Lovesick: Predictions from Jealousy and Hostile Conflict in Early Adult Romantic Relationships to Sleep, Depression and IL-6

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ABSTRACT

Romantic relationship hostility has been linked to a variety of health outcomes in marital couples, yet less is known about the role of hostility in health difficulties for young adults over time. The current study examines predictions from several indicators of romantic relationship hostility (observed hostility, jealousy, and reported negativity and conflict) in early adulthood to higher levels of sleep problems, depression, and Interleukin-6 (IL-6) in adulthood. Participants, parents, friends and romantic partners provided observational and self-report data from ages 13-29 and participants provided blood samples that were analyzed for circulating concentrations of IL-6 at age 29. After accounting for control variables including income, gender, attachment security, and baseline observed hostility and depression, higher levels of hostility in romantic relationships at ages 21 and 24 predicted more health difficulties at age 29. Identifying early adult markers of romantic relationship hostility that may contribute to poorer health outcomes has implications for our understanding of the importance early romantic relationships and for intervention.

INTRODUCTION

Hostility in romantic relationships has been linked to numerous health outcomes including increased anxiety and depression, poorer cardiovascular, endocrine, and immune functioning, and even early mortality (Bertera, 2005; Cranford, 2004; Kiecolt-Glaser & Newton, 2001; Linder, Crick & Collins, 2002; Luecken & Roubinov, 2012; Miller et al., 1996; Wright & Loving, 2011). Romantic relationship conflict represents an interpersonal stressor and we know that chronic stress in general has negative effects on many bodily systems and a variety of health outcomes (McEwen, 2008). Yet, even after controlling for potential confounds, such as socioeconomic status, overall perceived stress, and depressive symptoms, the link between hostile romantic interactions and health outcomes remains robust (Whisman & Sbarra, 2012). Currently, much of the research in the field has focused on married couples for assessments of conflict and health outcomes. For example, hostile behavior in married couples is associated with slower wound healing and larger declines in cellular immune functioning (Jaremka et al., 2013; Kiecolt-Glaser et al., 2005). Specific negative behaviors during marital conflict have been shown to predict the development of cardiovascular and musculoskeletal symptoms over 20 years (Haase et al., 2016).

Yet, romantic relationships in early adulthood (before the majority of couples are married) also have the potential to influence long-term health outcomes. Early adult romantic relationships are often beginning to serve attachment functions and so are likely to be influential as young adults continue to develop relationship patterns with the same or different partners (Allen & Land, 1999). Currently, many couples are delaying marriage until their late twenties or beyond and others choose not to marry at all (Shulman & Connolly, 2015). Such couples are

often in long-term, committed relationships but would not qualify for studies of marital functioning. These relationships in early adulthood have important ties to both current and future functioning and so are worthy of further study (Simon & Barrett, 2010).

Another limitation in the field of relationship conflict and health is a reliance on short-term studies. For example, several studies using romantic partners have looked at cortisol response over a period of hours in response to a stressor (Ditzen et al., 2008; Gunlicks-Stoessel & Powers, 2009; Ha et al., 2016; Powers et al., 2006). Cortisol levels have consistently been linked to a variety of health outcomes (Glaser & Kiecolt-Glaser, 2005) but short-term laboratory studies do not provide information on long-term effects of romantic conflict and stress. Other studies looking at various behavioral health indicators and mental health outcomes from dating relationships are cross-sectional (Braithwaite, Delevi, & Fincham, 2010). These studies provide important information about the short-term effects of romantic relationship conflict, but there is a need for a greater understanding about the long-term consequences of such conflict and hostility, especially in early adult romantic relationships.

We know that extreme forms of conflict (e.g., dating violence) in early romantic relationships are associated with later negative health behaviors, such as risky sex and substance use (Exner-Cortens, Eckenrode, & Rothman, 2013) and that observed hostility in early romantic relationships is linked to increasing hostile relationships over time (Loeb, Tan, Hessel & Allen, 2016). To date, however, there is little to no evidence about the development of hostile conflict in early adult romantic relationships and the long-term health outcomes from such early relationships. Many early adult relationships do not result in marriage and young adults may have several romantic partners before selecting a mate. Finding long-term health outcomes of early adult romantic relationships would suggest one of three possibilities: 1) A third variable

(such as attachment style or early negative affect) is accounting for both relationship difficulties and health difficulties; 2) Romantic relationship conflict simply reflects a hostile relationship pattern established earlier in life and which accounts for health effects; or 3) Romantic relationships marked by hostility have truly enduring implications for health. By examining associations between early adult hostility in romantic relationships and adult health indicators while accounting for potential confounds, we can begin to understand these processes.

As mentioned, there are several possible reasons why romantic relationship hostility may predict poorer health outcomes. Individual characteristics such as insecure attachment styles or a tendency toward negative affect may give rise to a greater stress response to interpersonal conflict, which may then contribute to poorer physical and mental health outcomes (Berry & Worthington, 2001; Powers, Pietromonaco, Gunlicks, & Sayer, 2006). Similarly, individuals with certain individual characteristics like insecure attachment styles may perceive conflict as more threatening and therefore stressful (Campbell, Simpson, Boldry, & Kashy, 2005). In either of these cases, we could expect that individual characteristics would be associated with both the development of romantic relationship hostility and (directly or indirectly) later health outcomes. Another possibility is that romantic relationship conflict may represent a continuation of hostile relationship patterns developed earlier in life (e.g., in friend relationships) and the additive effects of hostility across various relationships may predict poorer health outcomes (Gurung, Sarason, & Sarason, 1997; Kinsfogel, & Grych, 2004). In this case, we would expect to see evidence that hostile relationship patterns early in life predict both later hostile relationship patterns and health difficulties. Conversely, hostility in romantic relationships may predict health outcomes over and above individual factors and earlier hostile relationship patterns, either because romantic relationship hostility is uniquely harmful or because individuals in such

relationships lack the protective factor of a high-quality relationship. Some research suggests social support from a high-quality romantic relationship may buffer the effects of stress and predict better health outcomes; those in low-quality or high conflict relationships may not benefit from this buffering effect (Holt-Lunstad, Birmingham, & Jones, 2008). In either case, we would expect to see effects on health of romantic relationship hostility even after accounting for early individual factors and hostile relationship patterns. Although all of these theories are plausible (and not mutually exclusive), more research is needed on the effects of romantic relationship conflict on health while accounting for individual factors and conflict in other important relationships.

In order to best understand how *relationship* hostility affects individuals, it is important to account for the behaviors and perceptions of both partners in the relationship. Using partner behaviors as predictors also avoids common method variance issues for participant outcomes (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). There is also evidence that partner characteristics, such as happiness or rejection sensitivity, can affect an individual's health over and above his or her own levels of the same variable (Chopik & O'Brien, 2016; Norona, Roberson, & Welsh, 2016). For these reasons, the current study will use both self and partner reports and observations to predict participant health outcomes.

Relationship Predictors

Observed hostility. Several important cognitive and behavioral markers of negativity in romantic relationships may predict higher levels of health problems as individuals enter adulthood. Observed hostile conflict tactics are frequently linked to poorer health indicators in married couples (Jaremka, et al., 2013; Kiecolt-Glaser et al., 2005) and such findings may extend from earlier romantic relationships. Observational measures, along with self and partner-report,

provide convergent evidence of relationship functioning. Continual, observable hostile conflict in romantic relationships may produce physical stress, which in turn is manifested in markers of health problems later in life. In fact, chronic interpersonal stress averaged across relationships has been longitudinally linked to higher levels of IL-6 in young, healthy adults (Miller, Rohleder & Cole, 2009). Capturing such behavioral evidence in early adult romantic relationships, which research to date has generally not attempted, could elucidate when and how the long-term physical effects of romantic relationship conflict begin to accrue. One notable study looking at observed conflict in adolescent romantic relationships found that both positive and negative expressed emotions during conflict predicted increases in depressive symptoms over a 2-year period (Ha et al., 2014). The current study seeks to build on such findings by examining longer-term sequelae of various types of romantic conflict and hostility using a broader range of health outcomes.

Jealousy. A specific facet of relationship negativity, jealousy may play a particularly important role in early adult romantic relationships, before most individuals have married or made a similar long-term commitment. Jealousy, which may signal a lack of trust in one's partner, relationship, and/or relationships in general seems to have deleterious effects on both romantic relationship and individual health functioning. Higher levels of romantic jealousy have been linked to alcohol-related problems, higher levels of aggression, and dating violence (DiBello, Rodriguez, Hadden & Neighbors, 2015; Linder, Crick & Collins, 2002; Seiffge-Krenke & Burk, 2015). Experimentally, induced jealousy led participants to behave more aggressively, suggesting a causal link between jealous emotions and hostility (DeSteno, Valdesolo, & Bartlett, 2006). Jealousy, on the part of either the individual or his or her partner, may be another

indicator of relationship strain among early adults that could have long-term health outcomes, particularly if it persists across time and relationships.

Negativity and conflict. In addition to observed hostility and jealousy from both partners, perceived negativity and hostile conflict in the relationship reported by both partners may be linked to adult health outcomes. Perceptions of partner support and conflict have been linked to postpartum depressive symptoms (Dennis & Ross, 2006). Perceptions of negativity and conflict in the relationship would serve as a marker to examine how each partner's perceptions of hostility across time is linked to health outcomes for the target participant. It would be particularly noteworthy if romantic partner reported negativity in the relationship predicted poorer health outcomes because that would suggest that both partners' behaviors in a romantic relationship may have implications for an individual's health later on.

Health Outcomes

Interleukin-6. Interleukin-6 (IL-6) is a proinflammatory cytokine that is associated with the body's response to removing harmful pathogens and has been consistently sensitive to psychosocial predictors, including lower levels of social support, marital strain, and higher levels of depression (John-Henderson, Stellar, Mendoza-Denton & Francis, 2015; Lutgendorf et al., 1999; Whisman & Sbarra, 2012). Chronic inflammation is linked to the thickening of artery walls and cardiovascular disease. Relatively higher levels of circulating IL-6 are associated with a number of serious diseases including rheumatoid arthritis, psoriasis, sepsis, osteoporosis, and many forms of cancer and is considered a marker of these diseases (Edwards, Burns, Ring & Carroll, 2006; Kiecolt-Glaser, Gouin, & Hantsoo, 2010). IL-6 is a useful indicator of potential health difficulties, even in a relatively young, healthy sample (for example, see Edwards, Burns, Ring & Carroll, 2006). Observed ability to manage conflict in early adolescent close friend

relationships and late adolescent romantic relationships have also been linked to later levels of IL-6 in the current sample (Allen, Loeb & Narr, 2016), and the current study seeks to build on these findings by examining different potential early adult romantic relationship predictors IL-6.

Sleep. There is research to suggest that hostile conflict with romantic partners can have a negative impact on sleep and vice versa (Hicks & Diamond, 2011; Troxel, Robles, Hall & Buysse, 2007). Sleep quality is extremely important for overall functioning and health and sleep difficulties are associated with a variety of negative outcomes, including poorer physical and mental health (Cappuccio et al., 2011; Troxel, 2010; Wong et al., 2013). Sleep can be measured through subjective reporting or through objective observation. Objective observation is difficult, time-consuming and expensive but there is evidence that self-reports of sleep quality and duration are useful predictors of health outcomes such as diabetes, hypertension, and cancer (Grandner, Chakravorty, Perlis, Oliver, & Gurubhagavatula, 2014; Zhang et al., 2013). However, many studies on sleep and romantic relationships are cross-sectional and less is known about potential longitudinal effects of romantic relationship conflict on sleep. Early experiences of negative relationships may "stay with" individuals and so continue to influence their health outcomes over time (Allen et al., 2016). Because sleep may both influence and be influenced by conflictual relationships, hostile conflict between early adult romantic partners may predict changes in sleep quality and vice versa.

Depression. Hostile conflict has also been associated with increases in depression (La Greca & Harrison, 2005; Rice, Harold, Shelton & Thapar, 2006). Depression is associated with a myriad of health problems including coronary heart disease, arthritis, asthma, and diabetes (Moussavi et al., 2007; Rugulies, 2002). Individuals in conflictual romantic relationships may increasingly develop depressive symptoms over time, as these negative experiences may both

influence one's perceptions and expectations of romantic relationships and future relationship characteristics (Campbell et al., 2005; Roisman, Collins, Sroufe & Egeland, 2007). In addition, depressive symptoms may, in turn, negatively impact social relationships, creating a harmful cycle (Hammen, 2006). Early hostile conflict may predict increasing levels of depression over time (and vice versa), which in turn may be detrimental to individuals' future health.

Finding potential early romantic relationship roots of health difficulties is needed because such relationships may be more malleable as individuals develop and change than later relationships, particularly marital relationships. Young adults still have opportunities to develop new relationships and new ways of interacting within relationships. By identifying early indicators of problematic romantic relationships that may contribute to health issues later on, we can target key time points in romantic relationship development for future study and intervention.

A secondary aim of the current study is to examine the associations between indicators of romantic relationship hostility over time. Understanding how partner attitudes and behaviors influence each other across several years and/or across partners will help us to put any associations with later health outcomes in context. For example, hostility that is observable to a trained coder at age 21 (but which may or may not be reported by participants) may predict other types of hostility later on as individuals adapt their behavior accordingly to the hostile environment of the relationship. The current study will examine the development of relationship hostility through exploratory analyses to better understand the context through which health difficulties may emerge.

Control Variables

In order to address the possibility that third variables may underlie both an individuals' romantic relationship interactions and health outcomes, it is necessary to control for variables most likely to influence these domains.

Attachment security. The adult attachment interview (AAI) has been used extensively to predict a variety of psychosocial outcomes in adolescence and adulthood (Dawson, Allen, Marston, Hafen, & Schad, 2014; Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2010). There is evidence to suggest that attachment states of mind may specifically influence individuals' approach to conflict (Creasey, 2002). Because attachment states of mind as measured by the AAI has such broad implications for adolescents' social development in general and approach to conflict in particular, attachment security at age 14 is used as control variable in the current study.

Income. Family income serves as a marker of socioeconomic status (SES) that has far-reaching predictions for adolescent social development (Bradley & Corwyn, 2002). Adolescents from low-income families may be more likely to experience family violence, harsh parenting, and chronic stress, all of which may impact their later relationships (Crouch, Hanson, Saunders, Kilpatrick, & Resnick, 2000; McLoyd, 1998). Therefore, family income at age 13 is used as a control variable in the current study.

Gender. There is evidence, particularly in adolescence and young adulthood, that gender may influence individuals' approaches and responses to romantic relationship conflict (Feiring, Deblinger, Hoch-Espada, & Haworth, 2002; Hines & Saudino, 2003; Simon & Furman, 2010). Gender is used as a control variable in the current study.

Observed hostility. In order to address the possibility that romantic conflict merely represents a continuity of hostility from earlier relationships, observed hostility with close friends at age 13 will be included in the current study.

Depression. Depressive symptoms at age 13 will be included to address the possibility that early negative affect may be driving the development of hostile relationship patterns and health difficulties. Depressive symptoms at ages 21 and 24 and sleep problems at age 26 will also be included to examine *change* in these variables.

In the current study, participants were followed longitudinally for 16 years, from age 13 to age 29, using observational, self-report, and biological data. to examine the following hypotheses:

1. Age 13-15 demographic and psychosocial variables will be associated with age 21 indicators of hostility.
2. Age 13-15 demographic and psychosocial variables will be associated with age 24-26 indicators of hostility.
3. Participant and partner measures of hostility and conflict at age 21 will be associated with the development of age 24 levels of hostility and conflict.
4. Age 13-15 demographic and psychosocial variables will be associated with age 29 indicators of health.
5. Higher levels of hostility in romantic relationships at age 21 will predict higher levels of IL-6 at age 29.
6. Higher levels of hostility in romantic relationships at age 21 will predict higher levels of sleep problems at age 29.

7. Higher levels of hostility in romantic relationships at age 21 will predict relative increases in depression by age 29.
8. Higher levels of hostility in romantic relationships at age 24 will predict higher levels of IL-6 at age 29.
9. Higher levels of hostility in romantic relationships at age 24 will predict relative increases in sleep problems by age 29.
10. Higher levels of hostility in romantic relationships at age 24 will predict relative increases in depression by age 29.
11. Age 24 levels of hostility may mediate some of the associations between age 21 romantic hostility and age 29 health outcomes.

First, exploratory analyses will be conducted to examine the relationships between the baseline control variables and each subsequent wave of data, as well as the relationships between the age 21 and age 24 variables. Next, regressions will be run predicting the age 29 health outcomes from each prior wave of data separately and then full structural equation models will be tested to examine the above hypotheses.

METHOD

The current sample is part of a larger longitudinal of adolescent social development in familial and peer contexts. The original sample included 184 seventh and eighth graders (86 male and 98 female) and their parents. The sample was racially/ethnically and socioeconomically diverse: 107 adolescents (58%) identified themselves as Caucasian, 53 (29%) as African American, 15 (8%) as of mixed race/ethnicity, and 9 (5%) as being from other minority groups. Adolescents' parents reported a median family income in the $40,000–$59,999

range. Adolescents were originally recruited from the seventh and eighth grades at a public middle school drawing from suburban and urban populations in the Southeastern United States. Students were recruited via an initial mailing to all parents of students in the school, along with follow-up contact efforts at school lunches. Adolescents who indicated they were interested in the study were contacted by telephone. Of all students eligible for participation, 63% agreed to participate either as target participants, or as peers providing collateral information. Target participants will be referred to as "teens" in the current study.

For the current study, participants provided data at five time points: Twice in early adolescence (*M* age= 13.35, *SD* = 0.64 and *M* age =14.78, *SD*=.67), twice in early adulthood (*M* age =20.98, *SD*=1.08 and *M* age=23.99, *SD*=1.12), and in adulthood (*M* age = 28.55, *SD*=1.03). At the age 13 assessment, participants (*N*=184), their close friends, and parents provided data. At the age 15 assessment, participants (*N*=171, 92.93% of the original sample) completed an attachment interview. At the age 21 and 24 assessments, participants in a romantic relationship of at least 3 months were invited to participate in filmed interaction tasks with their romantic partners. To maximize the number of romantic partners able to participate, dyads came in over a span of three years to complete observational and questionnaire measures. At the age 21 data collection, 120 (65.22%) of the original teens were in eligible romantic relationships and both they and their partners agreed to participate. Participants reported being in a relationship with their romantic partners an average of 1.82 years (*SD*=1.76 years). At the age 24 data collection, 102 dyads (55.43% of the original sample) were eligible and agreed to participate. Participants reported being in a relationship with their romantic partners an average of 2.40 years (*SD*=2.24 years). Sixteen participants (12.12%) brought the same romantic partner to the age 21 and age 24 data collection. Only 14 (15.91%) of participants were married to their romantic partner by

the end of the age 24 data collection. At both ages 21 and 24, just one (female) participant brought a same sex partner to the romantic partner data collection; this participant had a different partner at age 21 and 24. At the age 29 data collection, 150 participants (81.52% of the original sample) provided self-reported depressive symptoms and sleep problems. At this age, participants also completed a "health visit" consisting of a cardiovascular reactivity assessment and a blood draw of approximately 20cc of blood to test for markers of inflammation (i.e., CRP and IL-6). Participants were compensated for each portion of the visit. One hundred sixteen (63.04%) participants agreed to participate in the blood draw and were able to provide usable samples. Figure 1 displays the variables for each time point.

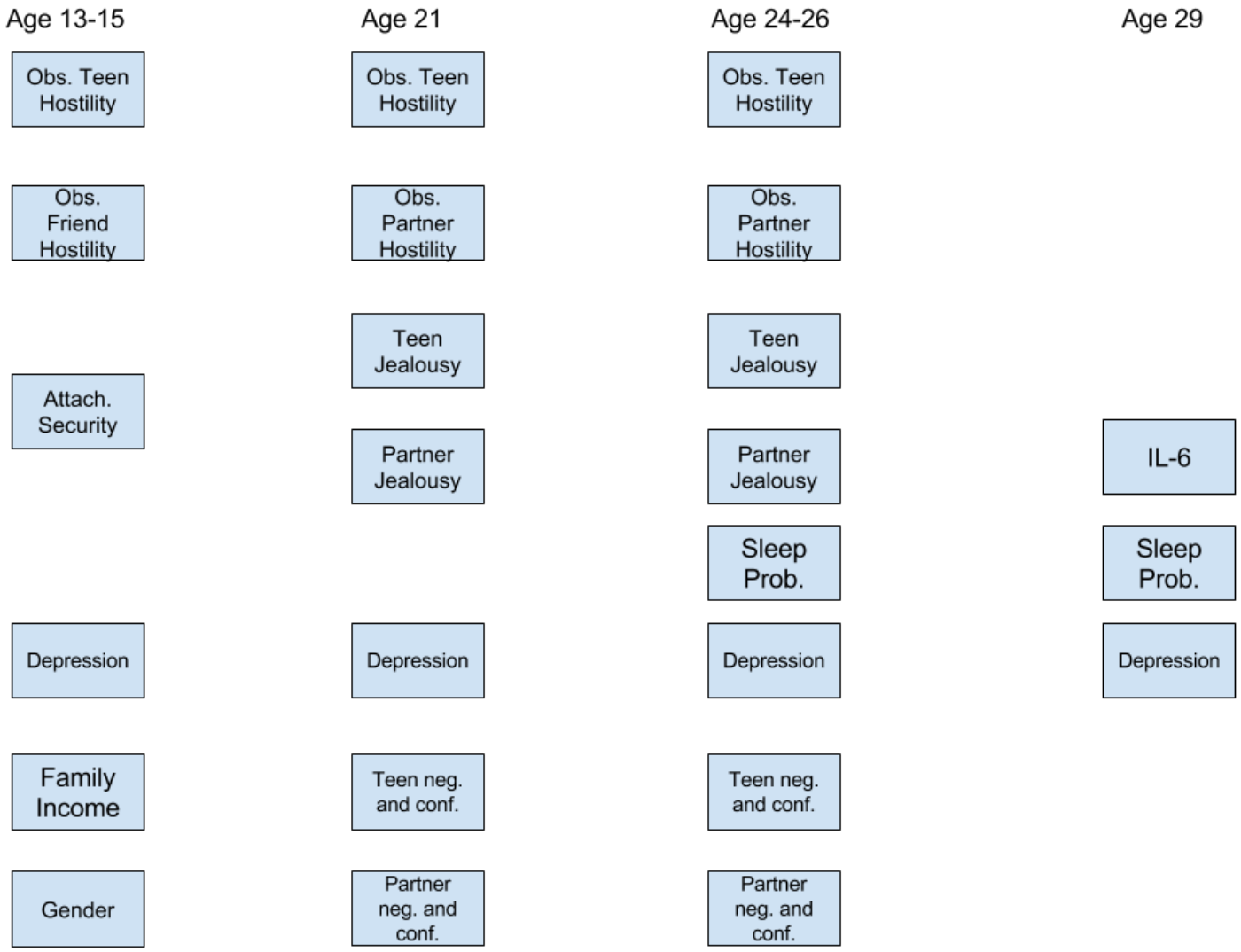

Figure 1. Study variables and time points.

ATTRITION ANALYSES

Of those participants who did not participate at the age 21 and/or age 24 data collection, the majority did not meet the criteria of being in a relationship lasting at least three months. For the remainder in both cases, the majority of cases of non-participation were a result of partners' declining our invitation to participate, and/or inability to schedule an observational assessment in which both parties were willing and able to participate. Analyses indicated that female participants were significantly more likely to participate at age 29 ($\chi 2=9.95$, $p=.002$). No other significant differences between those who did vs. did not participate on at any of the three waves on gender, family income, or earlier levels of the variables measured.

To best address any potential biases due to attrition and missing data in longitudinal analyses, full information maximum likelihood methods were used, with analyses including all variables that were linked to future missing data (i.e., where data were not missing completely at random). Because these procedures have been found to yield less biased estimates than approaches (e.g., simple regression) that use listwise deletion of cases with missing data, the entire original sample of 184 for the larger study was utilized for these analyses. This analytic technique does not impute or create any new data nor does it artificially inflate significance levels. Rather, it simply takes into account distributional characteristics of data in the full sample so as to provide the least biased estimates of parameters obtained when some data are missing (Arbuckle, 1996). Alternative longitudinal analyses using just those participants without missing data (i.e., listwise deletion) yielded results that were substantively identical to those reported below.

MEASURES

Attachment states of mind. At age 15, participants completed the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1996), a structured interview designed to capture states of mind regarding attachment. The interview took about one hour and probed participants' descriptions of their relationships with their parents. Some adaptations to the adult version were made to make the questions more appropriate for an adolescent population (Ward & Carlson, 1995). Interviews were audiotaped and transcribed for coding. Interviews were then coded using the AAI Q-set (Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993), by at least two raters trained in the Q-sort and the Adult Attachment Interview Classification System. Each rater read a transcript and used a forced distribution to provide a Q-sort description by assigning 100 items into nine categories ranging from most to least characteristic of the interview. The Q-sorts were then compared to a prototype sort for a maximally secure transcript, which was then used as that participant's scale security score (ranging from −1.00 to 1.00). The Spearman-Brown interrater reliability for the final security scale score was .82.

Observed hostility. At age 13, participants and their close friends participated in a revealed differences task in which they had to come to a consensus on a hypothetical task (which people should be given a place on a rescue shuttle from Mars). At ages 21 and 24, participants and their romantic partners of at least 3 months' duration completed a revealed differences task in which they identified their biggest area of disagreement and were instructed to talk about the topic for eight minutes. Common topics included moving in together, jealousy, money, chores, and jobs. Interactions at each wave were videotaped and then transcribed. The coding system employed for both friend and romantic partner interactions yields ratings from zero to four for each participant's overall behavior toward his/her partner in the interaction (Allen et al., 1994;

Allen et al., 2000). Ratings are molar in nature, yielding overall scores for participants' behaviors across the entire interaction; however, these molar scores are derived from an anchored coding system that considers both the frequency and intensity of each speech relevant to that behavior during the interaction in assigning the overall molar score. Interrater reliability was calculated for the overall scale using intraclass correlation coefficients and was in what is considered "fair" to "excellent" range for this statistic (intraclass r = .63-.92; Cicchetti & Sparrow, 1981).

Specific interactive behaviors were considered, and used to derive an anchored overall code for the extent to which participants, friends and romantic partners employed hostile and overbearing conflict tactics—a scale which captures autonomy and relatedness-undermining behaviors. The scale ranged from 0-4, with higher scores indicating more hostile and overbearing behaviors from each partner. The scale includes the following behaviors: 1) Overpersonalizing behaviors: Treating the disagreement as being in some respect a "fault" or feature of the person's disagreeing rather than a difference in ideas and reasons. By not separating the person from the disagreement, it becomes difficult to discuss differences reasonably—who will give in becomes more important than exploring why a person took the position they took. Pressuring behaviors: The extent to which the individual proceeds in the discussion as though his/her main objective is to get his/her own selections accepted (rather than to listen to other person and to come up with the best solution), and/or makes statements that implicitly or explicitly pressure in an effort to make the other person uncomfortable enough to change his/her mind. Avoidance behaviors: The degree to which an individual steers away from disagreements or the chance to clarify disagreements. Behaviors indicative of avoidance include: ceding the floor (as opposed to other person taking it), and being more interested in not disagreeing than in the outcome. Rudeness:

The use of hostile comments, interruptions, steamrolling, eye-rolling, or other tactics that undermine the relationship during the conflict.

Jealousy. The Multidimensional Jealousy Scale (Pfeiffer & Wong, 1989) is a 24-item measure designed to capture the degree to which target participants and their romantic partners each self-report on their frequency of jealous thoughts and behaviors and intensity of jealous emotions, in various hypothetical situations involving their partners. These situations primarily focus on how partners would react if their partners were interacting with someone of the opposite sex. Because this measure was worded to target jealousy towards others of the *opposite* sex, the one same sex couple in the sample at ages 21 and 24 was excluded. Cognitive jealousy is assessed by how often participants have various suspicions concerning his or her partner and a rival (sample item: I suspect that X is secretly seeing someone of the opposite sex). Participants responded on a 1-7 likert scale for the cognitive subscale, with a 1 being never and a 7 being all the time. Emotional jealousy is assessed by how upset participants would feel in response to jealousy-evoking situations (sample item: X comments to you on how great looking a particular member of the opposite sex is). Participants responded on a 1 to 7 likert scale, with a 1 being very pleased and a 7 being very upset. The behavioral jealousy scale asks participants how often they engage in various detective (snooping) or protective behaviors (verbal attacks of potential "rivals."). A sample item includes: I look through X's drawers, handbag, or pockets. Participants responded on a 1-7 likert scale, with a 1 being never and a 7 being all the time. Total jealousy was calculated by summing the three subscales. Internal consistency for this measure was excellent (Cronbach's $\alpha = 0.88\text{-}92$).

Reported hostile conflict and relationship negativity. The Conflict in Relationships Scale (CIR; Wolfe, Reitzel-Jaffe, Gough, & Wekerle, 1994) is an 80-item self-report inventory

created to measure physical and verbal abuse and positive and negative communication patterns in dating situations that have been experienced or committed by the participant. The current study version used self and partner-reported overall negative conflict from the participant to his/her romantic partner and vice versa. An example item is: "During a conflict/argument in the past year: I insulted my partner with put downs." Response options ranged from "Never happened" to "6+ times (in the past year)." Higher scores indicate more negative conflict from the target participant to the romantic partner. Internal consistency for this measure was excellent (Cronbach's α =.81 to .93). The Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985) is a 45-item measure originally created to measure differences in children's relationship type and quality with siblings, friends, parents, teachers, etc. Participants answered questions about different qualities of their current romantic relationship, choosing how much each quality occurred in their romantic relationship. The overall negativity scale is the sum of five subscales: Conflict, Antagonism, Criticism, Dominance and Punishment. Participants reported on a 1-5 likert scale from Never/None to Extremely much. Sample items include: "How much do you and this person get upset or mad at each other?" (Conflict) and "How often does this person point out your faults or put you down?" (Criticism). Internal consistency for this measure was excellent (Cronbach's α = .84-.87). Scores on the NRI and CIR were highly correlated (r=0.62, p =.001 to r=.70, p=.001) and so were combined to create a composite measure of negativity and conflict as reported by each partner at both ages 21 and 24.

Interleukin-6. During the age 29 visit, approximately 20 cc of blood was collected and treated with EDTA, to prevent clotting, to determine circulating concentrations of specific inflammatory markers (i.e., CRP and IL-6). Plasma was separated via centrifugation, aliquoted and stored at -80C and levels of CRP and IL-6 measured by high sensitivity immunoassays. IL-6

was measured by ELISA (limit of detection = 0.3 pg/ml; R&D Systems, San Diego, CA). Intra-assay and inter assay coefficients of variation (%CV) are 3.6 and 8.6 for IL-6.

Sleep. The Pittsburgh Sleep Quality Index (PSQI; Buysse et al., 1989) is a 19-item self-report questionnaire designed to capture sleep quality over the last month. The composite Global Sleep scale includes the sum of items relating to subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, sleep medication, and daytime dysfunction. An example item includes: "During the past month, how often have you had trouble sleeping because you wake up in the middle of the night or early morning?" with response options including "Not during the past month (0)," "Less than once a week (1)," "Once or twice a week (2)," and "Three or more times a week (3)." Higher scores indicate more problematic sleep. Internal consistency for this measure across the different time points ranged from Cronbach's α =.67 to .75. This measure has been associated with

Depression. The Beck Depression Inventory (BDI-II; Beck, Steer & Brown, 1996) is one of the most widely accepted instruments for detecting possible depression in normal populations (Steer, Beck, & Garrison, 1985). It contains 21 self-reported items related to depressive symptoms. Example options for an item on self-dislike are: "I don't feel disappointed in myself (0)," "I am disappointed in myself (1)," "I am disgusted with myself (2)," "I hate myself (3)." Higher scores indicate higher levels of depression. Internal consistency for this measure was excellent (Cronbach's α = .89-.91).

RESULTS

Analyses were conducted in Mplus (Version 7.2; Muthén & Muthén, 2015). First, preliminary exploratory regression analyses were conducted to examine the relationships between the early adolescent (ages 13-15) control variables and each subsequent wave of data, as

well as the relationships between the age 21 and age 24 variables. Next, exploratory regression analyses were run predicting the age 29 health outcomes from each prior wave of data separately. Finally, full structural equation models for each age 29 health outcome (age 29 Il-6, sleep problems, and depression) were constructed using SAS Proc Calis to identify additional paths that increased model fit.

PRELIMINARY ANALYSES

1. **Age 13-15 demographic and psychosocial variables will be associated with age 21 indicators of hostility.**

Exploratory regression analyses were run to test associations between age 13-15 predictors and age 21 outcomes. Each age 21 outcome was regressed on all age 13-15 predictors entered simultaneously. Results are presented in Appendices B-H and Figure 2 summarizes these results. When all age 13-15 predictors were entered simultaneously, age 13 observed teen hostility predicted relative increases in depression (β=.38, *p*=.001). While accounting for age 13 levels of depression, teens who were observably hostile at age 13 became more depressed by age 21. Age 13 depression predicted age 21 depression (β=.23, *p*=.003), suggesting some stability in depression from age 13 to age 21. Age 13 depression *negatively* predicted partner jealousy at age 21 (β=-.19, *p*=.05), suggesting that teens who endorsed greater depression at age 13 had partners who reported less jealousy at age 21. Gender was associated with both age 21 jealousy (β=.21, *p*=.01) and partner reported negativity and conflict (β=.18, *p*=.04; i.e, females reported higher levels of jealousy and had partners who reported higher levels of negativity and conflict). Unexpectedly, attachment security at age 15 did not predict any age 21 variables.

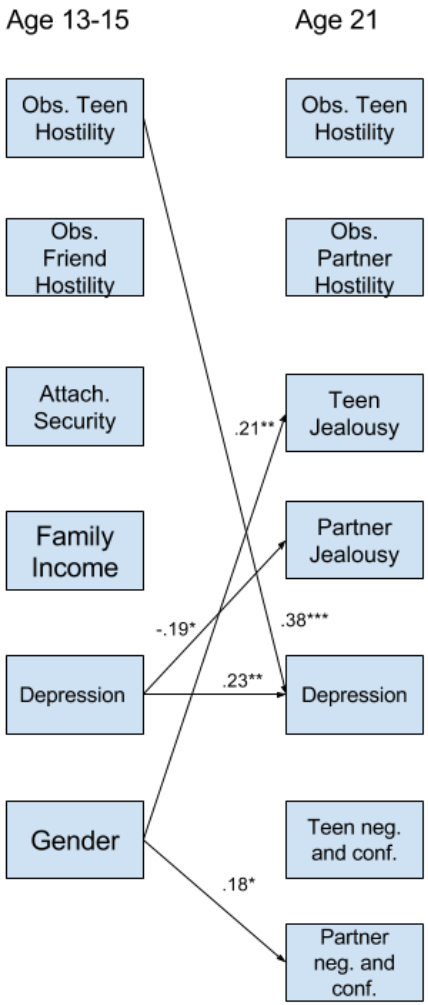

Figure 2. Age 13-15 predictors of age 21 variables. *$p < .05$. **$p \leq .01$. ***$p \leq .001$.

2. **Age 13-15 demographic and psychosocial variables will be associated with age 24-26 indicators of hostility.**

Next, exploratory regression analyses were run to test age 13-15 predictions to age 24-26 variables. Each age 24-26 variable was regressed on all age 13-15 variables entered simultaneously (see Appendices I-P). Results are summarized in Figure 3. When all age 13-15 variables were entered simultaneously, higher family income at age 13 predicted less observed teen hostility (β=-.31, *p*=.001), less teen reported jealousy (β=-.25, *p*=.01), less partner reported jealousy (β=-.33, *p*=.001), and less partner reported negativity and conflict at age 24 (β=-.40, *p*=.001). This suggests that some forms of romantic hostility at age 24 are associated with lower family income in early adolescence. Age 13 depression predicted age 24 depression (β=.15, *p*=.05), suggesting a small amount of stability in depression across 11 years. Gender was associated with partner reported jealousy at age 24, such that males' partners (all females in this sample) reported more jealousy at this age (β=-.20, *p*=.03). Gender was associated with sleep problems at age 26, such that females reported more sleep problems (β=.22, *p*=.01). Unexpectedly, attachment security at age 15 did not predict any age 24 variables.

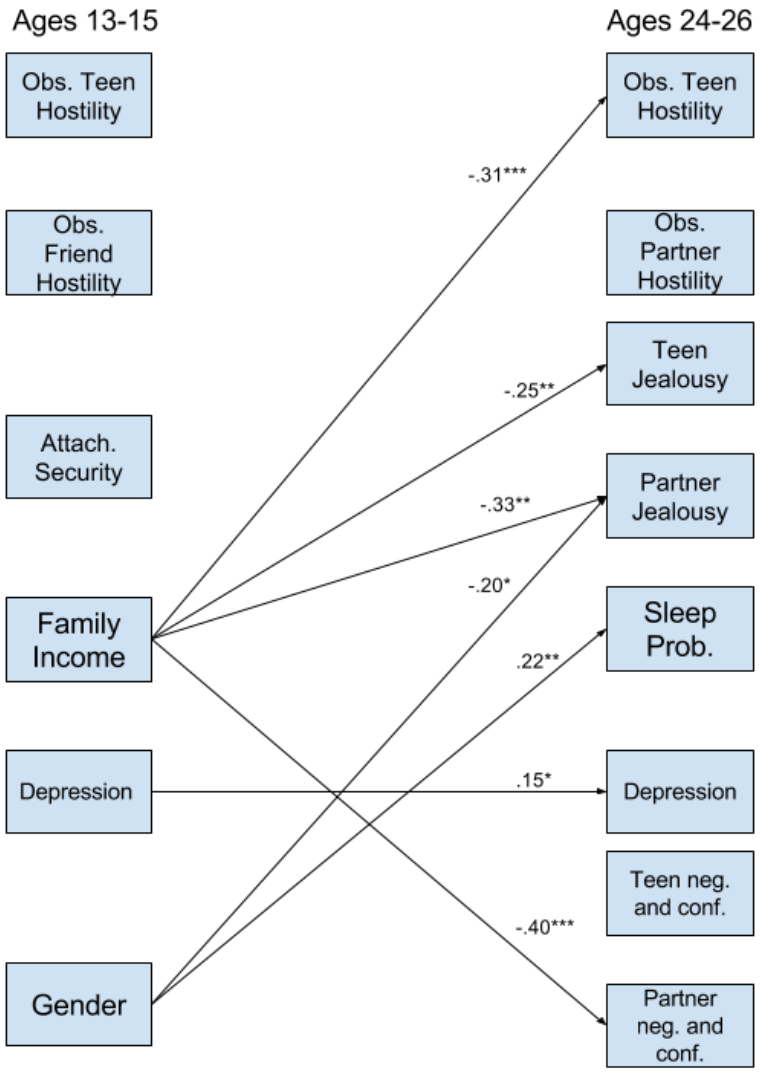

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Figure 3. Age 13-15 predictors of age 24 variables. *$p < .05$. **$p \leq .01$. ***$p \leq .001$.

3. Participant and partner measures of hostility and conflict at age 21 will be associated with the development of age 24 levels of hostility and conflict.

Next, exploratory regression analyses were conducted using age 21 factors to predict age 24 outcomes. Each age 24 outcome was regressed on all age 21 predictors simultaneously (see Appendices Q-X). Results are summarized in Figure 21. All teen reported variables displayed stability: Age 21 observed teen hostility predicted age 24 observed teen hostility (β=.35, *p*=.001), age 21 teen jealousy predicted age 24 teen jealousy (β=.35, *p*=.002), age 21 teen depression predicted age 24 teen depression (β=.43, *p*=.001), and age 21 teen reported negativity and conflict predicted age 24 teen reported negativity and conflict (β=.31, *p*=.002). Observed teen hostility also predicted relative increases in levels of teen jealousy (β=.25, *p*=.04), partner jealousy (β=.29, *p*=.01), teen reported negativity and conflict (β=.40, *p*=.001), and partner reported negativity and conflict by age 24 (β=.35, *p*=.01). The results for observed teen hostility suggest that observable hostility at age 21 is associated with relative increases in several indicators of romantic hostility over time (when most participants brought different partners). Observed partner hostility at age 21 predicted relatively *decreasing* levels of partner jealousy (β=-.25, *p*=.03) and relatively *decreasing* levels of teen reported negativity and conflict by age 24 (β=-.30, *p*=.01). These findings suggest that, in the presence of observable partner hostility, participants may display or indicate less hostility over time, even in new relationships. Finally, partner reported negativity and conflict at age 21 predicted relatively increasing levels of observed teen hostility (β=.34, *p*=.01) and observed partner hostility by age 24 (β=.30, *p*=.02), suggesting that teens reporting more hostility and negativity may become more observably hostile over time and may either select more observably hostile partners or may influence partners to behave more hostilely.

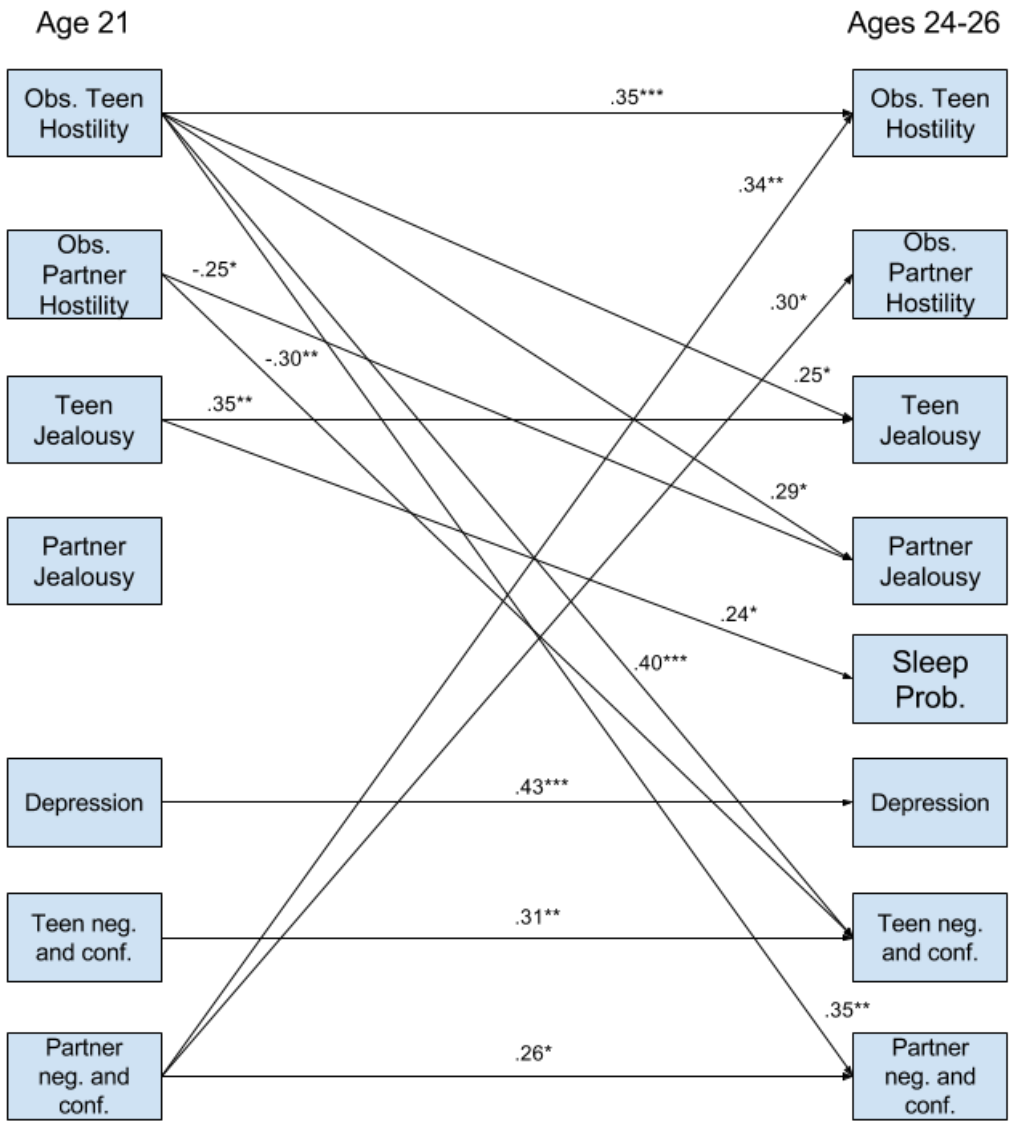

Figure 4. Age 21 predictors of age 24 variables. *$p < .05$. **$p \leq .01$. ***$p \leq .001$.

4. **Age 13-15 demographic and psychosocial variables will be associated with age 29 indicators of health.**

Next, exploratory regression analyses were run using age 13-15 control variables to predict age 29 health outcomes. All age 13-15 predictors were entered simultaneously to predict each age 29 outcome. (See Appendices Y-AA). Only one significant relationship was found (Figure 5): Higher family income was associated with lower age 29 IL-6 (β=-.24, *p*=.007). This finding suggests that family income may have a long-term association with this particular marker of inflammation. Unexpectedly, none of the other age 13-15 control variables had significant associations with the age 29 health outcomes.

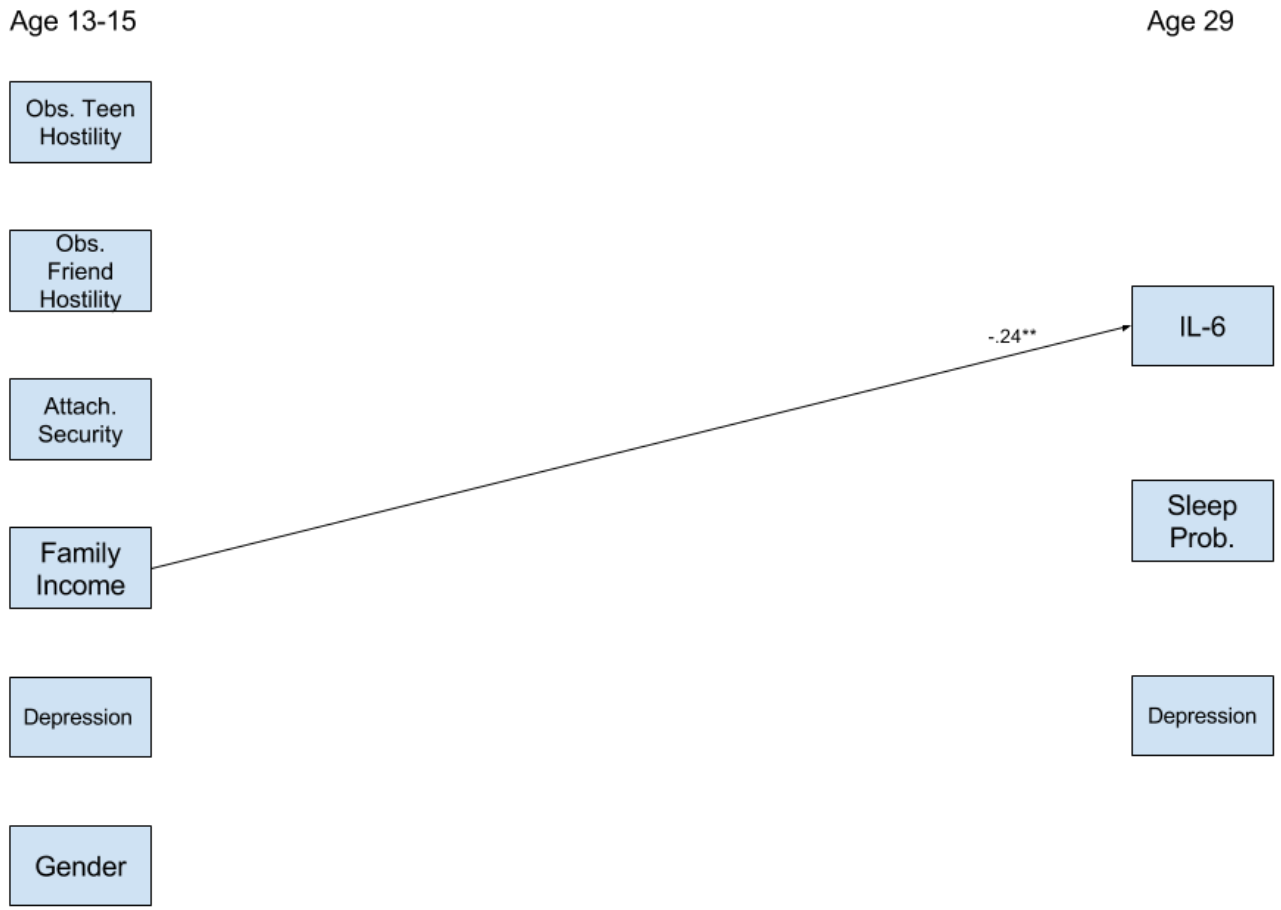

Figure 5. Age 13-15 predictors of age 29 health outcomes. *$p < .05$. **$p \leq .01$. ***$p \leq .001$.

5. **Higher levels of hostility in romantic relationships at age 21 will predict higher levels of IL-6 at age 29.**
6. **Higher levels of hostility in romantic relationships at age 21 will predict higher levels of sleep problems at age 29.**
7. **Higher levels of hostility in romantic relationships at age 21 will predict relative increases in depression by age 29.**

Next, exploratory regression analyses were run using age 21 romantic relationship variables and depressive symptoms to predict age 29 health outcomes. All age 21 variables were entered simultaneously in regression analyses to predict each age 29 health outcome (see Appendices BB-DD). Several significant associations were identified (summarized in Figure 6): More depression at age 21 predicted more depression at age 29 (β=.34, *p*=.001), suggesting a moderate amount of stability in depression across this period. Higher observed teen hostility predicted higher age 29 IL-6 (β=.46, *p*=.001) as did higher teen jealousy (β=.23, *p*=.03). Higher teen jealousy also predicted more sleep problems (β=.23, *p*=.01) and depression at age 29 (β=.22, *p*=.007). These findings suggest that jealousy at age 21 may be particularly related to later health outcomes but that observed hostility may also be linked to later levels of IL-6. Higher romantic partner jealousy predicted *less* teen reported depression at age 29 (β=-.28, *p*=.005). This finding is likely a suppressor effect: In the absence of other explicit markers of hostility, partner reported jealousy at age 21 may actually be a positive indicator for later depression. Higher teen reported negativity and conflict predicted relative increases in depression by age 29 (β=.22, *p*=.02), suggesting that, even taking into account earlier levels of depression, reporting more negativity and conflict at age 21 predicts relative increases in depression over time.

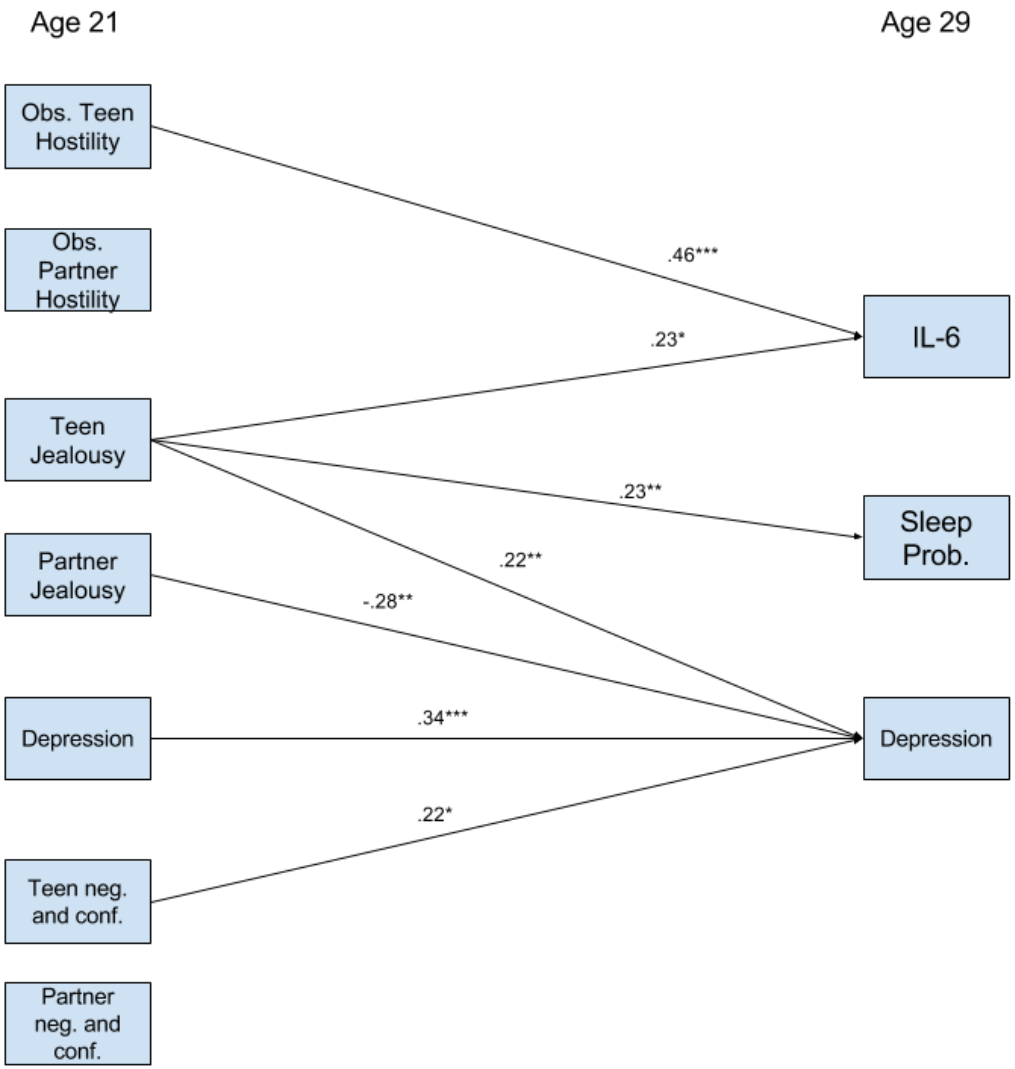

Figure 6. Age 21 predictors of age 29 health outcomes. *$p < .05$. **$p \leq .01$. ***$p \leq .001$.

8. **Higher levels of hostility in romantic relationships at age 24 will predict higher levels of IL-6 at age 29.**
9. **Higher levels of hostility in romantic relationships at age 24 will predict relative increases in sleep problems by age 29.**
10. **Higher levels of hostility in romantic relationships at age 24 will predict relative increases in depression by age 29.**

Next, exploratory regression analyses were conducted using age 24 variables to predict age 29 health outcomes. Age 24 levels of depression and sleep problems were entered to examine change in these variables over time. All age 24 variables were entered simultaneously in regression analyses to predict each age 29 outcome (See Appendices EE-GG). Several significant associations were identified (Figure 7): Higher depression at age 24 predicted higher depression at age 29 (β=.44, *p*=.001), suggesting a moderate amount of stability in depression across this time period. More sleep problems at age 24 predicted more sleep problems at age 29 (β=.34, *p*=.001), again suggesting a moderate amount of stability. Higher observed teen negative hostility predicted relative increases in sleep problems by age 29 (β=.37, *p*=.01), suggesting that, even accounting for earlier sleep problems, being observably hostile with a partner at age 21 was associated with more sleep problems over time. Higher romantic partner jealousy predicted relative *decreases* in sleep problems at age 29 (β=-.32, *p*=.02). This is likely a suppressor effect: In the absence of other markers of overt hostility, partner jealousy may actually be a positive indicator for certain health outcomes later. Higher romantic partner reported negativity and conflict at age 24 predicted higher IL-6 (β=.37, *p*=.02) and relative increases in sleep problems (β=.34, *p*=.01) by age 29, suggesting that partners' perceptions of negativity and conflict in the relationship at 24 may be important indicators for later health

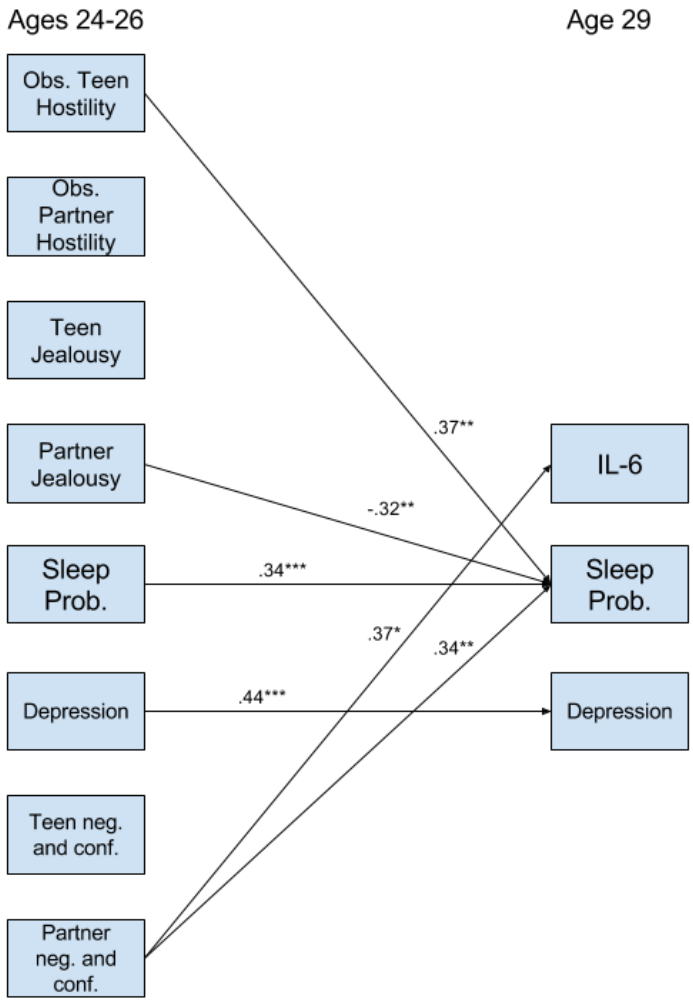

Figure 7. Age 24 predictors of age 29 health outcomes. *$p < .05$. **$p \leq .01$. ***$p \leq .001$.

COMBINED MODELS

Next, models were created using all significant paths to age 29 health outcomes identified in the prior regression analyses. A separate model was created for each health outcome (i.e., age 29 Il-6, sleep problems, and depression). These models were tested in SAS PROC CALIS (version 9.4, SAS Institute, Cary, NC) to identify other important paths, using full information maximum likelihood handling of missing data. All temporally prior variables were allowed to predict the specified outcome in a model. After suggested paths were identified, the combined models were run in MPlus. Figures 8-10 display each model with the paths to the age 29 health outcomes highlighted. Variables without significant associations and intercorrelations are not depicted for simplicity.

Predictions to IL-6

5. **Higher levels of hostility in romantic relationships at age 21 will predict higher levels of IL-6 at age 29.**
8. **Higher levels of hostility in romantic relationships at age 24 will predict higher levels of IL-6 at age 29.**

Figure 10 displays the model with paths to age 29 IL-6 highlighted. The path model displayed in Figures 8-11 fit the data well— comparative fix index (CFI) = .94; Tucker-Lewis index (TLI)= .92; root-mean-square error of approximation = .04; $\chi 2$ (131) = 165.03, p = .02. Hypotheses regarding IL-6 were partially supported. The following paths to age 29 IL-6 were retained in the combined model: Higher observed negativity from the teen towards a romantic partner predicted higher levels of IL-6 at age 29 (β=.38, p=.001). Higher levels of teen reported jealousy at age 21 also predicted higher levels of IL-6 at age 29 (β=.20, p=.02). These results

suggest that, even accounting for later levels of romantic relationship hostility, being observably hostile and reporting more jealousy at age 21 are both associated with more circulating IL-6 at age 29.

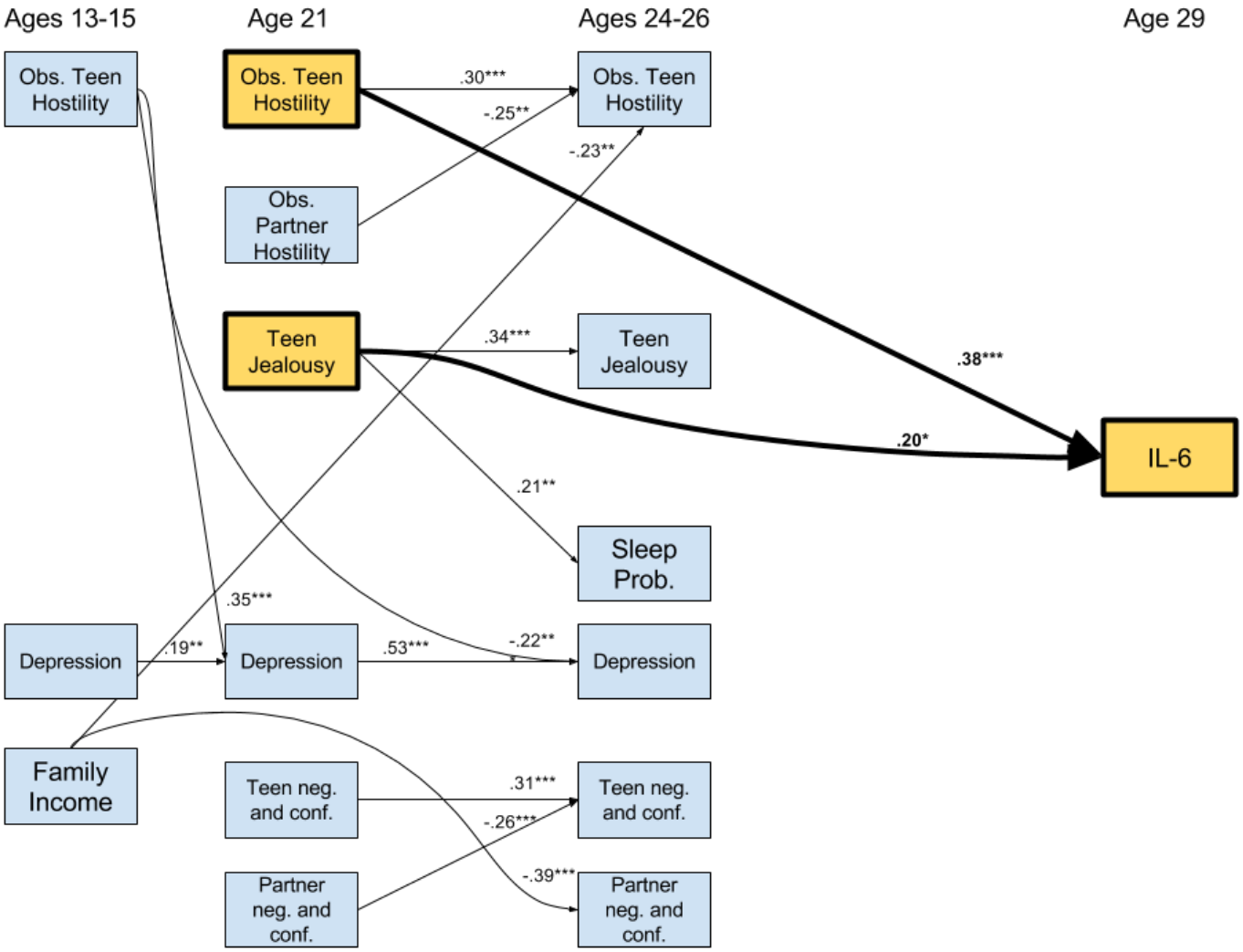

Figure 10. Age 13-15, 21 and 24 predictors of age 29 IL-6. Only variables with significant paths depicted for simplicity. Intercorrelations not depicted. *$p < .05$. **$p \leq .01$. ***$p \leq .001$.

Predictions to Sleep Problems

6. **Higher levels of hostility in romantic relationships at age 21 will predict higher levels of sleep problems at age 29.**
9. **Higher levels of hostility in romantic relationships at age 24 will predict relative increases in sleep problems by age 29.**

Figure 8 displays the model with paths to age 29 sleep problems highlighted. The path model displayed in Figure 8 fit the data well— comparative fix index (CFI) = .93; Tucker-Lewis index (TLI)= .91; root-mean-square error of approximation = .04; $\chi 2$ (134) = 171.635, p = .02. The hypotheses regarding sleep were partially supported. The following paths to age 29 sleep problems were retained in the combined model: Higher teen jealousy at age 21 predicted more sleep problems at age 26 (β=.21, p=.01), which in turn predicted more sleep problems at age 29 (β=.50, p=.001). This finding suggests a path to sleep problems at age 29 from teen reported jealousy at age 21 through sleep problems at 26. Higher levels of partner reported negativity and conflict at age 24 predicted relative increases in sleep problems for the teen by age 29 (β=.21, p=.02), suggesting that, even accounting for sleep problems at 26, partner reported negativity and conflict at age 24 is associated with the development of sleep difficulties over time.

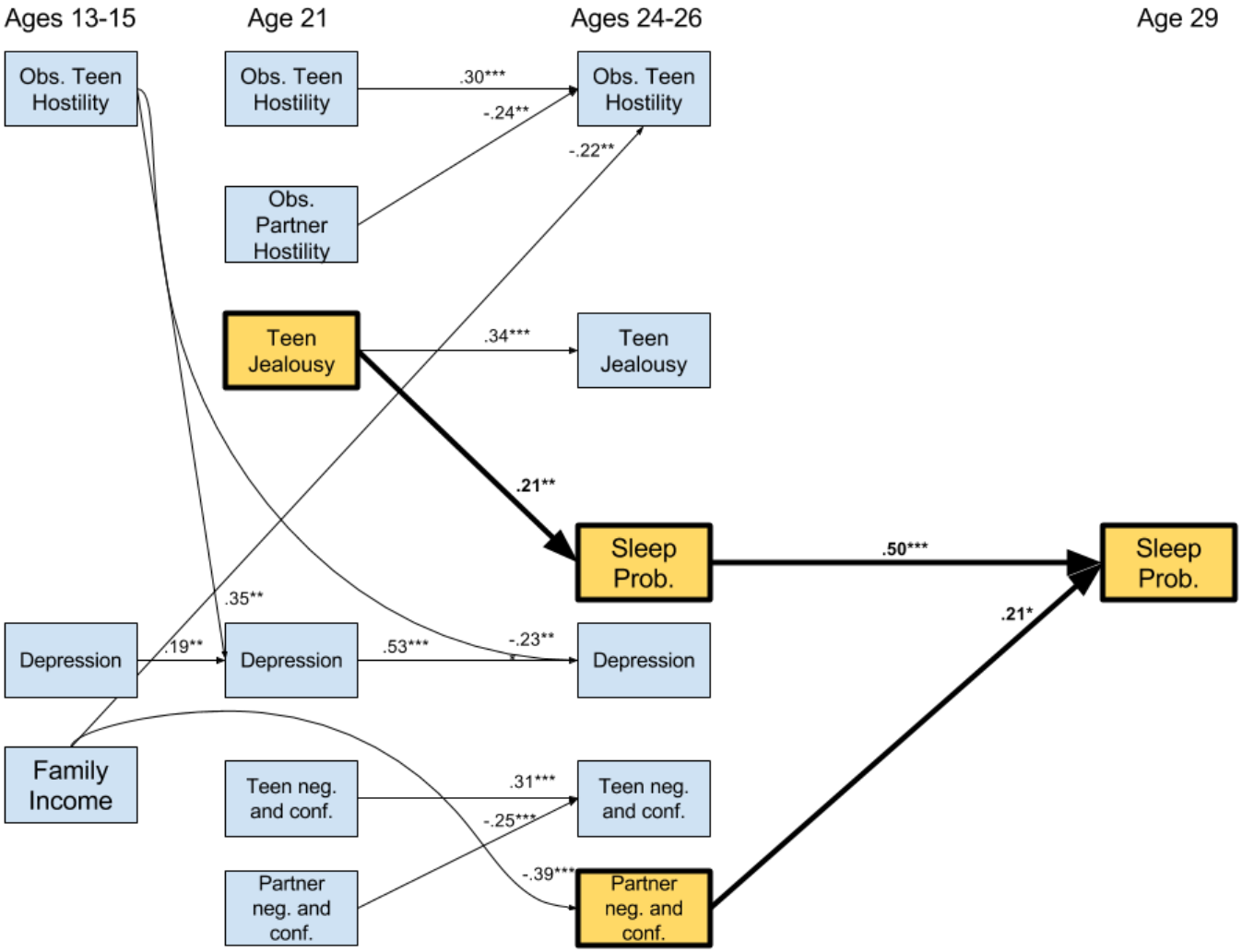

Figure 8. Age 13-15, 21 and 24 predictors of age 29 sleep problems. Only variables with significant paths depicted for simplicity. Intercorrelations not depicted. *$p < .05$. **$p \leq .01$. ***$p \leq .001$.

Predictions to Depression

7. **Higher levels of hostility in romantic relationships at age 21 will predict relative increases in depression by age 29.**
10. **Higher levels of hostility in romantic relationships at age 24 will predict relative increases in depression by age 29.**

Figure 9 displays the model with paths to age 29 depression highlighted. The path model displayed in Figures 8-11 fit the data well— comparative fix index (CFI) = .94; Tucker-Lewis index (TLI)= .92; root-mean-square error of approximation = .04; $\chi 2$ (130) = 164.91, p = .02. Hypotheses regarding depression were partially supported. The following paths to age 29 depression were retained in the combined model: Higher depression at age 13 predicted higher depression at age 21 (β=.19, p=.01). Higher observed negativity from the teen towards a close friend at age 13 predicted relative increases in depression by age 21 (β=.35, p=.001) but relative *decreases* in depression by age 24 (β=-.23, p=.002). Teens who were more observably hostile with friends at age 13 reported more depression at age 21 but *less* depression at age 24. The link between age 13 observed hostility and age 24 depression did not appear in initial regression analyses, suggesting that it only exists after accounting for age 21 depression. Higher levels of depression at age 21 predicted higher levels of depression at age 24 (β=.52, p=.001) and age 29 (β=.22, p=.01), suggesting some stability over time in depression. Finally, higher teen reported negativity and conflict at age 21 predicted relative increases in levels of depression by age 29 (β=.22, p=.006), suggesting that, even accounting for age 21 levels of depression, self-report of negativity and conflict in a romantic relationship at 21 is associated with increasing levels of depression over time.

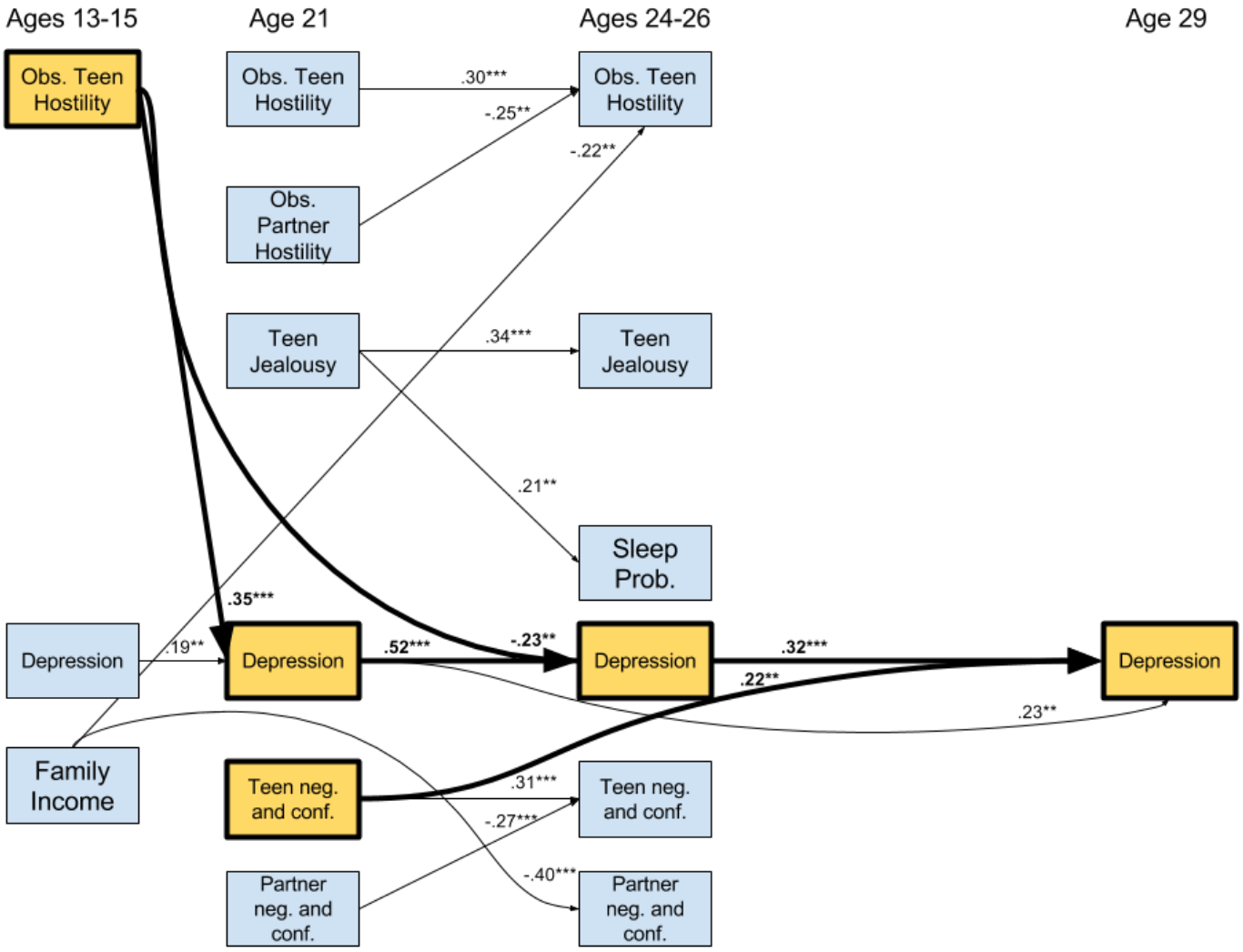

Figure 9. Age 13-15, 21 and 24 predictors of age 29 depression. Only variables with significant paths depicted for simplicity. Intercorrelations not depicted. *$p < .05$. **$p \leq .01$. ***$p \leq .001$.

Mediation

11. Age 24 levels of hostility may mediate some of the associations between age 21 romantic hostility and age 29 health outcomes.

The hypothesis regarding mediation was not supported. Two possible indirect paths were tested: Age 13 observed hostility to age 29 depression via age 21 depression and age 21 teen jealousy to age 29 sleep problems via age 21 sleep problems. When tested using bootstrapped confidence intervals, both indirect effects' 95% confidence intervals were found to contain zero and so were not considered significant.

Two unexpected findings of note emerged in the combined models: More observed romantic partner hostility at age 21 predicted relatively *decreasing* levels of observed teen hostility by age 24 (β=-.25, *p*=.01) and more partner reported negativity and conflict at age 21 predicted *decreasing* levels of teen reported negativity and conflict at age 24 (β=-.27, *p*=.001). Figure 11 displays these findings. Of note, these findings emerged despite the fact that most teens had different romantic partners at each age. These findings suggest that, in the presence of elevated partner hostility, participants may become less hostile over time, even in new relationships.

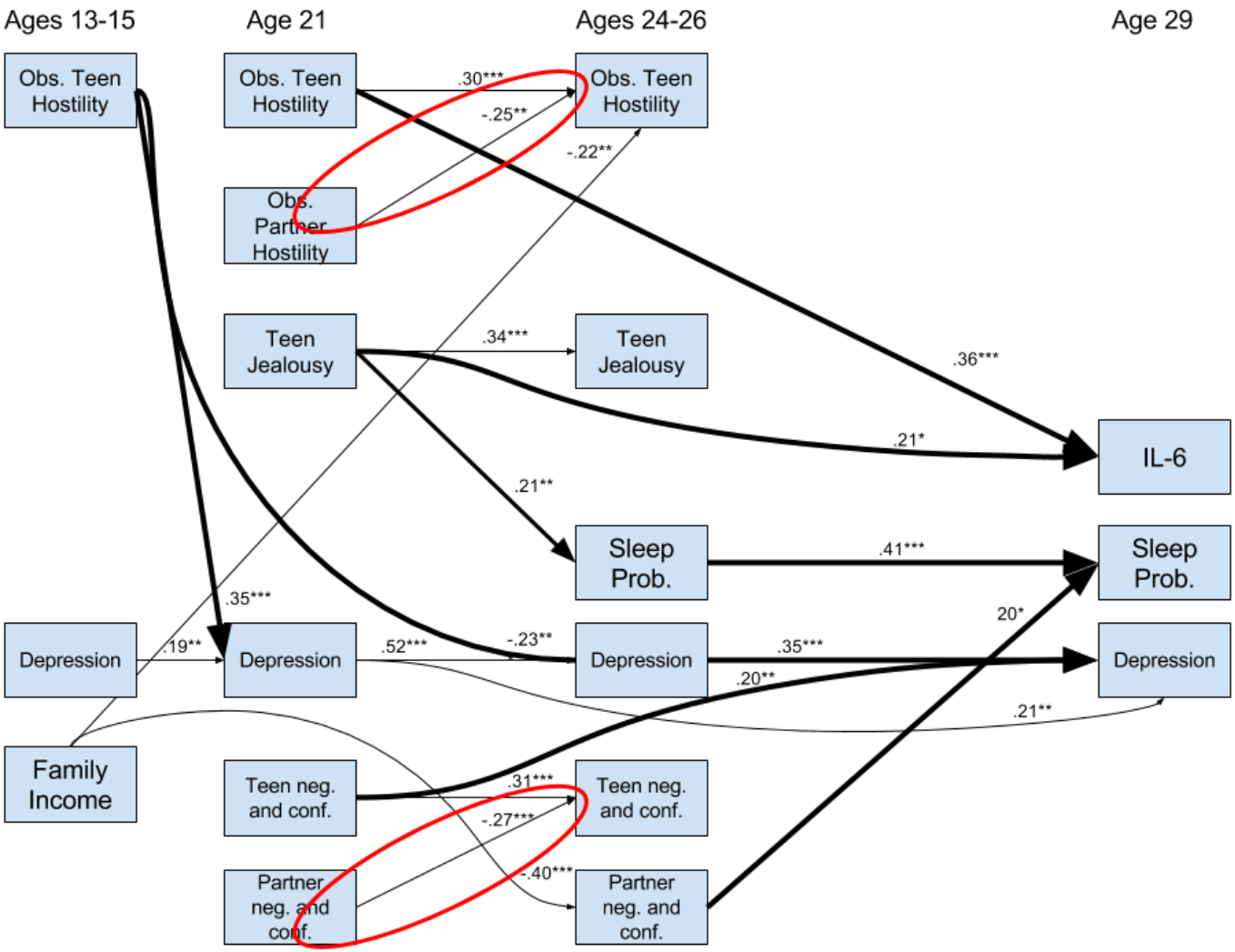

Figure 11. Age 21 partner hostility negatively predicting age 24 teen hostility. *$p < .05$. **$p \leq .01$. ***$p \leq .001$

DISCUSSION

The current study examined the long-term health implications of conflict and hostility in early adult romantic relationships. In general, we found compelling evidence that early adult romantic relationships have associations with later health indicators even when accounting for important control variables. Such conflict may represent a unique stressor, particularly early in adulthood when it may be more normative for relationships to be less intense. Past short-term research would suggest that stress from such conflict is likely to be taxing and physically harmful (Ditzen et al., 2008; Gunlicks-Stoessel & Powers, 2009; Ha et al., 2016; Powers et al., 2006) and, if such conflict starts in early adulthood, the effects may be cumulative and chronic. Several findings emerged consistently in both regression and path analyses: Even controlling for a range of potential confounds and later romantic relationship indicators, age 21 indicators of hostility and conflict had associations with age 29 health outcomes. Higher levels of observed teen hostility and teen reported jealousy at age 21 predicted higher levels of IL-6 at age 29 and higher levels of teen reported negativity and conflict at age 21 predicted relative increases in levels of depression from ages 21 and 24 to age 29. These effects were (unexpectedly) not mediated through later variables, suggesting at least the possibility that the consequences of early romantic relationship hostility may have a lasting impact regardless of what happens in future relationships.

It is not immediately clear why age 21 hostile conflict may be important relative to age 24 hostile conflict. One possibility is that romantic relationships at age 21 are developmentally different than romantic relationships even a few years later. Although age 21 is technically adulthood, it is on the tail-end of adolescence and is often now considered part of "emerging adulthood" (Arnett, 2007). Many individuals in this age-range have not settled into permanent or

long-term employment, housing, or relationships. Given this, we may consider romantic relationships at this age likely to share some characteristics with adolescent romantic relationships. We know from prior research that intensity (both positive and negative) in adolescent romantic relationships seems to have negative associations with later outcomes such as depression and levels of IL-6 (Allen, Loeb & Narr, 2016; Ha et al., 2014) and our findings were consistent with these studies. Possibly hostile conflict at this age is a particularly problematic sign because it represents an abnormal amount of intensity for the developmental period. Individuals who are in relationships marked by hostility and jealousy at this age may not have yet developed the social skills to handle conflict effectively and therefore might be under particular stress in such high-conflict relationships. Future studies could examine other predictors of health outcomes from this age, such as the observable degree to which couples are able to calm down and recover from observable conflict, to further understand these processes.

As predicted, partner perceptions appeared to be important in the current study. This builds on past research examining partner effects on health (Chopik & O'Brien, 2016; Norona, Roberson, & Welsh, 2016). In initial regression analyses, higher levels of age 24 partner-reported negativity and conflict predicted relative increases in levels of sleep problems and higher levels of IL-6 by age 29 and, in the combined sleep model, higher levels of age 24 partner perceptions of negativity and conflict predicted relative increases in teen sleep problems by age 29. These findings suggest that partner perceptions of hostility in a romantic relationship could potentially have an impact on teens' health over and above the teens' own perceptions, perhaps because having a hostile or dissatisfied partner is uniquely stressful. The link to increasing sleep problems is particularly interesting because it occurs three years from the reported hostility, potentially suggesting an accumulation of stress from conflict over time.

Unexpectedly, in regression analyses, romantic partner reported jealousy at age 21 was found to *negatively* predict participant depression at age 29. Similarly, romantic partner reported jealousy at age 24 was found to *negatively* predict participant sleep problems at age 29. In other words, the more jealousy the romantic partner reported, the fewer health difficulties the participant reported later. It should be noted that there was not a significant zero-order correlation between either age 21 romantic partner jealousy and age 29 participant depression or age 24 romantic partner jealousy and age 29 participant sleep problems. A significant relationship only emerged in the presence of other (more explicit) measures of conflict and hostility. This suggests a suppressor effect: Romantic partner jealousy may be a positive indicator for later health i*n the absence of* overt hostility and conflict, perhaps representing intensity and investment in the relationship from the romantic partner. Another possibility is that some types of jealousy are more harmful than others. Past research using the measure of jealousy used in this study (The Multidimensional Jealousy Scale) has found that the cognitive, emotional and behavioral subscales predict different aspects of relationship functioning (Rydell & Bringle, 2007). This study used the overall scale, but further research should examine the associations between different aspects of jealousy, overt hostility, and indicators of relationship satisfaction and commitment.

A secondary aim of the current study was to examine the development of hostility over time from ages 21 to 24 in order to better understand the context in which health difficulties may emerge. In general, we found a moderate amount of stability in teen behaviors and reports across time and much less stability in partner behaviors and reports. This makes sense because the majority of partners were different at the two time-points. Partner reported negativity and conflict was the exception, displaying a small degree of stability. Higher levels of partner

reported negativity and conflict at age 21 also predicted relative increases in both teen and partner observable hostility by age 24. Teens who were more observably hostile at age 21 tended to report relative increases in jealousy, negativity and conflict and also had partners who reported increasing jealousy, negativity and conflict by age 24. Hostility which is observable by outside raters may be particularly important in the development of hostile relationship patterns over time, perhaps because it is so explicit. Observable teen hostility at age 21 also displayed a robust association with higher levels of IL-6 at age 29 even after accounting for later hostility and a variety of other variables, strengthening the case that observable hostility in young adult romantic relationships may be particularly problematic.

Two unexpected findings regarding the development of hostility emerged in the combined models: Higher levels of observed partner hostility at age 21 predicted relatively decreasing observed teen hostility by age 24 and, similarly, higher levels of partner reported negativity and conflict at age 21 predicted relatively decreasing teen reported negativity and conflict by age 24. These findings suggest that individuals who experience partner hostility in early adult romantic relationships may become less hostile over time, though an important caveat is that the observed hostility finding did not emerge in the preliminary regression analyses (nor were the zero-order correlations significant) and so these results should be interpreted with caution. These results may suggest another suppressor effect: In the absence of teen hostility, the presence of a hostile partner may be associated with the development of a more submissive style from the teen later on. A prior study using this sample does in fact suggest that individuals in hostile relationships may develop a submissive or conflict-averse style over time (Loeb, Hessel, & Allen, 2015). It is again noteworthy in the current study that these findings emerged despite most teens bringing different partners to the age 21 and 24 data collection. This again suggests

the potential importance of relationship patterns or schemas that develop across specific relationships.

To examine the extent to which demographic and early adolescent individual factors may account for later conflict and health outcomes, several control variables were included in the current study. These included observed hostility towards and from a close friend, attachment states of mind, depressive symptoms, family income and gender. In the combined models, higher family income at age 13 did predict lower levels of observed teen hostility and lower levels of partner reported negativity and conflict at age 24, suggesting some enduring associations with income and some types of romantic relationship hostility. In addition, higher levels of observed hostility from the teen towards a close friend at age 13 predicted relative increases in levels of depression by age 21 but actually predicted relative *decreases* in levels of depression by age 24. There was no significant zero-order correlation between age 13 observed hostility and age 24 depression, nor any significant link in initial regression analyses. The link only appeared after age 21 depression was included, suggesting that, in the absence of age 21 depression, teens who were observably hostile at age 13 became less depressed over time, perhaps because such teens were on a path of externalizing rather than internalizing behaviors. No significant paths to health outcomes from age 13 control variables were retained in the combined models. Only one adolescent control variable (family income) predicted one age 29 health outcome (IL-6) in preliminary regressions. Taken together, these findings suggest that the associations observed between romantic relationship conflict and later health outcomes are not simply a continuation of trait-like negative affect or hostility continuing from early adolescence and that demographic characteristics do not solely account for the associations. This lends greater support to the idea

that early adult romantic relationship hostility itself could potentially have a deleterious impact on health in adulthood.

Interestingly, attachment states of mind (as measured by the Adult Attachment Interview) had no significant associations with any outcomes in any of the analyses in the current study. This was unexpected and counter to the large body of research that has shown attachment to be important for a variety of psychosocial outcomes (Dawson et al., 2014; Ravitz et al., 2010). Because our measure of attachment was collected at age 15 and in reference to parental relationships, it is possible that this form of attachment states of mind no longer holds much relevance for early adult romantic relationship hostility or later health outcomes. Future research should examine attachment in romantic relationships and/or later in life to determine if such measures would prove important for relationship hostility and health.

One important possibility to consider in the current study is whether a particular partner over time shapes an individual's behaviors and outcomes, thus accounting for observed effects. While this remains a possibility, particularly as individuals enter into marriage or other types of committed relationships with one partner, we did not find evidence of this in the current study. Only sixteen participants (12.12%) brought the same romantic partner to the age 21 and age 24 data collection, yet we found predictions from both teen and partner romantic relationship hostility to later hostility as well as health outcomes. Though most of the participants were entering into new relationships, long-term associations were found from earlier relationships. This suggests the possibility that relationship dynamics may be at least as important as the individual relationship. Even if problematic, high-conflict relationships dissolve, these relationships may contribute to later health difficulties, which is consistent with other findings from the sample (Allen, Loeb & Narr, 2016). The current study had too small of a sample size to

compare those with the same vs. different partners, but future research should examine whether having the same partner for a long time matters for health outcomes. The findings in the current study suggest that it may be important to look early in adulthood for the roots of conflict-related health difficulties and to focus on the development of hostile patterns rather than any single relationship. More research is needed to examine why early conflict seems to have such far-reaching associations with health.

Some important limitations should be noted in the current study. While we were able to look at a variety of relationship and health indicators across time and reporters, we did not have access to every measure at every age. We only had IL-6 at age 29 and so were unable to look for change in this variable. In addition, we only started collecting sleep data at age 26 which limited our ability to look for change. Although several potential confounds were accounted for, including attachment security, observed hostility with close friends, depressive symptoms, gender, and family income in early adolescence, it is still possible that other variables not examined may underlie both romantic relationship conflict and health outcomes in adulthood. The possibility remains that personality or temperament characteristics of the teen not accounted for in the current study are contributing to the observed associations. In addition, most people at age 29 are relatively healthy and for this reason the current study did not examine more serious or chronic health conditions that tend to emerge later in life.

In addition, although the sample size used was consistent with other in-depth studies of romantic relationship functioning that include observational measures, there was a relatively small sample available (N=102-120) for some measures of relationship functioning. Both self and partner predictors were included to capture relationship functioning and avoid self-report confounds. However, some identified paths (e.g., teen reported negativity and conflict at age 21

to depression at age 29) rely solely on self-report and may reflect some bias for this reason. In addition, we were only including those in romantic relationships of at least 3 months duration for our measures of hostility and conflict and so we do not know how these results might differ for those not in romantic relationships or those in short-term dating relationships. Our sample only included one participant in a same-sex relationship and thus we cannot draw any conclusions about potential differences or similarities for heterosexual vs. non-heterosexual relationships.

Future research should look to better understand the role of jealousy and its effect on health over time. In addition, studies should examine potential early romantic relationship links to more serious health conditions as participants age. The current study did not find evidence of significant mediation from early romantic relationship conflict to later health outcomes, but other studies should consider other potential mediators such as health risk behavior or physiological reactivity. Finally, future studies should continue to examine potential underlying mechanisms of both hostility and conflict and health outcomes. For example, there is potential evidence that low heart rate variability may contribute to both responses to stress and adverse health outcomes (Gorman & Sloan, 2000; Thayer et al., 2012). Future research could incorporate potential mechanisms like heart rate variability to better understand how and why hostility contributes to health difficulties.

REFERENCES

Allen, J. P., Hauser, S. T., Bell, K. L., McElhaney, K. B., Tate, D. C., Insabella, G. M., et al. (2000). *The autonomy and relatedness coding system*. Unpublished manuscript, University of Virginia, Charlottesville.

Allen, J. P., Hauser, S. T., Bell, K. L., & O'Connor, T. G. (1994). Longitudinal assessment of autonomy and relatedness in adolescent-family interactions as predictors of adolescent ego development and self-esteem. *Child Development, 65,* 179–194.

Allen, J. P. & Land, D (1999). Attachment in adolescence. J. Cassidy & P. R. Shaver (Eds.) *Handbook of attachment theory and research and clinical applications*, (pp. 319- 335), New York: Guilford.

Allen, J.P., Loeb, E., & Narr, R. (2016, March). *Mid-Adolescent Peer Relationship Qualities as Predictors of Physical Health Outcomes at Ages 25-27.* Presented at Biennial Meeting of the Society for Research on Adolescence, Baltimore, Maryland.

Arbuckle, J. L. (1996). Full information estimation in the presence of incomplete data. *Advanced structural equation modeling: Issues and techniques*, *243*, 277.

Arnett, J. J. (2007). Emerging adulthood: What is it, and what is it good for?. *Child development perspectives*, *1*(2), 68-73.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). Beck depression inventory-II. *San Antonio, TX: Psychological Corporation*, b9.

Berry, J. W., & Worthington Jr, E. L. (2001). Forgivingness, relationship quality, stress while imagining relationship events, and physical and mental health. *Journal of Counseling Psychology*, *48*(4), 447.

Bertera, E. M. (2005). Mental health in US adults: The role of positive social support and social

negativity in personal relationships. *Journal of Social and Personal Relationships, 22*(1), 33-48.

Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual review of psychology*, *53*(1), 371-399.

Braithwaite, S. R., Delevi, R., & Fincham, F. D. (2010). Romantic relationships and the physical and mental health of college students. *Personal relationships, 17*(1), 1-12.

Buysse, D. J., Reynolds, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry research*, *28*(2), 193-213.

Campbell, L., Simpson, J. A., Boldry, J., & Kashy, D. A. (2005). Perceptions of conflict and support in romantic relationships: the role of attachment anxiety. *Journal of personality and social psychology*, *88*(3), 510.

Cappuccio, F. P., Cooper, D., D'Elia, L., Strazzullo, P., & Miller, M. A. (2011). Sleep duration predicts cardiovascular outcomes: a systematic review and meta-analysis of prospective studies. *European heart journal*, *32*(12), 1484-1492.

Chopik, W. J., & O'Brien, E. (2017). Happy you, healthy me? Having a happy partner is independently associated with better health in oneself. *Health Psychology*, *36*(1), 21.

Cicchetti, D. V., & Sparrow, S. A. (1981). Developing criteria for establishing interrater reliability of specific items: Applications to assessment of adaptive behavior. *American Journal of Mental Deficiency, 86*(2), 127-137.

Cranford, J. A. (2004). Stress-buffering or stress-exacerbation? Social support and social undermining as moderators of the relationship between perceived stress and depressive symptoms among married people. *Personal Relationships, 11*(1), 23-40.

Creasey, G. (2002). Associations between working models of attachment and conflict management behavior in romantic couples. *Journal of Counseling Psychology*, *49*(3), 365.

Crouch, J. L., Hanson, R. F., Saunders, B. E., Kilpatrick, D. G., & Resnick, H. S. (2000). Income, race/ethnicity, and exposure to violence in youth: Results from the national survey of adolescents. *Journal of community psychology*, *28*(6), 625-641.

Dawson, A. E., Allen, J. P., Marston, E. G., Hafen, C. A., & Schad, M. M. (2014). Adolescent insecure attachment as a predictor of maladaptive coping and externalizing behaviors in emerging adulthood.*Attachment & Human Development*

Dennis, C. L., & Ross, L. (2006). Women's perceptions of partner support and conflict in the development of postpartum depressive symptoms. *Journal of advanced nursing*, *56*(6), 588-599.

DeSteno, D., Valdesolo, P., & Bartlett, M. Y. (2006). Jealousy and the threatened self: getting to the heart of the green-eyed monster. *Journal of personality and social psychology*, *91*(4), 626.

Dibello, A. M., Rodriguez, L. M., Hadden, B. W., & Neighbors, C. (2015). The green eyed monster in the bottle: relationship contingent self-esteem, romantic jealousy, and alcohol-related problems. *Addictive behaviors*, *49*, 52-58.

Ditzen, B., Schmidt, S., Strauss, B., Nater, U. M., Ehlert, U., & Heinrichs, M. (2008). Adult attachment and social support interact to reduce psychological but not cortisol responses to stress. *Journal of psychosomatic research*,*64*(5), 479-486.

Edwards, K. M., Burns, V. E., Ring, C., & Carroll, D. (2006). Sex differences in the interleukin-6 response to acute psychological stress. *Biological psychology*, *71*(3), 236-239.

Exner-Cortens, D., Eckenrode, J., & Rothman, E. (2013). Longitudinal associations between teen dating violence victimization and adverse health outcomes. *Pediatrics*, *131*(1), 71-78.

Feiring, C., Deblinger, E., Hoch-Espada, A., & Haworth, T. (2002). Romantic relationship aggression and attitudes in high school students: The role of gender, grade, and attachment and emotional styles. *Journal of Youth and Adolescence*, *31*(5), 373-385.

Furman, W., & Buhrmester, D. (1985). Children's perceptions of the personal relationships in t their social networks. *Developmental psychology*, *21*(6), 1016.

George, C., Kaplan, N., & Main, M. (1996). *Adult Attachment Interview protocol* (3rd ed.). Berkeley: Department of Psychology, University of California.

Glaser, R., & Kiecolt-Glaser, J. K. (2005). Stress-induced immune dysfunction: implications for health. *Nature Reviews Immunology*, *5*(3), 243-251.

Gorman, J. M., & Sloan, R. P. (2000). Heart rate variability in depressive and anxiety disorders. *American heart journal*, *140*(4), S77-S83.

Grandner, M. A., Chakravorty, S., Perlis, M. L., Oliver, L., & Gurubhagavatula, I. (2014). Habitual sleep duration associated with self-reported and objectively determined cardiometabolic risk factors. *Sleep medicine*, *15*(1), 42-50.

Gunlicks-Stoessel, M. L., & Powers, S. I. (2009). Romantic partners' coping strategies and patterns of cortisol reactivity and recovery in response to relationship conflict. *Journal of social and clinical psychology*, *28*(5), 630.

Gurung, R., Sarason, B., & Sarason, I. (1997). Close personal relationships and health outcomes: A key to the role of social support. *Handbook of personal relationships: Theory, research and interventions (2nd ed). Chichester, UK: Wiley*, 547-73.

Ha, T., Dishion, T. J., Overbeek, G., Burk, W. J., & Engels, R. C. (2014). The blues of adolescent romance: Observed affective interactions in adolescent romantic relationships associated with depressive symptoms. *Journal of abnormal child psychology*, *42*(4), 551-562.

Haase, C. M., Holley, S., Bloch, L., Verstaen, A., & Levenson, R. W. (2016). Interpersonal Emotional Behaviors and Physical Health: A 20-Year Longitudinal Study of Long-Term Married Couples.

Hammen, C. (2006). Stress generation in depression: Reflections on origins, research, and future directions. *Journal of clinical psychology*, *62*(9), 1065-1082.

Hicks, A. M., & Diamond, L. M. (2011). Don't go to bed angry: Attachment, conflict, and affective and physiological reactivity. *Personal Relationships*,*18*(2), 266-284.

Hines, D. A., & Saudino, K. J. (2003). Gender differences in psychological, physical, and sexual aggression among college students using the Revised Conflict Tactics Scales. *Violence and victims*, *18*(2), 197-217.

Holt-Lunstad, J., Birmingham, W., & Jones, B. Q. (2008). Is there something unique about marriage? The relative impact of marital status, relationship quality, and network social support on ambulatory blood pressure and mental health. *Annals of behavioral medicine*, *35*(2), 239-244.

Jaremka, L. M., Fagundes, C. P., Glaser, R., Bennett, J. M., Malarkey, W. B., & Kiecolt-Glaser, J. K. (2013). Loneliness predicts pain, depression, and fatigue: understanding the role of immune dysregulation. *Psychoneuroendocrinology*, *38*(8), 1310-1317.

John-Henderson, N. A., Stellar, J. E., Mendoza-Denton, R., & Francis, D. D. (2015).

Socioeconomic Status and Social Support Social Support Reduces Inflammatory Reactivity for Individuals Whose Early-Life Socioeconomic Status Was Low. *Psychological science*, 0956797615595962.

Kiecolt-Glaser, J. K., Gouin, J. P., & Hantsoo, L. (2010). Close relationships, inflammation, and health. *Neuroscience & Biobehavioral Reviews*, *35*(1), 33-38.

Kiecolt-Glaser, J. K., Loving, T. J., Stowell, J. R., Malarkey, W. B., Lemeshow, S., Dickinson, S. L., & Glaser, R. (2005). Hostile marital interactions, proinflammatory cytokine production, and wound healing.*Archives of general psychiatry*, *62*(12), 1377-1384.

Kiecolt-Glaser, J., & Newton, T. L. (2001). Marriage and health: His and hers. *Psychological Bulletin*, *127*(4), 472-503.

Kinsfogel, K. M., & Grych, J. H. (2004). Interparental conflict and adolescent dating relationships: integrating cognitive, emotional, and peer influences.*Journal of family psychology*, *18*(3), 505.

Kobak, R. R., & Sceery, A. (1988). Attachment in late adolescence: Working models, affect regulation, and representations of self and others. *Child Development*, **59**, 135–146. doi:10.2307/1130395

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*(1), 49-61.

Linder, J. R., Crick, N. R., & Collins, W. A. (2002). Relational aggression and victimization in young adults' romantic relationships: Associations with perceptions of parent, peer, and romantic relationship quality. *Social Development*, *11*(1), 69-86.

Loeb, E., Hessel, E. T., & Allen, J. (2015). The self-fulfilling prophecy of adolescent social

expectations. *International Journal of Behavioral Development*.

Loeb, E. L., Tan, J. S., Hessel, E. T., & Allen, J. P. (2016). Getting What You Expect: Negative Social Expectations in Early Adolescence Predict Hostile Romantic Partnerships and Friendships Into Adulthood. *The Journal of Early Adolescence*, 0272431616675971.

Luecken, L. J., & Roubinov, D. S. (2012). Hostile behavior links negative childhood family relationships to heart rate reactivity and recovery in young adulthood. *International Journal of Psychophysiology*, *84*(2), 172-179.

Lutgendorf, S. K., Garand, L., Buckwalter, K. C., Reimer, T. T., Hong, S. Y., & Lubaroff, D. M. (1999). Life stress, mood disturbance, and elevated interleukin-6 in healthy older women. *The Journals of Gerontology Series A: Biological sciences and medical sciences*, *54*(9), M434-M439.

McEwen, B. S. (2008). Central effects of stress hormones in health and disease: Understanding the protective and damaging effects of stress and stress mediators. *European journal of pharmacology*, *583*(2), 174-185.

McLoyd, V. C. (1998). Socioeconomic disadvantage and child development. *American psychologist*, *53*(2), 185.

Miller, G., Rohleder, N., & Cole, S. W. (2009). Chronic interpersonal stress predicts activation of pro-and anti-inflammatory signaling pathways six months later. *Psychosomatic Medicine*, *71*(1), 57.

Miller, T. Q., Smith, T. W., Turner, C. W., Guijarro, M. L., & Hallet, A. J. (1996). Meta-analytic review of research on hostility and physical health. *Psychological Bulletin*, *119*(2), 322-348.

Moussavi, S., Chatterji, S., Verdes, E., Tandon, A., Patel, V., & Ustun, B. (2007). Depression,

chronic diseases, and decrements in health: results from the World Health Surveys. *The Lancet*, *370*(9590), 851-858.

Muthén, B., & Muthén, L. (2015). MPLUS Version 7.2. [Computer Software]. Los Angeles, CA.

Norona, J. C., Roberson, P. N., & Welsh, D. P. (2016). Rejection sensitivity and depressive symptoms: Longitudinal actor-partner effects in adolescent romantic relationships. *Journal of adolescence*, *51*, 6-18.

Pfeiffer, S. M., & Wong, P. T. (1989). Multidimensional jealousy. *Journal of Social and Personal Relationships*, *6*(2), 181-196.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of applied psychology*, *88*(5), 879.

Powers, S. I., Pietromonaco, P. R., Gunlicks, M., & Sayer, A. (2006). Dating couples' attachment styles and patterns of cortisol reactivity and recovery in response to a relationship conflict. *Journal of personality and social psychology*, *90*(4), 613.

Ravitz, P., Maunder, R., Hunter, J., Sthankiya, B., & Lancee, W. (2010). Adult attachment measures: A 25-year review. *Journal of psychosomatic research*, *69*(4), 419-432.

Rice, F., Harold, G. T., Shelton, K. H., & Thapar, A. (2006). Family conflict interacts with genetic liability in predicting childhood and adolescent depression. *Journal of the American Academy of Child & Adolescent Psychiatry*, *45*(7), 841-848.

Roisman, G. I., Collins, W. A., Sroufe, L. A., & Egeland, B. (2005). Predictors of young adults' representations of and behavior in their current romantic relationship: Prospective tests of the prototype hypothesis.*Attachment & Human Development*, *7*(2), 105-121.

Rugulies, R. (2002). Depression as a predictor for coronary heart disease: a review and meta-analysis. *American journal of preventive medicine*,*23*(1), 51-61.

Rydell, R. J., & Bringle, R. G. (2007). Differentiating reactive and suspicious jealousy. *Social Behavior and Personality: an international journal*, *35*(8), 1099-1114.

Seiffge-Krenke, I., & Burk, W. J. (2015). The dark side of romantic relationships: Aggression in adolescent couples and links to attachment. *Mental Health & Prevention*, *3*(4), 135-142.

Shulman, S., & Connolly, J. (2015). 15 The Challenge of Romantic Relationships in Emerging Adulthood. *The Oxford Handbook of Emerging Adulthood*, 230.

Simon, R. W., & Barrett, A. E. (2010). Nonmarital Romantic Relationships and Mental Health in Early Adulthood Does the Association Differ for Women and Men?. *Journal of Health and Social Behavior*, *51*(2), 168-182.

Simon, V. A., & Furman, W. (2010). Interparental conflict and adolescents' romantic relationship conflict. *Journal of research on adolescence*, *20*(1), 188-209.

Steer, R. A., & Beck, A. T. (1985). Modifying the Beck Depression Inventory: reply to Vredenburg, Krames, and Flett. *Psychological reports*,*57*(2), 625-626.

Thayer, J. F., Åhs, F., Fredrikson, M., Sollers, J. J., & Wager, T. D. (2012). A meta-analysis of heart rate variability and neuroimaging studies: implications for heart rate variability as a marker of stress and health. *Neuroscience & Biobehavioral Reviews*, *36*(2), 747-756.

Troxel, W. M. (2010). It's more than sex: exploring the dyadic nature of sleep and implications for health. *Psychosomatic medicine*, *72*(6), 578.

Troxel, W. M., Robles, T. F., Hall, M., & Buysse, D. J. (2007). Marital quality and the marital bed: examining the covariation between relationship quality and sleep. *Sleep medicine reviews*, *11*(5), 389-404.

Ward, M. J., & Carlson, E. A. (1995). Associations among adult attachment representations, maternal sensitivity, and infant-mother attachment in a sample of adolescent mothers. *Child Development*, **66**, 69–79. doi:10.1111/j.1467-8624.1995.tb00856.x

Whisman, M. A., & Sbarra, D. A. (2012). Marital adjustment and interleukin-6 (IL-6). *Journal of Family Psychology*, *26*(2), 290.

Wolfe, D. A., Reitzel-Jaffe, D., Gough, R., & Wekerle, C. (1994). Conflicts in relationships: Measuring physical and sexual coercion among youth.*Unpublished manuscript, University of Western Ontario, Canada*.

Wong, M. L., Lau, E. Y. Y., Wan, J. H. Y., Cheung, S. F., Hui, C. H., & Mok, D. S. Y. (2013). The interplay between sleep and mood in predicting academic functioning, physical health and psychological health: a longitudinal study. *Journal of psychosomatic research*, *74*(4), 271-277.

Wright, B. L., & Loving, T. J. (2011). Health implications of conflict in close relationships. *Social and Personality Psychology Compass*, *5*(8), 552-562.

Zhang, X., Giovannucci, E. L., Wu, K., Gao, X., Hu, F., Ogino, S., ... & Ma, J. (2013). Associations of self-reported sleep duration and snoring with colorectal cancer risk in men and women. *Sleep*, *36*(5), 681.

APPENDIX A: MEANS, STANDARD DEVATIONS, AND INTERCORRELATIONS OF STUDY VARIABLES

		Mean	SD	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.
1.	Attach (13)	.25	.42	-0.04	-0.06	-.25***	0.03	-0.05	-0.16	0.01	-0.04	0.05	0.05	-0.06	-0.06	-0.13	-0.14	-0.06	-0.11	-0.03	-0.06	-0.05	-0.07	-0.08	0.11	0.28***
2.	Obs. TN host. (13)	.78	.52	1	0.63***	0.03	0.35***	0.22*	0.01	0.03	0.10	0.13	0.20*	-0.05	-0.08	-0.09	0.01	-0.05	-0.09	-0.02	-0.04	0.06	-0.02	-0.01	-0.05	-0.04
3.	Obs. Fr. Host. (13)	.76	.55		1	0.03	0.20**	0.14	-0.08	-0.00	-0.01	0.07	0.15	-0.08	-0.00	0.02	-0.05	-0.06	-0.02	0.00	-0.04	0.10	0.05	-0.10	-0.08	0.01
4.	Dep. (13)	5.07	4.30			1	0.20*	0.00	0.01	0.03	-0.07	-0.03	-0.08	0.17*	0.10	-0.10	0.01	0.02	0.02	-0.01	0.04	-0.03	0.07	0.04	0.06	-0.11
5.	Dep (21)	5.22	6.00				1	0.33**	0.05	0.03	0.07	0.07	0.03	0.45***	0.09	-0.03	-0.06	-0.01	-0.03	-0.03	-0.04	0.06	0.19*	0.36***	0.03	-0.01
6.	Obs. TN. Host (21)	.60	.51					1	0.48***	0.19	0.17	0.24*	0.16	0.29**	0.06	0.40**	0.22	0.22	0.24*	0.27**	0.28**	0.33**	0.13	0.19	0.06	-0.18
7.	Obs. RP host (21)	.54	.48						1	0.11	0.08	0.17	-0.02	0.23*	0.02	0.08	0.21	0.05	-0.10	-0.05	-0.06	0.11	0.08	0.16	0.07	-0.17
8.	TN Jeal (21)	73.41	16.48							1	0.43***	0.19*	0.23**	0.14	0.27**	0.17	0.04	0.34***	0.19	0.15	0.09	0.25**	0.25**	0.18*	0.22**	-0.05
9.	RP Jeal (21)	76.29	16.48								1	0.18	0.57***	-0.02	0.16	0.18	0.04	0.15	0.25*	0.04	0.19	0.16	0.11	-0.08	0.10	-0.06
10.	TN neg. (21)	20.56	4.79									1	0.22*	0.16	0.09	0.13	0.23*	-0.06	0.05	0.33***	0.04	0.03	0.18	0.27**	-0.04	0.07
11.	RP neg (21)	21.93	5.49										1	0.02	0.11	0.37***	0.24*	0.09	0.29**	0.08	0.31**	0.16	0.07	0.06	0.19*	-0.15
12.	Dep. (24)	5.34	5.97											1	0.42***	0.09	0.09	0.31**	0.08	0.26**	0.22*	-0.01	0.29***	0.46***	0.12	-0.09
13.	Sleep (26)	5.78	3.47												1	0.42*	0.10	0.21*	-0.09	0.19	0.09	0.17	0.53***	0.27***	0.23**	-0.13
14.	Obs TN host (24)	.56	.67													1	0.65***	0.16	0.40***	0.40***	0.30**	0.11	0.31**	0.08	0.12	-0.37***
15.	Obs. RP host (24)	.53	.62														1	0.20	0.24*	0.50***	0.24*	0.02	0.12	-0.00	0.13	-0.20
16.	TN jeal (24)	71.08	12.94															1	0.46***	0.35***	0.38***	0.31**	0.13	0.03	0.14	-0.27**
17.	RP jeal (24)	74.79	18.15																1	0.52***	0.64***	0.26*	-0.06	-0.06	-0.20*	-0.32**
18.	TN neg. (24)	20.39	4.38																	1	0.61***	0.07	0.18	0.14	-0.06	-0.14
19.	RP Neg (24)	22.11	5.57																		1	0.29**	0.22*	-0.05	0.03	-0.41***
20.	IL-6 (29)	0.20	.87																			1	0.25**	0.06	0.14	-0.26**
21.	Sleep (29)	5.50	3.33																				1	0.40***	0.15	-0.12
22.	Dep (29)	5.08	6.36																					1	0.10	0.00
23.	Gender	--	--																						1	-0.11
24.	Income	43,600	22,400																							1

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

APPENDIX B

Age 13-15 Predictors of Age 21 Observed Teen Hostility

	β	*S.E.*	R^2
Observed Teen Hostility (13)	.157	.125	
Observed Friend Hostility (13)	.058	.126	
Attachment Security (15)	-.092	.115	
Family Income (13)	-.154	.094	
Depression (13)	-.009	.096	
Gender (13)	.055	.098	
			.084

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX C

Age 13-15 Predictors of Age 21 Observed Partner Hostility

	β	*S.E.*	R^2
Observed Teen Hostility (13)	.085	.127	
Observed Friend Hostility (13)	-.137	.128	
Attachment Security (15)	-.131	.111	
Family Income (13)	-.139	.095	
Depression (13)	-.025	.096	
Gender (13)	.067	.101	
			.062

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX D

Age 13-15 Predictors of Age 21 Teen Jealousy

	β	*S.E.*	R^2
Observed Teen Hostility (13)	.022	.112	
Observed Friend Hostility (13)	-.017	.116	
Attachment Security (15)	-.034	.098	
Family Income (13)	-.012	.090	
Depression (13)	.002	.088	
Gender (13)	.214**	.088	
			.047

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$

APPENDIX E

Age 13-15 Predictors of Age 21 Partner Jealousy

	β	*S.E.*	R^2
Observed Teen Hostility (13)	.124	.124	
Observed Friend Hostility (13)	-.048	.128	
Attachment Security (15)	-.085	.100	
Family Income (13)	.008	.096	
Depression (13)	-.194*	.101	
Gender (13)	.099	.094	
			.051

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX F

Age 13-15 Predictors of Age 21 Depression

	β	*S.E.*	R^2
Observed Teen Hostility (13)	.382***	.088	
Observed Friend Hostility (13)	-.057	.094	
Attachment Security (15)	.116	.081	
Family Income (13)	.003	.076	
Depression (13)	.226**	.076	
Gender (13)	.006	.074	
			.174**

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX G

Age 13-15 Predictors of Age 21 Teen Reported Negativity and Conflict

	β	*S.E.*	R^2
Observed Teen Hostility (13)	.146	.114	
Observed Friend Hostility (13)	-.011	.115	
Attachment Security (15)	.031	.095	
Family Income (13)	.075	.087	
Depression (13)	-.023	.088	
Gender (13)	-.026	.089	
			.029

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX H

Age 13-15 Predictors of Age 21 Partner Reported Negativity and Conflict

	β	*S.E.*	R^2
Observed Teen Hostility (13)	.145	.120	
Observed Friend Hostility (13)	.083	.121	
Attachment Security (15)	.017	.100	
Family Income (13)	-.136	.089	
Depression (13)	-.082	.089	
Gender (13)	.179*	.089	
			.097

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX I

Age 13-15 Predictors of Age 24 Observed Teen Hostility

	β	*S.E.*	R^2
Observed Teen Hostility (13)	-.200	.141	
Observed Friend Hostility (13)	.133	.128	
Attachment Security (15)	.113	.125	
Family Income (13)	-.310***	.097	
Depression (13)	-.099	.102	
Gender (13)	.104	.099	
			.162*

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX J

Age 13-15 Predictors of Age 24 Observed Partner Hostility

	β	*S.E.*	R^2
Observed Teen Hostility (13)	.040	.150	
Observed Friend Hostility (13)	-.066	.136	
Attachment Security (15)	-.107	.131	
Family Income (13)	-.193	.106	
Depression (13)	.016	.108	
Gender (13)	.103	.104	
			.079

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX K

Age 13-15 Predictors of Age 24 Teen Jealousy

	β	*S.E.*	R^2
Observed Teen Hostility (13)	-.034	.124	
Observed Friend Hostility (13)	-.073	.124	
Attachment Security (15)	-.031	.102	
Family Income (13)	-.252**	.091	
Depression (13)	.012	.098	
Gender (13)	.077	.094	
			.090

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX L

Age 13-15 Predictors of Age 24 Partner Jealousy

	β	*S.E.*	R^2
Observed Teen Hostility (13)	-.081	.126	
Observed Friend Hostility (13)	.026	.126	
Attachment Security (15)	-.057	.100	
Family Income (13)	-.330***	.090	
Depression (13)	.002	.098	
Gender (13)	-.197*	.092	
			.151*

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX M

Age 13-15 Predictors of Age 26 Sleep Problems

	β	*S.E.*	R^2
Observed Teen Hostility (13)	-.158	.099	
Observed Friend Hostility (13)	.112	.098	
Attachment Security (15)	-.044	.086	
Family Income (13)	-.088	.078	
Depression (13)	.074	.080	
Gender (13)	.215**	.076	
			.084

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX N

Age 13-15 Predictors of Age 24 Depression

	β	*S.E.*	R^2
Observed Teen Hostility (13)	-.004	.103	
Observed Friend Hostility (13)	-.087	.102	
Attachment Security (15)	-.041	.088	
Family Income (13)	-.055	.080	
Depression (13)	.153*	.078	
Gender (13)	.100	.079	
			.054

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX O

Age 13-15 Predictors of Age 24 Teen Reported Negativity and Conflict

	β	*S.E.*	R^2
Observed Teen Hostility (13)	-.069	.128	
Observed Friend Hostility (13)	.036	.128	
Attachment Security (15)	-.027	.109	
Family Income (13)	-.123	.096	
Depression (13)	-.030	.102	
Gender (13)	-.088	.095	
			.026

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX P

Age 13-15 Predictors of Age 24 Partner Reported Negativity and Conflict

	β	*S.E.*	R^2
Observed Teen Hostility (13)	-.027	.124	
Observed Friend Hostility (13)	.008	.124	
Attachment Security (15)	.020	.097	
Family Income (13)	-.399***	.085	
Depression (13)	.055	.098	
Gender (13)	-.024	.091	
			.160*

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX Q

Age 21 Predictors of Age 24 Observed Teen Hostility

	β	*S.E.*	R^2
Observed Teen Hostility (21)	.347***	.116	
Observed Partner Hostility (21)	-.081	.111	
Teen Jealousy (21)	.050	.143	
Partner Jealousy (21)	-.074	.157	
Depression (21)	-.076	.111	
Teen Report Neg. and Conf. (21)	-.005	.118	
Partner Report Neg. and Conf. (21)	.340**	.130	
			.246**

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX R

Age 21 Predictors of Age 24 Observed Partner Hostility

	β	*S.E.*	R^2
Observed Teen Hostility (21)	.094	.128	
Observed Partner Hostility (21)	.167	.117	
Teen Jealousy (21)	-.028	.139	
Partner Jealousy (21)	-.167	.154	
Depression (21)	-.056	.109	
Teen Report Neg. and Conf. (21)	.208	.116	
Partner Report Neg. and Conf. (21)	.301*	.132	
			.181*

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX S

Age 21 Predictors of Age 24 Teen Jealousy

	β	*S.E.*	R^2
Observed Teen Hostility (21)	.247*	.120	
Observed Partner Hostility (21)	-.079	.115	
Teen Jealousy (21)	.347**	.110	
Partner Jealousy (21)	.080	.131	
Depression (21)	-.085	.095	
Teen Report Neg. and Conf. (21)	-.168	.104	
Partner Report Neg. and Conf. (21)	-.020	.120	
			.209**

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX T

Age 21 Predictors of Age 24 Partner Jealousy

	β	*S.E.*	R^2
Observed Teen Hostility (21)	.290**	.119	
Observed Partner Hostility (21)	-.249*	.115	
Teen Jealousy (21)	.071	.120	
Partner Jealousy (21)	.137	.135	
Depression (21)	-.127	.097	
Teen Report Neg. and Conf. (21)	-.078	.115	
Partner Report Neg. and Conf. (21)	.170	.130	
			.195**

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX U

Age 21 Predictors of Age 26 Sleep Problems

	β	*S.E.*	R^2
Observed Teen Hostility (21)	-.001	.119	
Observed Partner Hostility (21)	-.011	.113	
Teen Jealousy (21)	.236*	.100	
Partner Jealousy (21)	-.018	.124	
Depression (21)	.112	.088	
Teen Report Neg. and Conf. (21)	.000	.105	
Partner Report Neg. and Conf. (21)	.087	.118	
			.082

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

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APPENDIX V

Age 21 Predictors of Age 24 Teen Reported Negativity and Conflict

	β	*S.E.*	R^2
Observed Teen Hostility (21)	.399***	.109	
Observed Partner Hostility (21)	-.303**	.109	
Teen Jealousy (21)	.047	.115	
Partner Jealousy (21)	-.014	.133	
Depression (21)	-.133	.097	
Teen Report Neg. and Conf. (21)	.313**	.101	
Partner Report Neg. and Conf. (21)	-.072	.119	
			.229**

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX W

Age 21 Predictors of Age 24 Partner Reported Negativity and Conflict

	β	*S.E.*	R^2
Observed Teen Hostility (21)	.345**	.126	
Observed Partner Hostility (21)	-.185	.124	
Teen Jealousy (21)	-.062	.115	
Partner Jealousy (21)	.075	.132	
Depression (21)	.119	.097	
Teen Report Neg. and Conf. (21)	-.100	.112	
Partner Report Neg. and Conf. (21)	.257*	.123	
			.197**

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX X

Age 21 Predictors of Age 24 Depression

	β	*S.E.*	R^2
Observed Teen Hostility (21)	.018	.110	
Observed Partner Hostility (21)	.181	.099	
Teen Jealousy (21)	.151	.088	
Partner Jealousy (21)	-.194	.110	
Depression (21)	.430***	.074	
Teen Report Neg. and Conf. (21)	.061	.089	
Partner Report Neg. and Conf. (21)	.059	.104	
			.286***

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX Y

Age 13-15 Predictors of Age 29 IL-6

	β	*S.E.*	R^2
Observed Teen Hostility (13)	-.020	.115	
Observed Friend Hostility (13)	.112	.112	
Attachment Security (15)	-.020	.092	
Family Income (13)	-.242**	.090	
Depression (13)	-.077	.083	
Gender (13)	.124	.086	
			.091

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX Z

Age 13-15 Predictors of Age 29 Sleep Problems

	β	*S.E.*	R^2
Observed Teen Hostility (13)	-.071	.105	
Observed Friend Hostility (13)	.088	.104	
Attachment Security (15)	-.054	.093	
Family Income (13)	-.085	.084	
Depression (13)	.039	.082	
Gender (13)	.144	.081	
			.042

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX AA

Age 13-15 Predictors of Age 29 Depression

Predictor	β	*S.E.*	R^2
Observed Teen Hostility (13)	.072	.100	
Observed Friend Hostility (13)	-.147	.102	
Attachment Security (15)	-.109	.093	
Family Income (13)	.050	.083	
Depression (13)	.016	.082	
Gender (13)	.106	.081	
			.033

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX BB

Age 21 Predictors of Age 29 IL-6

Predictor	β	*S.E.*	R^2
Observed Teen Hostility (21)	.456***	.124	
Observed Partner Hostility (21)	-.106	.123	
Teen Jealousy (21)	.228*	.101	
Partner Jealousy (21)	-.083	.129	
Depression (21)	-.115	.099	
Teen Report Neg. and Conf. (21)	-.077	.109	
Partner Report Neg. and Conf. (21)	.082	.134	
			.220**

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX CC

Age 21 Predictors of Age 29 Sleep Problems

	β	*S.E.*	R^2
Observed Teen Hostility (21)	.036	.113	
Observed Partner Hostility (21)	.010	.107	
Teen Jealousy (21)	.226*	.098	
Partner Jealousy (21)	-.017	.117	
Depression (21)	.165	.088	
Teen Report Neg. and Conf. (21)	.115	.105	
Partner Report Neg. and Conf. (21)	-.017	.113	
			.113*

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX DD

Age 21 Predictors of Age 29 Depression

	β	*S.E.*	R^2
Observed Teen Hostility (21)	-.029	.099	
Observed Partner Hostility (21)	.090	.093	
Teen Jealousy (21)	.224**	.088	
Partner Jealousy (21)	-.275**	.106	
Depression (21)	.337***	.078	
Teen Report Neg. and Conf. (21)	.218*	.091	
Partner Report Neg. and Conf. (21)	.091	.100	
			.245***

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX EE

Age 24-26 Predictors of Age 29 IL-6

	β	*S.E.*	R^2
Observed Teen Hostility (24)	.059	.173	
Observed Partner Hostility (24)	-.060	.160	
Teen Jealousy (24)	.240	.128	
Partner Jealousy (24)	-.087	.176	
Sleep Problems (26)	.158	.104	
Depression (24)	-.131	.103	
Teen Report Neg. and Conf. (24)	-.202	.150	
Partner Report Neg. and Conf. (24)	.369*	.162	
			.173*

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX FF

Age 24-26 Predictors of Age 29 Sleep Problems

	β	*S.E.*	R^2
Observed Teen Hostility (24)	.366**	.149	
Observed Partner Hostility (24)	-.097	.141	
Teen Jealousy (24)	.027	.100	
Partner Jealousy (24)	-.317*	.134	
Sleep Problems (26)	.337***	.085	
Depression (24)	.130	.084	
Teen Report Neg. and Conf. (24)	-.082	.129	
Partner Report Neg. and Conf. (24)	.340**	.129	
			.383***

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX GG

Age 24-26 Predictors of Age 29 Depression

	β	*S.E.*	R^2
Observed Teen Hostility (24)	.034	.160	
Observed Partner Hostility (24)	-.097	.152	
Teen Jealousy (24)	-.144	.125	
Partner Jealousy (24)	.120	.152	
Sleep Problems (26)	.100	.089	
Depression (24)	.437***	.080	
Teen Report Neg. and Conf. (24)	.212	.154	
Partner Report Neg. and Conf. (24)	-.234	.130	
			.263***

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

APPENDIX HH MEASURES

Multidimensional Jealousy Scale

For each of the following questions, please circle the number that best describes how often you have the following thoughts about _____ *(insert name of current boyfriend or girlfriend here)?*

1. I suspect that _____ is secretly seeing someone of the opposite sex.

1	2	3	4	5	6	7
Never			Sometimes			All the time

2. I am worried that some member of the opposite sex may be chasing after _____.

1	2	3	4	5	6	7
Never			Sometimes			All the time

3. I suspect that _____ may be attracted to someone else.

1	2	3	4	5	6	7
Never			Sometimes			All the time

4. I suspect that _____ may be physically intimate with another member of the opposite sex behind my back

1	2	3	4	5	6	7
Never			Sometimes			All the time

5. I think that some members of the opposite sex may be romantically interested in _____.

1	2	3	4	5	6	7
Never			Sometimes			All the time

6. I am worried that someone of the opposite sex is trying to seduce _____.

1	2	3	4	5	6	7
Never			Sometimes			All the time

7. I think that _____ is secretly developing an intimate relationship with someone of the opposite sex.

1	2	3	4	5	6	7
Never			Sometimes			All the time

8. I suspect that _____ is crazy about members of the opposite sex.

1	2	3	4	5	6	7
Never			Sometimes			All the time

For each of the following questions, please circle the number that best describes how emotionally you would react to the following situations.

9. _____ comments to you on how great looking a particular member of the opposite sex is.

1	2	3	4	5	6	7
Very Pleased			Neutral			Very upset

10. _____ shows a great deal of interest or excitement in talking to someone of the opposite sex.

1	2	3	4	5	6	7
Very Pleased			Neutral			Very upset

11. _____ smiles in a very friendly manner to someone of the opposite sex.

1	2	3	4	5	6	7
Very Pleased			Neutral			Very upset

12. A member of the opposite sex is trying to get close to _____ all the time.

1	2	3	4	5	6	7
Very Pleased			Neutral			Very upset

13. _____ is flirting with someone of the opposite sex.

1	2	3	4	5	6	7
Very Pleased			Neutral			Very upset

14. Someone of the opposite sex is dating _____.

1	2	3	4	5	6	7
Very Pleased			Neutral			Very upset

15. _____ hugs and kisses someone of the opposite sex.

1	2	3	4	5	6	7
Very Pleased			Neutral			Very upset

16. _____ works very closely with a member of the opposite sex (in school or office).

1	2	3	4	5	6	7
Very Pleased			Neutral			Very upset

For each of the following questions, please circle the number that best describes how often you engage in the following behaviors

17. I look through _____'s drawers, handbag, or pockets.

1	2	3	4	5	6	7
Never			Sometimes			All the time

18. I call _____ unexpectedly, just to see if he or she is there.

1	2	3	4	5	6	7
Never			Sometimes			All the time

19. I question _____ about previous or present romantic relationships.

1	2	3	4	5	6	7
Never			Sometimes			All the time

20. I say something nasty about someone of the opposite sex if _____ shows an interest in that person.

1	2	3	4	5	6	7
Never			Sometimes			All the time

21. I question _____ about his or her telephone calls.

1	2	3	4	5	6	7
Never			Sometimes			All the time

22. I question _____ about his or her whereabouts.

1	2	3	4	5	6	7
Never			Sometimes			All the time

23. I join in whenever I see _____ talking to a member of the opposite sex.

1	2	3	4	5	6	7
Never			Sometimes			All the time

24. I pay _____ a surprise visit just to see who is with him or her.

1	2	3	4	5	6	7
Never			Sometimes			All the time

Beck Depression Inventory

For each number, check the box that best describes how you have been feeling in the <u>past week, including today</u>. If more than one statement within a group seems to apply equally well, check each box that applies.

1	☐ I do not feel sad. ☐ I feel sad. ☐ I am sad all the time and I can't snap out of it. ☐ I am so sad or unhappy that I can't stand it.
2	☐ I am not particularly discouraged about the future. ☐ I feel discouraged about the future. ☐ I feel I have nothing to look forward to. ☐ I feel that the future is hopeless and that things cannot improve.
3	☐ I do not feel like a failure. ☐ I feel I have failed more than the average person. ☐ As I look back on my life, all I can see is a lot of failures. ☐ I feel I am a complete failure as a person.
4	☐ I get as much satisfaction out of things as I used to. ☐ I don't enjoy things the ways I used to. ☐ I don't get real satisfaction out of anything anymore. ☐ I am dissatisfied or bored with everything.
5	☐ I don't feel particularly guilty. ☐ I feel guilty a good part of the time. ☐ I feel quite guilty most of the time. ☐ I feel guilty all of the time.
6	☐ I don't feel I am being punished. ☐ I feel I may be punished. ☐ I expect to be punished. ☐ I feel I am being punished.
7	☐ I don't feel disappointed in myself. ☐ I am disappointed in myself. ☐ I am disgusted with myself. ☐ I hate myself.
8	☐ I don't feel I am any worse than anybody else. ☐ I am critical of myself for my weaknesses or mistakes. ☐ I blame myself all the time for my faults. ☐ I blame myself for everything bad that happens.
9	☐ I don't have any thoughts of killing myself. ☐ I have thoughts of killing myself, but I would not carry them out. ☐ I would like to kill myself. ☐ I would kill myself if I had the chance.
10	☐ I don't cry any more than usual. ☐ I cry more now than I used to. ☐ I cry all the time now. ☐ I used to be able to cry, but now I can't cry even though I want to.

11	☐ I am no more irritated now than I ever am. ☐ I get annoyed or irritated more easily than I used to. ☐ I feel irritated all the time now. ☐ I don't get irritated at all by the things that used to irritate me.
12	☐ I have not lost interest in other people. ☐ I am less interested in other people than I used to be. ☐ I have lost most of my interest in other people. ☐ I have lost all of my interest in other people.
13	☐ I make decisions about as well as I ever could. ☐ I put off making decisions more than I used to. ☐ I have greater difficulty in making decisions than before. ☐ I can't make decisions at all anymore.
14	☐ I don't feel I look any worse than I used to. ☐ I am worried that I am looking old or unattractive. ☐ I feel that there are permanent changes in my appearance that make me look unattractive. ☐ I believe that I look ugly.
15	☐ I can work about as well as before. ☐ It takes an extra effort to get started at doing something. ☐ I have to push myself very hard to do anything. ☐ I can't do any work at all.
16	☐ I can sleep as well as usual. ☐ I don't sleep as well as I used to. ☐ I wake up 1-2 hours earlier than usual and find it hard to get back to sleep. ☐ I wake up several hours earlier than I used to and cannot get back to sleep.
17	☐ I don't get more tired than usual. ☐ I get tired more easily than I used to. ☐ I get tired from doing almost anything. ☐ I am too tired to do anything.
18	☐ My appetite is no worse than usual. ☐ My appetite is not as good as it used to be. ☐ My appetite is much worse now. ☐ I have no appetite at all anymore.
19a	☐ I haven't lost much weight, if any, lately. ☐ I have lost more than 5 pounds lately, ☐ I have lost more than 10 pounds lately. ☐ I have lost more than 15 pounds lately.
19 b	I am purposely trying to lose weight by eating less. ☐ YES ☐ NO
20	☐ I am no more worried about my health than usual.

	☐ I am worried about physical problems such as aches and pains, or upset stomach, or constipation. ☐ I am very worried about physical problems and it's hard to think of much else. ☐ I am so worried about physical problems that I cannot think about anything else.
21	☐ I have not noticed any recent change in my interest in sex. ☐ I am less interested in sex than I used to be. ☐ I am much less interested in sex now. ☐ I have lost interest in sex completely.

Conflict in Relationships Scale

The following questions ask you about things that may have happened to you and ### while you were having an argument. Check the box that is your best guess of how often these things have happened IN THE PAST YEAR. Please remember that all answers are confidential.

During a conflict/argument in the past year:	Never Happened	1-2 times	3-5 times	6+ times
1. I gave reasons for my side of the argument.	☐	☐	☐	☐
2. My partner gave reasons for his/her side of the argument.	☐	☐	☐	☐
3. I touched my partner sexually when he/she didn't want me to.	☐	☐	☐	☐
4. My partner touched me sexually when I didn't want him/her to.	☐	☐	☐	☐
5. I tried to turn my partner's friend against him/her.	☐	☐	☐	☐
6. My partner tried to turn my friends against me.	☐	☐	☐	☐
7. I did something to make my partner feel jealous.	☐	☐	☐	☐
8. My partner did something to make me feel jealous.	☐	☐	☐	☐
9. I destroyed or threatened to destroy something my partner valued.	☐	☐	☐	☐
10. My partner destroyed or threatened to destroy something I valued.	☐	☐	☐	☐
11. I told my partner that I was partly to blame.	☐	☐	☐	☐
12. My partner told me that he/she was partly to blame.	☐	☐	☐	☐
13. I brought up something bad that my partner had done in the past	☐	☐	☐	☐
14. My partner brought up something bad	☐	☐	☐	☐

that I had done in the past.				
15. I threw something at my partner.	☐	☐	☐	☐
16. My partner threw something at me.	☐	☐	☐	☐
17. I said things just to make my partner angry.	☐	☐	☐	☐
18. My partner said things just to make me angry.	☐	☐	☐	☐
19. I gave reasons why I thought my partner was wrong.	☐	☐	☐	☐
20. My partner gave me reasons why he/she thought I was wrong.	☐	☐	☐	☐
21. I agreed that my partner was partly right.	☐	☐	☐	☐
22. My partner agreed that I was partly right.	☐	☐	☐	☐
23. I spoke to my partner in a hostile or mean tone of voice.	☐	☐	☐	☐
24. My partner spoke to me in a hostile or mean tone of voice.	☐	☐	☐	☐

During a conflict/argument in the past year:	**Never Happened**	**1-2 times**	**3-5 times**	**6+ times**
25. I forced my partner to have sex when he/she didn't want to.	☐	☐	☐	☐
26. My partner forced me to have sex when I didn't want to.	☐	☐	☐	☐
27. I offered a solution that I thought would make us both happy.	☐	☐	☐	☐
28. My partner offered a solution that he/she thought would make us both happy.	☐	☐	☐	☐
29. I threatened my partner in an attempt to have sex with him/her.	☐	☐	☐	☐
30. My partner threatened me in an attempt to have sex with me.	☐	☐	☐	☐
31. I put off talking until we calmed down.	☐	☐	☐	☐
32. My partner put off talking until we calmed down.	☐	☐	☐	☐
33. I insulted my partner with put downs.	☐	☐	☐	☐
34. My partner insulted me with put downs.	☐	☐	☐	☐
35. I discussed the issue calmly.	☐	☐	☐	☐
36. My partner discussed the issue calmly.	☐	☐	☐	☐
37. I kissed my partner when he/she didn't	☐	☐	☐	☐

want me to.				
38. My partner kissed me when I didn't want him/her to.	☐	☐	☐	☐
39. I said things to my partner's friend about him/her to turn them against him/her.	☐	☐	☐	☐
40. My partner said things to my friends about me to turn them against me.	☐	☐	☐	☐
41. I ridiculed or made fun of my partner in front of others.	☐	☐	☐	☐
42. My partner ridiculed me or made fun of me in front of others.	☐	☐	☐	☐
43. I told my partner how upset I was.	☐	☐	☐	☐
44. My partner told me how upset he/she was	☐	☐	☐	☐
45. I kept track of who my partner was with and where he/she was.	☐	☐	☐	☐
46. My partner track of who I was with and where I was.	☐	☐	☐	☐
47. I blamed my partner for the problem.	☐	☐	☐	☐
48. My partner blamed me for the problem.	☐	☐	☐	☐
49. I kicked, hit, or punched my partner.	☐	☐	☐	☐

During a conflict/argument in the past year:	**Never Happened**	**1-2 times**	**3-5 times**	**6+ times**
50. My partner kicked, hit or punched me.	☐	☐	☐	☐
51. I left the room to cool down.	☐	☐	☐	☐
52. My partner left the room to cool down.	☐	☐	☐	☐
53. I gave in, just to avoid conflict.	☐	☐	☐	☐
54. My partner gave in, just to avoid conflict.	☐	☐	☐	☐
55. I accused my partner of flirting with another person.	☐	☐	☐	☐
56. My partner accused me of flirting with another person.	☐	☐	☐	☐
57. I deliberately tried to frighten my partner.	☐	☐	☐	☐
58. My partner deliberately tried to frighten me.	☐	☐	☐	☐
59. I slapped my partner or pulled his/her hair.	☐	☐	☐	☐
60. My partner slapped me or pulled my	☐	☐	☐	☐

hair.				
61. I threatened to hurt my partner.	☐	☐	☐	☐
62. My partner threatened to hurt me.	☐	☐	☐	☐
63. I threatened to end the relationship.	☐	☐	☐	☐
64. My partner threatened to end the relationship.	☐	☐	☐	☐
65. I threatened to hit my partner or throw something at him/her.	☐	☐	☐	☐
66. My partner threatened to hit me or throw something at me.	☐	☐	☐	☐
67. I pushed, shoved or shook my partner.	☐	☐	☐	☐
68. My partner pushed, shoved or shook me	☐	☐	☐	☐
69. I spread rumors about my partner.	☐	☐	☐	☐
70. My partner spread rumors about me.	☐	☐	☐	☐

Network of Relationships Inventory

We are interested in the different kinds of things young adults experience in romantic relationships. Please answer the following questions as they relate to ###. Please check the box that best describes your relationship:

	Never/ None	**A Little**	**Somewhat**	**Quite a Bit**	**Extremely Much**
1. How much free time do you spend with this person?	☐	☐	☐	☐	☐
2. How much do you play around and have fun with this person?	☐	☐	☐	☐	☐
3. How often do you go places and do enjoyable things with this person?	☐	☐	☐	☐	☐
4. How much do you and this person get upset with or mad at each other?	☐	☐	☐	☐	☐
5. How much do you and this person disagree and quarrel?	☐	☐	☐	☐	☐
6. How much do you and this person argue with each other?	☐	☐	☐	☐	☐
7. How much does this person teach you how to do things that you don't know how to do?	☐	☐	☐	☐	☐
8. How much does this person help you figure out or fix things?	☐	☐	☐	☐	☐
9. How often does this person help you when you need to get something done?	☐	☐	☐	☐	☐

10. How much do you and this person get on each other's nerves?	☐	☐	☐	☐	☐
11. How much do you and this person get annoyed with each other's behavior?	☐	☐	☐	☐	☐
12. How much do you and this person hassle or nag each other?	☐	☐	☐	☐	☐
13. How much do you talk about everything with this person?	☐	☐	☐	☐	☐
14. How much do you share your secrets and private feelings with this person?	☐	☐	☐	☐	☐
15. How much do you talk to this person about things that you don't want others to know?	☐	☐	☐	☐	☐
16. How much do you help this person with things s/he can't do by him/herself?	☐	☐	☐	☐	☐
17. How much do you protect and look out for this person?	☐	☐	☐	☐	☐
18. How much do you take care of this person?	☐	☐	☐	☐	☐
19. How much does this person like or love you?	☐	☐	☐	☐	☐
20. How much does this person really care about you?	☐	☐	☐	☐	☐
21. How much does this person have a strong feeling of affection (loving or liking) toward you?	☐	☐	☐	☐	☐
22. How much does this person treat you like you're admired or respected?	☐	☐	☐	☐	☐

	Never / None	**A Little**	**Somewhat**	**Quite a Bit**	**Extremely Much**
23. How much does this person treat you like you're good at many things?	☐	☐	☐	☐	☐
24. How much does this person like or approve of the things you do?	☐	☐	☐	☐	☐
25. How much do you tell the other person what to do (more than they tell you what to do)?	☐	☐	☐	☐	☐
26. Between you and this person, how much do you tend to be the boss in the relationship?	☐	☐	☐	☐	☐
27. In your relationship with this person, how much do you tend to take charge and decide what should be done?	☐	☐	☐	☐	☐
28. How sure are you that this relationship will last no matter what?	☐	☐	☐	☐	☐

29. How sure are you that your relationship will last in spite of fights?	☐	☐	☐	☐	☐
30. How sure are you that your relationship will continue in the years to come?	☐	☐	☐	☐	☐
31. How often do you turn to this person for support with personal problems?	☐	☐	☐	☐	☐
32. How often do you depend on this person for help, advice, or sympathy?	☐	☐	☐	☐	☐
33. When you are feeling down or upset, how often do you depend on this person to cheer you up?	☐	☐	☐	☐	☐
34. How often does this person point out your faults or put you down?	☐	☐	☐	☐	☐
35. How often does this person criticize you?	☐	☐	☐	☐	☐
36. How often does this person say mean or harsh things to you?	☐	☐	☐	☐	☐
37. How often does this person get his/her way when you two do not agree about what to do?	☐	☐	☐	☐	☐
38. How often does this person end up being the one who makes the decisions for both of you?	☐	☐	☐	☐	☐
39. How often does this person get you to do things his/her way?	☐	☐	☐	☐	☐
40. How satisfied are you with your relationship with this person?	☐	☐	☐	☐	☐
41. How good is your relationship with this person?	☐	☐	☐	☐	☐
42. How happy are you with the way things are between you and this person?	☐	☐	☐	☐	☐
43. How much does this person punish you?	☐	☐	☐	☐	☐
44. How much does this person discipline you for disobeying him/her?	☐	☐	☐	☐	☐
45. How much does this person scold you for doing something you are not supposed to do?	☐	☐	☐	☐	☐

Pittsburgh Sleep Questionnaire

The following questions relate to your usual sleep habits during the past month *only*. Your answers should indicate the most accurate reply for the *majority* of days and nights in the past month. Please answer all questions.

1. **During the past month, when have you usually gone to bed at night? (Circle AM/ PM)**
   USUAL BED TIME: _____ AM PM

2. **During the past month, when have you usually gotten up in the morning? (Circle AM/PM)**
   USUAL GETTING UP TIME: _____ AM
   PM

3. **During the past month, how long (in minutes) has it usually taken you to fall asleep each night?**
   NUMBER OF MINUTES: _____

4. **During the past month, how many hours of *actual sleep* did you get at night? (This may be different than the number of hours you spend in bed)**
   HOURS OF SLEEP PER NIGHT: _____

5. **During the past month, how would you rate your sleep quality overall?**
   - ☐ Very good
   - ☐ Fairly good
   - ☐ Fairly bad
   - ☐ Very bad

6. **During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?**
   - ☐ No problem at all
   - ☐ Only a very slight problem
   - ☐ Somewhat of a problem
   - ☐ A very big problem

7. **During the past month, how often have you had trouble sleeping because you…**

	Not during the past month	Less than once a week	Once or twice a week	Three or more times a week
a. Cannot get to sleep within 30 minutes	☐	☐	☐	☐
b. Wake up in the middle of the night or early morning	☐	☐	☐	☐
c. Have to get up to use the bathroom	☐	☐	☐	☐
d. Cannot breathe comfortably	☐	☐	☐	☐
e. Cough or snore loudly	☐	☐	☐	☐
f. Feel too cold	☐	☐	☐	☐
g. Feel too hot	☐	☐	☐	☐
h. Had bad dreams	☐	☐	☐	☐
i. Have pain	☐	☐	☐	☐
j. Other reason(s): please describe	☐	☐	☐	☐

8. **During the past month, how often have you…**

	Not during	Less than	Once or	Three or

	the past month	once a week	twice a week	more times a week
a. Taken medicine (prescribed or "over the counter") to help you sleep?	☐	☐	☐	☐
b. Had trouble staying awake while driving, eating meals, or engaging in social activity?	☐	☐	☐	☐

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