	.83
Anxiety	→ Eating	.07	.11	.56	-.01	.11	.91
Extern	→ Extern	.74	.10	<.01	.74	.10	<.001
Extern	→ Depress	.04	.20	.73	.05	.21	.63
Extern	→ Anxiety	.05	.17	.56	.07	.17	.47
Extern	→ Eating	-.08	.04	.80	-.07	.20	.58
Eating	→ Eating	.07	.09	.57	.02	.09	.89
Eating	→ Depress	.20	.09	.04	.19	.09	.06
Eating	→ Anxiety	-.04	.08	.61	-.05	.08	.58
Eating	→ Extern	-.02	.04	.80	-.04	.04	.50

Note. SE = standard error; Depress = depressive symptoms, Extern = externalizing symptoms, Eating = eating disorder symptoms. See measure descriptions in the Method section for more information.