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# Parent–Child Relationship Quality Directly and Indirectly Influences Hooking Up Behavior Reported in Young Adulthood through Alcohol Use in Adolescence

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**Abstract**  Utilizing data from all four waves of the National Longitudinal Study of Adolescent Health (Add Health; $n =$ 4,594), the current study explored the direct and indirect effect of parent–child relationship quality during adolescence (Wave 1) on young adult reports of hookup frequency (Wave 4) via alcohol use during adolescence (intercept at Wave 1) and the trajectory of alcohol use across time (slope from Wave 1 through 4). Results from structural equation modeling with a latent growth curve indicated that parent–child relationship quality was related to a lower alcohol use intercept and fewer reported hookups. Both alcohol use slope and intercept were related to more hookups during young adulthood. Bootstrap tests of the indirect paths revealed that, overall, parent–child relationship quality was associated with fewer reported hookups during young adulthood via the mechanism of the alcohol use intercept.

**Keywords**  Parent–child relationship quality · Hooking up · Alcohol use · Mediation analysis · Trajectories · Casual sex

## Introduction

Hooking up can be broadly defined as "a sexual encounter, usually lasting only one night, between two people who are strangers or brief acquaintances" (Paul, McManus, & Hayes, 2000, p. 79). When asked whether the individual had engaged in intercourse with someone once and only once, prevalence rates range from 36% to 54 % in college student samples

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(Eshbaugh & Gute, 2008; Gute & Eshbaugh, 2008). Studies investigating the consequences of hooking up have found the behavior linked with both positive and negative outcomes. Positive consequences include increased positive affect (Lewis, Granato, Blayney, Lostutter, & Kilmer, 2012), experiencing positive emotions (Owen & Fincham, 2011), and reductions in depressive symptoms and loneliness for more depressed individuals (Owen, Fincham, & Moore, 2011). Negative consequences include increases in depressive symptoms and loneliness in those individuals less depressed prior to the hookup (Owen et al., 2011), unwanted sex (Flack et al., 2007), and sexual regret (Eshbaugh & Gute, 2008). Gaining a clear understanding of the factors that lead to engaging in hookups has been a priority for scholars in this area, finding a number of variables known to predict this behavior, including alcohol use, personality, love and attachment style, self-esteem, attitudinal acceptance of hooking up and fear of intimacy (Gute & Eshbaugh, 2008; Owen, Rhoades, Stanley, & Fincham, 2010; Paul et al., 2000).

The current study extends the literature on hooking up by focusing on a lesser studied construct: the role the parent–child relationship during adolescence plays on one specific type of later hooking up behaviors, engaging in sexual relations (oral, anal, or vaginal intercourse) with a partner only once. Specifically, this study tests a model that suggests parent–child relationship quality will directly and indirectly influence the frequency of hookups through alcohol use as an adolescent and trajectories of alcohol use over adolescence into young adulthood using data from Waves 1 through 4 of the National Longitudinal Study of Adolescent Health (Add Health).

### Parent–Child Relationship Quality and Hooking Up

Very little research has specifically examined how family of origin factors influence young adults' hookup behavior. A

cross-sectional study examining correlates of hooking up among college students included a variable exploring family environment (conflict within the family, argument between parents, and parents as a role model for marriage) (Owen et al., 2010). This variable was not significantly correlated at the bivariate level with whether the college student had hooked up ($r = -.04$). More information can be found in the literature investigating how the parent–child relationship impacts sexual risk-taking, broadly, among adolescents. A review of this literature concluded that family connectedness (comprised of constructs closely related to and including parent–child relationship quality) is a protective factor for a range of adolescent risky sexual behaviors (Markham et al., 2010). One study utilizing the first three waves of data from the Add Health study found that higher parent–child relationship quality at Wave 1 was related to lower levels of unprotected sex, intercourse initiation, and being diagnosed with a sexually transmitted infection at Waves 2 and 3 (Deptula, Henry, & Schoeny, 2010). These findings persisted after controlling for other parenting behaviors (parental involvement, allowed independence, and parent–child sexual communication) and adolescent sexual activity Wave 1 (to the author's knowledge, no studies utilizing the Add Health data have explored hooking up behaviors). While these findings provide compelling evidence for the importance of parent–child relationship quality in limiting later adolescent risky sexual behavior, not all studies have found this relationship to be significant (Perkins, Luster, Villarruel, & Small, 1998). Additionally, in some of the research that did find a link between parent–child relationship quality and adolescent sexual behavior, the magnitude of the association between the constructs is small. Specifically, logistic regression analyses revealed higher-quality parent child relationships to be associated with a 20 % reduction in the odds of condom nonuse among adolescents, a 15 % reduction in the odds of adolescent sexual initiation, and a 10 % reduction in the odds of contracting a sexually transmitted infection (Deptula et al., 2010).

Scholars have long suspected that parents may directly influence adolescent sexuality in limited ways, but, rather, parent–child relationship quality might have a more indirect impact on risky sexual behavior (Whitbeck, Hoyt, Miller, & Kao, 1992). Miller (2002) used a review of the research concerning family influences on adolescent sexual behavior to develop a conceptual model that proposes parent–child relationship quality influences adolescent sexual behavior indirectly through a variety of mechanisms, including adolescent sexual values, prosocial activities, self-restraint, alcohol use, depressive symptoms, and peer associations. One proposed pathway is of particular interest to the current study: parent–child connectedness and communication (both elements captured in relationship quality) → alcohol use → sexually risky behaviors. The current study adopts this empirically-derived conceptual model, examining alcohol use as the mechanism

through which parent–child relationship quality influences reports of hooking up in young adulthood. The direct effect of parent–child relationship quality to later reports of hooking up will also be estimated, as there is a body of literature to suggest these variables may be linked, but the magnitude of the association might be small.

Parent–Child Relationship Quality and Adolescent Alcohol Use

Exploration of how parenting influences adolescent alcohol use has resulted in an extensive literature (for a review, see Ryan, Jorm, & Lubman, 2010). The quality of the parent–child relationship, in particular, has been shown to significantly influence both level of alcohol use in adolescence and trajectories over time. A longitudinal study of 1,329 adolescents with 5 waves of data found that higher parent–child relationship quality was associated with less alcohol use at age 13 and a less steep trajectory of alcohol use up to age 19 (Gutman, Eccles, Peck, & Malunchuk, 2011). This finding has been replicated in other longitudinal studies (Gerrard, Gibbons, Zhao, Russell, & Reis-Bergman, 1999), including one that utilized Wave 1 and 2 data from the Add Health Study (Shelton & Bree, 2010), with adolescents from racial minority groups (Cleveland, Gibbons, Gerrard, Pomery, Brody, 2005; Mogro-Wilson, 2007), and parent–child relationship quality has been identified as a stronger predictor of adolescent alcohol use than family structure (Crawford & Novak, 2007). While some studies have failed to demonstrate a relationship between parent–child relationship quality and alcohol use (van der Vorst, Engels, Meeus, Dekovic, & Vermulst, 2006), a comprehensive review of longitudinal studies exploring the influence of parenting factors on adolescent alcohol use concluded that there is sufficient evidence that good parent–child relationship quality is associated with less adolescent alcohol use (Ryan, Jorm, & Lubman, 2010).

The current study was novel, in that alcohol use was measured beyond adolescence and into young adulthood. Therefore, it is likely that a higher quality relationship between parents and children could be associated with lower alcohol use in adolescence (intercept), but this link may be more complex in regard to the trajectory over time (slope). Alcohol use is a normative part of college life and during young adulthood this behavior becomes legally sanctioned. Those young adults that drank less alcohol as an adolescent would necessarily have a steeper increase over time, meaning it is likely that while lowering alcohol use in adolescence, higher parent–child relationship quality could also be associated with a steeper trajectory of alcohol use into young adulthood. To account for this possibility analytically, the initial level of alcohol use during adolescence will be controlled when estimating the rate of change over time (the slope will be regressed on the intercept). This will provide for a more

rigorous test of the influence that parent–child relationship quality has on the rate of change in alcohol use across adolescence and into young adulthood.

## Alcohol Use and Hooking Up

One of the most consistent findings in the hookup literature is the robust relationship between alcohol use and hooking up behavior. Among college students, when analyzed in concert with other demographic and attitudinal factors, alcohol use (operationalized as frequency of consumption and amount consumed) emerged as the strongest predictor of hooking up behavior in both cross-sectional, being associated with a 300 % increase in the odds of engaging in hookups (Owen et al., 2010), and short-term longitudinal research conducted over the course of an academic semester, with Cohen's *d* effect sizes ranging from −.56 to −1.49 (Owen et al., 2011). The majority of hookup experiences are preceded by alcohol consumption by both partners (Downing-Matibag & Geisinger, 2009) and more severe alcohol intoxication symptomatology predicts a higher level of sexual involvement in the hookup (Paul et al., 2000). A longitudinal study of college students beginning in the first year of college and spanning 3 years found that sexual encounters involving alcohol use, not specifically hooking up, increased linearly over the 3 years (Lam & Lefkowitz, 2013). Especially relevant to the current study, alcohol intoxication has been shown to predict the frequency of oral and vaginal sex hookups (Fielder & Carey, 2010b) and the frequency of drinking alcohol (not amount consumed or intoxication symptoms) has been shown to predict engaging in oral and vaginal sexual hookups (Lewis et al., 2012).

Scholars have posited that alcohol seems to serve two main functions in the hookup context. First, it lowers inhibitions and supplies "liquid courage" that allows for conversation to unfold between potential partners (Paul & Hayes, 2002). Alcohol serves as a facilitator of a hookup, in that respect. Second, alcohol intoxication provides a socially acceptable explanation for one's behavior after a hookup (Ven & Beck, 2009). It is common for young adults to describe "being drunk" as a reasonable motive and justification for engaging in a hookup.

Studies are yet to incorporate measurement of alcohol use prior to college in predicting hooking up. The current study is unique, in that alcohol use is measured across adolescence into young adulthood. This will provide additional insight into how early alcohol use and changes in use are related to reports of hooking up behavior later in life.

## Control Variables

To increase confidence in the findings among the main constructs of interest, a variety of control variables will be included in the analyses that prior research have shown to be associated with either parent–child relationship quality, alcohol use, or hooking up: sex, age, depressive symptoms, race, education, religious service attendance, and risk propensity. Males' trajectory of alcohol use over time increases at a greater rate, compared to females (Chen & Jacobson, 2012), males report more frequent hookups involving intercourse once and only once (Fielder & Carey, 2010; Gute & Eshbaugh, 2008), and parent–child relationship quality during adolescence is higher for males (Shelton & Bree, 2010). Given the relatively wide 8-year age range in the Add Health study that could potentially encompass different developmental periods at each Wave of data collection, the effect of age will be controlled in the analyses. Depressive symptoms have been shown to covary with hooking up (Owen et al., 2010) and are often comorbid with alcohol use problems among adolescents (Armstrong & Costello, 2002). European Americans report a steeper increase in alcohol use over time (Chen & Jacobson, 2012) and are more likely to engage in hooking up (Owen et al., 2010). The hookup has been explored almost exclusively with college student samples, so controlling for education is important in a sample with varying levels of academic attainment and religious service attendance is associated with a reduced likelihood of hooking up (Burdette, Ellison, Hill, & Glenn, 2009; Penhollow, Young, & Bailey, 2007). Risk propensity is an especially important control variable to include in this model, as there is some evidence that the relationship between alcohol use and risky sexual behavior is spurious, with individual impulsivity or sensation seeking as the underlying cause of both alcohol use and risky sexual behaviors (Kalichman, Heckman, & Kelly, 1996; Velez-Blasini, 2008).

## The Current Study

The purpose of the current study was to test a model specifying parent–child relationship quality directly and indirectly influences the frequency of hooking up through the mechanism of alcohol use during adolescence and the trajectory of use over adolescence and young adulthood using data from Wave 1 through 4 of the Add Health Study ($n = 4,594$). Based on the review of literature, three hypotheses can be made. The first hypothesis is that greater parent–child relationship quality will be associated with fewer hookups and the anticipated magnitude of this link is small. Second, greater parent–child relationship quality will be associated with less alcohol use during adolescence and potentially a steeper trajectory over time. Third, both alcohol use during adolescence and the trajectory over time will be associated with a greater number of hookups.

The design of this study had several clear strengths. First, a nationally representative sample was be used. Almost all of the research on the hookup to date has relied on convenience samples of college students. In a recent review of the literature

concerning young adults and sexuality, Lefkowitz, Gillen, and Vasilenko ([2011](#)) concluded: "We cannot overstate the importance of including more diverse samples in research on sexual behavior….The reliance to date on primarily White college student samples means that many of our conclusions are based on a select and biased sample" (p. 225). Second, data were gathered from adolescents and a parent at Wave 1 concerning parent–child relationship quality. The use of multiple informants helps attenuate the influence of shared method variance on the findings. Third, these were prospective longitudinal data gathered over a 15 year period, which provides stronger evidence for the causal links among the variables implied in the model, compared to cross-sectional data or short-term longitudinal studies conducted over the course of an academic semester.

## Method

### Participants

The data for the current study were the in-home interview data from all four waves of the National Longitudinal Study of Adolescent Health (Add Health) and the parent questionnaire data from Wave 1. The Add Health study collected its first wave of data from 1994 to 1995 with a nationally-representative sample of 20,745 adolescents in grades 7 through 12 in the United States (Harris et al., [2009](#)). The original sample was gathered from 80 high schools and 52 middle schools using systematic and implicit stratification methods to ensure representation of United States adolescents in relation to region of the country, urbanicity, school size, school type, and ethnicity. In addition to the adolescent data, one parent completed a questionnaire about family and relationships. The second wave of data was collected one year after Wave 1. Wave 3 was conducted from 2001 to 2002 and Wave 4 data was gathered from 2008 to 2009 with 15,701 of the original Wave I participants. The participants in the study were adults at Wave 4, ranging in age from 24 to 32 years at the time of data collection.

A questionnaire was administered to the participants at each wave of data collection using computer-assisted personal interviews and computer-assisted self-interview for sensitive questionnaire sections, with the total interview time taking approximately 90 to 120 min at each wave. Following the interview, the researchers took physical measurements and collected biological specimens from all participants. The current study used only the survey data, which contains information related to social, economic, psychological, intimate relationship, and health domains. In addition, the current study used the public use Add Health dataset, which comprises a representative random sample of participants from the full Add Health data.

Since the purpose of this study was to test a model of how parent–child relationship quality indirectly influences the frequency of hooking up via alcohol use trajectories across adolescence and young adulthood, only a subset of the participants from the public-use data were analyzed. Inclusion in the study was limited to those who reported at Wave 4 they had never been physically forced to have sex or had sex in exchange for money, as these two variables would obfuscate the operational definition of hooking up in this study, producing a final sample size of 4,594. Participants were not excluded if they reported being verbally coerced into sex or were given alcohol or drugs preceding sex. Both verbal coercion and impaired judgment due to alcohol or drug use are documented characteristics of some hookups (Flack et al., [2007](#); Wright, Norton, & Matusek, [2010](#)).

The sample in the current study was comprised of 4,594 individuals who participated in the Add Health study. The sex distribution was roughly equal, with 48.7 % male and 51.3 % female. The majority of participants in the study identified their race as European American (67.3 %), 22.0 % African American, 3.0 % Asian or Pacific Islander, 1.4 % Native American or Alaskan Native, and the remaining 6.3 % were another race not listed. The mean age of participants at Wave 1 was 15.50 years ($SD = 1.77$) and was 28.39 years ($SD = 1.79$) at Wave 4. In regard to highest level of education at Wave 4, 7.6 % had less than a high school diploma, 16.3 % were high school graduates, and 9.9 % participated in vocational or technical school. Nearly a third of the sample had some college education (32.4 %), 20.6 % completed a bachelor's degree, and 13.1 % undertook graduate training. Household income data for participants at Wave 4 indicated that 32.8 % of the sample earned less than $39,999 per year, 36.6 % earned between $40,000 and $74,999 per year, while the remaining 30.7 % made over $75,000 each year. In addition to the adolescent interview data, one parent was also interviewed at Wave 1. This parent was primarily the adolescents' mother (93.7 %).

### Measures

#### Control Variables

Sex, age, depressive symptoms, race, education, religious service attendance, and risk propensity were all included as control variables in the model.

Participant biological sex was coded as 1 = *male* and 2 = *female*.

Depressive symptoms were measured at Wave 4 with 9 items from the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, [1977](#)). Participants indicate the frequency of experiencing a number of depressive symptoms in the last week, including "You were bothered by things that usually don't bother you," and "you felt depressed." Responses

range from 1 = *rarely or none of the time (less than 1 day)* to 4 = *most or all of the time (5–7 days).* Cronbach's alpha reliability in the current study was α = .79.

Participant race was dummy coded as 0 = *European American* and 1 = *other race.*

Education was measured at Wave 4 with the item: "What is the highest level of education that you have achieved to date?" Responses ranged from 1 = *8th grade or less* to 9 = *completed a master's degree or higher.*

Religious service attendance was measured at Wave 4 by the item: "How often have you attended church, synagogue, temple, mosque, or religious services in the past 12 months?" Responses ranged from 0 = *never* to 5 = *more than once a week.*

Propensity for risk-taking was assessed at Wave 3 with a 7-item measure. Participants were directed to choose from a pair of sentences, which one best described what he or she likes/feels. Sample items include: "I like wild, uninhibited parties/I like quiet parties with good conversation," and "I am not interested in experience for its own sake/I like to have new and exciting experiences and sensations." Responses were coded so that 1 = higher risk statement and 0 = lower risk statement. Cronbach's alpha reliability in the current study was α = .69.

### Hookups

One item at Wave 4 was used to measure number of hookups: "Considering all types of sexual activity, with how many partners, male or female, have you had sex on one and only one occasion?" "All types of sexual activity" is encompassed by earlier items in the questionnaire that explicitly define this as vaginal intercourse, oral sex, and anal intercourse. Responses ranged from 0 = *0 partners* to 10 = *10 or more partners.*

### Parent–Child Relationship Quality

Adolescents responded to 4 items assessing the quality of their relationship with both their mother and father at Wave 1. It was specified in the interview that the adolescents could report on whomever they considered to be their parent, which included biological, foster, adoptive, and step parents. The items asked, "How close do you feel to your mother/father?" "Most of the time, your mother/father is warm and loving toward you," "You are satisfied with the way your mother/father communicate with you," and "Overall, you are satisfied with your relationship with your mother/father." Responses ranged from 1 = *not at all* to 5 = *very much* for the first question and 1 = *strongly disagree* to 5 = *strongly agree* for the remaining items. Cronbach's alpha reliability for the items regarding mother-adolescent relationship quality was α = .85 and α = .90 for father-adolescent relationship quality. One

parent was also interviewed at Wave 1 and responded to 4 items assessing parent–child relationship quality. The items asked how often, "You get along well with the adolescent," "You make decisions about the adolescent's life together," "You feel you can really trust the adolescent," and "Overall, you are satisfied with your relationship with the adolescent." Responses ranged from 1 = *never* to 5 = *always* for the first 3 items and 1 = *strongly disagree* to 5 = *strongly agree* for the last item. Cronbach's alpha reliability for the items regarding parent report parent-adolescent relationship quality was α = .71.

### Alcohol Use

One item assessed alcohol use at each wave of data collection (Wave 1–4). The item asked, "During the past 12 months, on how many days did you drink alcohol?" Responses ranged from 0 = *never,* 1 = *1 or 2 days in the past 12 months,* 2 = *once a month or less,* 3 = *2 or 3 days a month,* 4 = *1 or 2 days a week,* 5 = *3 to 5 days a week,* and 6 = *every day or almost every day.* Alcohol use was selected as the variable of interest in this study because the frequency of alcohol consumption has been consistently linked to parent–child relationship quality among adolescents (Cleveland et al., 2011; Gerrard et al., 1999; Gutman et al., 2011) and is also a salient predictor of hookup behavior (Lewis et al., 2012).

### Analytic Plan

To determine whether the relationship between parent–child relationship quality and hooking up is mediated by alcohol use intercept and trajectory over adolescence and young adulthood controlling for the influence of sex, age, depressive symptoms, race, education, religious attendance, and risk propensity, structural equation modeling that incorporated a latent growth curve model was used. Data analysis was conducted with Mplus 7.0 (Muthen & Muthen, 2012) and maximum likelihood estimation. Missing data were handled with the full-information maximum likelihood procedure (ranging from 0.2 % to 17.7 %). Because model $\chi^2$ is influenced by sample size and may result in significance even when the model is minimally mis-specified (Marsh, Hau, & Wen, 2004), the comparative fit index (CFI), Tucker-Lewis Index (TLI), the root mean square error approximation (RMSEA), and the standardized root mean square residual (SRMR) were also used to evaluate overall model-data fit. Values greater than .95 for CFI and TLI and smaller than .06 and .08 for RMSEA and SRMR suggest good model fit (Hu & Bentler, 1999). The indirect paths from parent–child relationship quality to hooking up were tested with bootstrapping procedures (Preacher & Hayes, 2008).

**Table 1** Correlations and descriptive statistics for study variables ($n = 4594$)

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1. Hookups | – | | | | | | | |
| 2. Parent Report | −.08*** | – | | | | | | |
| 3. Adolescent Report Mother | −.06*** | .33*** | – | | | | | |
| 4. Adolescent Report Father | −.11*** | .22*** | .50*** | – | | | | |
| 5. Alcohol Use (W1) | .19*** | −.18*** | −.16*** | −.18*** | – | | | |
| 6. Alcohol Use (W2) | .18*** | −.17*** | −.13*** | −.17*** | .55*** | – | | |
| 7. Alcohol Use (W3) | .24*** | −.01 | −.04** | −.03 | .24*** | .27*** | – | |
| 8. Alcohol Use (W4) | .20*** | −.02 | −.01 | .02 | .17*** | .19*** | .49*** | – |
| Mean | 2.50 | 4.22 | 4.34 | 4.13 | 1.04 | 1.08 | 2.18 | 2.24 |
| SD | 3.10 | .60 | .72 | .85 | 1.45 | 1.50 | 1.77 | 1.82 |
| Range | 0–10 | 1–5 | 1–5 | 1–5 | 0–6 | 0–6 | 0–6 | 0–6 |

Parent Report = Parent report of parent–child relationship quality. Adolescent Report Mother = Adolescent report of mother–child relationship quality. Adolescent Report Father = Adolescent report of father-child relationship quality. W1 = Wave 1. W2 = Wave 2. W3 = Wave 3. W4 = Wave 4. ** $p < .01$. *** $p < .001$ (two-tailed)

## Results

### Correlations

Bivariate correlations were first computed among the study variables (see Table 1). The correlations revealed several important findings. First, hooking up shared a weak negative correlation with the parent–child relationship quality variables (ranging from $r = −.06$ to $−.11$) and more strongly correlated with the alcohol use variable at each time point in the expected direction (from $r = .18$ to $.24$, $p < .001$). Next, the parent–child relationship quality variables were all associated with each other (from $r = .22$ to $.50$, $p < .001$) and alcohol use at Wave 1 and Wave 2 (from $r = −.18$ to $−.13$, $p < .001$). Parent–child relationship quality bore a far weaker relationship to alcohol use at Wave 3 and Wave 4 (from $r = −.04$ to $.02$). Finally, the alcohol use variable was related to itself at each time point (from $r = .17$ to $.55$, $p < .001$). With these correlations falling in line with expectations, the analysis can proceed.

### Structural Equation Model

As a precursor to testing the structural equation model, the latent growth curve was first computed to ensure the model fit the data. The loadings for the intercept variable were set to 1 so the intercept would model alcohol use at Wave 1. Since there was 1 year between data collection for the first 2 waves of the Add Health study, the first two loadings for the latent slope variable were set at 1 and 2. The loadings for the last two time points on the slope variable were estimated by Mplus (Duncan, Duncan, & Strycher, 2006).

To provide a more rigorous test of how parent–child relationship quality might predict the alcohol use slope, alcohol use intercept was regressed on the slope so that variation from initial levels of alcohol use would be removed from the rate of change over time. This model proved to fit the data well: $\chi^2(5) = 19.68$, $p = .0014$; RMSEA = .025 (C.I. = .014, .037); CFI = .994; TLI = .993; SRMR = .016. The mean for the intercept variable was estimated to be .93 and the slope mean indicated that alcohol use increased .16 units per time interval over the duration of the study, controlling for the initial level of use at Wave 1. Additionally, there was significant variability in both the slope and intercept, indicating predictors could be added to account for the variation.

With the latent growth curve analysis proceeding as anticipated, the final structural equation model was computed (see Fig. 1). For the sake of clarity, only the main results are presented in the figure with standardized parameter coefficients. It is important to note that the residuals for adolescent report of parent–child relationship quality with the mother and father were correlated because of shared method variance for those two indicators that was not shared in the parent report of parent–child relationship quality. The model fit indices suggested an overall good fit of the model to the data: $\chi^2(46) = 277.06$, $p < .001$; RMSEA = .033 (C.I. = .029, .037); CFI = .966; TLI = .938; SRMR = .019. Overall, this model accounted for 15 % of the variance in hookup frequency.

Results revealed that parent–child relationship quality was associated with a lower level of adolescent alcohol use at Wave 1 ($\beta = −.31$, $p < .001$) and fewer reported hookups at Wave 4 ($\beta = −.10$, $p < .001$), but was not significantly associated with the trajectory of alcohol use over adolescence and young adulthood ($\beta = .02$). This can be interpreted as follows: a one SD unit increase in parent–child relationship quality was associated with a .31 SD unit reduction in alcohol use during adolescence and a .10 SD unit decrease in number of hookups reported as a young adult controlling for the influence of sex, age, depressive symptoms, race, education,

**Fig. 1** Structural equation model with parent–child relationship quality indirectly predicting hookups through alcohol use during adolescence and trajectories over adolescence and young adulthood ($n = 4,594$). Standardized coefficients. For clarity, the paths from the control variables are not shown, but were included in the analysis. Model fit indices: $\chi^2(46) = 277.066$; RMSEA $= .033$ (C.I. $= .029$, $.037$); CFI $= .966$; TLI $= .938$; SRMR $= .019$. ***$p < .001$ (two-tailed)
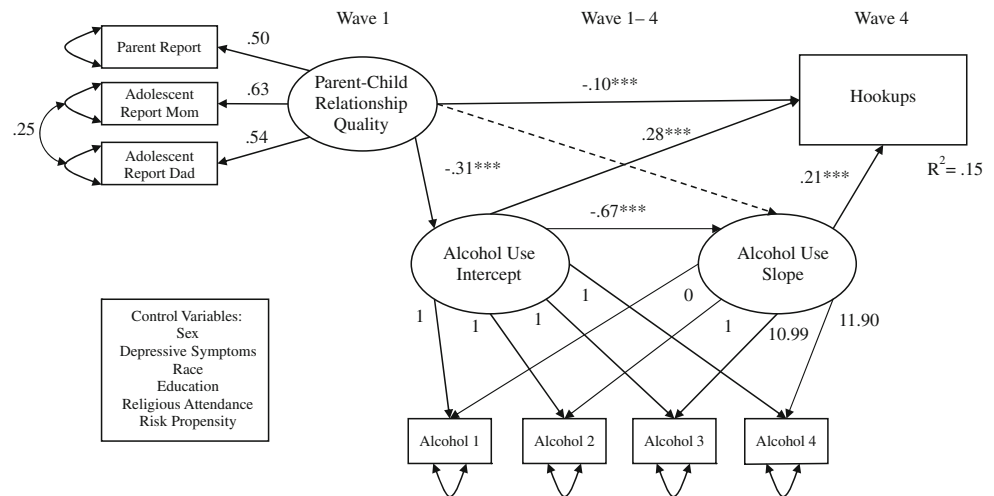


religious attendance, and risk propensity. The alcohol use intercept and slope were, in turn, each positively associated with hookup frequency, $\beta = .28$, $p < .001$ and $\beta = .21$, $p < .001$, respectively. In other words, increases in alcohol use during adolescence and the trajectory over time were associated with young adults reporting a greater number of hookups.

To determine whether the alcohol use intercept was a stronger predictor of hookup frequency than the slope variable, the two paths were constrained to be equal and a Chi square difference test was conducted. Constraining the two paths to be equal significantly worsened the fit of the model to the data, $\chi^2_{\text{diff}}(1) = 16.03$, $p < .001$, meaning that alcohol use in adolescence was a stronger predictor of the total number of hookups reported by young adults than the rate of change in alcohol use over adolescence and early adulthood. The same procedure was done to compare the predictive strength of the alcohol use intercept and parent–child relationship quality on hooking up. Again, alcohol use in adolescence was a significantly stronger predictor of hookups during young adulthood than parent–child relationship quality during adolescence, $\chi^2_{\text{diff}}(1) = 42.74$, $p < .001$.

In regard to control variables, depressive symptoms ($\beta = .02$), race ($\beta = .02$), level of education ($\beta = -.03$), and religious service attendance ($\beta = .02$) were not associated with the frequency of hooking up. The other control variables all exhibited a significant association with the number of hookups. Specifically, being male ($\beta = -.07$, $p < .001$), being younger ($\beta = -.04$, $p = .013$), and having a higher propensity for risk ($\beta = .16$, $p < .001$) were all associated with a greater number of hookups. It is important to note that the associations for age and sex were statistically significant due to the high level of statistical power in this large sample, but the magnitude of these effects can be considered trivial (Cohen, 1988).

Test of Indirect Paths

To test whether the alcohol use intercept and slope mediated the relationship between parent–child relationship quality

and number of hookups, bootstrapping analyses of the indirect pathways were conducted with 2,000 bootstraps and a 95 % confidence interval (Preacher & Hayes, 2008). Two indirect pathways were found to be significant. First, the indirect path from parent–child relationship quality to the alcohol use intercept to hooking up was significant, $\beta = -.09$, $p < .001$, CI $= -.11$, $-.06$. This can be interpreted as follows: a one SD unit increase in parent–child relationship quality was associated with a .09 SD unit decrease in number of hookups via the prior effect of parent–child relationship quality on alcohol use at Wave 1 (intercept), holding the control variables constant. The indirect path from parent–child relationship quality to the alcohol use slope to hooking up was not significant, $\beta = .003$, CI $= -.01$, $.01$), but parent–child relationship quality → alcohol use intercept → alcohol use slope → hooking up was significant, $\beta = .04$, $p < .001$, CI $= .02$, $.06$. Since the direction of the indirect effects were not consistent across the two pathways, examining the total indirect effect is helpful for discerning the overall relationship between parent–child relationship quality and hookup frequency, $\beta = -.04$, $p < .001$, CI $= -.06$, $-.02$. The total indirect effect indicated that as parent–child relationship quality increased, the frequency of hooking up decreased via the effect of parent–child relationship quality on the initial level of alcohol use at Wave 1 and the trajectory of alcohol use from Wave 1 to Wave 4.

**Discussion**

The purpose of this study was to test whether parent–child relationship quality was directly and indirectly related to the frequency of hooking up through alcohol use in adolescence and the trajectory of alcohol use over adolescence and young adulthood. The influence of sex, age, depressive symptoms, race, education, religious attendance, and risk propensity were accounted for in the model, as well. Results indicated

that parent–child relationship quality was related to less alcohol use during adolescence (intercept) and fewer hookups as a young adult, but not the rate of change over time (slope). Alcohol use intercept and slope were both associated with a greater number of hookups, although the intercept was a significantly stronger predictor of the number of hookups. Tests of the indirect effects revealed that, overall, parent–child relationship quality is associated with fewer hookups via its effect on both the level of alcohol use during adolescence and the indirect impact on growth in alcohol use over time.

These findings contribute to the burgeoning body of research seeking to identify factors that predict hooking up behavior by demonstrating the importance of examining more distal influences on young adults. Particularly, this research demonstrates the importance of parent–child relationship quality during adolescence in understanding how many hookups one will engage in as a young adult. Factors from the family of origin have not been helpful in explaining hooking up in prior cross-sectional research (Owen et al., 2010). Methodological factors in the current study certainly allowed for this link to be extricated: the use of multiple informants (parent and adolescent report of parent–child relationship quality), a prospective longitudinal design, and examining the indirect link between parent–child relationship quality and hooking up. Mediation analysis is indispensable to connect various processes throughout the lifespan with later sexuality. The magnitude of the direct effect from parent–child relationship quality to hooking up can be considered small ($\beta = -.10$), according to guidelines from Cohen (1988), which is also in line with findings from other studies examining the influence of parent–child relationship variables on risky sexual behavior (Deptula et al., 2010). If this study relied on the analysis of only direct effects, a much less compelling relationship would have been found between parent–child relationship quality and hooking up.

Parent–child relationship quality was related to less alcohol use during adolescence, but not the trajectory of alcohol use into young adulthood. The magnitude of the effect for parent–child relationship quality to the alcohol use intercept was moderate ($\beta = -.31$) (Cohen, 1988). As was hypothesized in the literature review, those that consume alcohol less frequently as an adolescent will, necessarily, have a steeper increase over time as they become adults when alcohol use is socially and legally sanctioned. This relationship can be observed in the current data, through the negative predictive path from the alcohol use intercept to slope variable ($r = -.62$, $p < .001$). Thus, if having a good relationship with parents' means less alcohol use as an adolescent, there will be a greater increase in frequency of alcohol use into adulthood. How should this be understood in relation to hooking up? Does having a good relationship with one's parents as an adolescent serve as a springboard into the world of hookups as

a young adult or does it temper this behavior? The overall indirect effect of parent–child relationship quality does indicate that a better quality relationship between parents and child is associated with fewer hookups later in life.

As expected, alcohol use was found to significantly predict hookup frequency, with alcohol use as a young adult having a moderate effect on the number of hookups ($\beta = .31$) and the rate of change over time having a small effect ($\beta = .19$) (Cohen, 1988). Broadly speaking, this finding fits nicely with other research in this area that has centered on alcohol use as a key predictor of hooking up behavior (Owen et al., 2010, 2011; Paul et al., 2000). However, these results contribute an additional nuance to this body of knowledge by demonstrating alcohol use during adolescence is actually a stronger predictor of the total number of hookups (reported in young adulthood) than the pattern or trajectory of alcohol use over time. Other research, to date, has only explored young adults' current alcohol use in predicting this behavior. Why might alcohol use as an adolescent be a stronger predictor of later hookups than increasing alcohol use over time? Given the literature pertaining to alcohol use as a key facilitator of hooking up (Downing-Matibag & Geisinger, 2009; Paul & Hayes, 2002), it is plausible that adolescents who use alcohol more frequently will start engaging in hookups earlier compared to those who wait until college or later to begin using alcohol. Thus, this finding may simply be a function of those using more alcohol as adolescents having a longer timespan during which to engage in hookups. Alternatively, there may be underlying factors not accounted for in this model that help explain this robust relationship, but the extensive variety of control variables included in the analysis, particularly risk propensity, increases confidence in the results. This finding is surprising and future research focusing specifically on potential mechanisms linking adolescent alcohol use and later hookups is needed.

Implications

This research points to the importance of a parent–child relationship quality during adolescence as a potential protective factor against adolescent alcohol use and later sexually risky behaviors. Efforts aimed at strengthening the parent–child bond may have a residual impact on behaviors years down the road. This research is potentially useful to parents of adolescents wanting to identify ways they can reduce their child's participation in risky behaviors. While this study does not specify the concrete behavioral pathways through which parents can reduce adolescent alcohol use and subsequent hooking up, it does show that investing the time and energy in creating a high quality relationship with an adolescent child, through things like having high quality communication, being warm and loving, and jointly making decisions about the adolescents' life, can be a protective

factor, in and of itself. Additionally, these findings point to the importance of educating adolescents about responsible alcohol use, whether they are using it during their teen years or not. Abstaining from alcohol as an adolescent does not equate to abstaining during young adulthood and effective education might prove instrumental in preventing excessive or problematic use during the transition to drinking.

## Limitations

The variables in this study were not operationalized with existing, validated measures. Of particular importance is the way in which hooking up was measured: "Considering all types of sexual activity, with how many partners, male or female, have you had sex on one and only one occasion?" While this operationalization has been used in other studies on this topic (Gute & Eshbaugh, 2008), it likely does not provide the most precise information. Recent research has demonstrated that nearly half of hookups (46.7 %) do not involve oral, anal, or vaginal sexual intercourse (Lewis et al., 2012) and 44 % of participants in one study indicated they had hooked up with their most recent hookup partner more than once (Fielder & Carey, 2010a). Therefore, the results of this study are only describing one type of hookup, a one-time sexual encounter, which does not encompass all hookup experiences. This indicates the need for these findings to be replicated in samples with alternative operationalizations of hooking up. Lack of precision in measurement is a common limitation in studies employing secondary data analysis, but researchers have stressed the importance of exploring issues of sexuality with more diverse samples (Lefkowitz et al., 2011). Additionally, the participants reported the total number of hookups ever engaged in as young adults. This retrospective questioning could be prone to memory bias or distorted in light of current life stage. Parent–child relationship quality and alcohol use were the variables of interest in this study, but there are other potentially meaningful parenting and alcohol variables to be explored, such as parental monitoring, time spent with parents, binge drinking, or problematic alcohol consumption. Furthermore, there are certainly other variables that mediate the parent–child relationship and hooking up not explored here. Finally, this study utilized latent growth curve modeling to estimate an average curve for all individuals' alcohol use, as has prior research. Alternative statistical procedures (growth mixture modeling) could be employed to determine if alcohol use follows several distinct trajectories from adolescence into young adulthood, rather than one. Features of the study design also might mask some of the nuance in alcohol use across the adolescence and into young adulthood. While this study utilized a latent variable growth curve to capture change in alcohol use over time, more frequent assessments of alcohol use that are not spaced so far apart might reveal multiple, distinct curves for alcohol use across this time period (E.g., a curve for the teenage years and a separate curve once the adolescent leaves home).

## Conclusion

This study found that parent–child relationship quality during adolescence is indirectly associated with fewer hookups during young adulthood via the influence of parent–child relationship quality on adolescent alcohol use and the change in alcohol use across adolescence and into adulthood. These findings suggest that one's family of origin impacts sexual behavior later in life through complex direct and indirect processes and more research is certainly warranted to continue elucidating these pathways.

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