

The Effect of Early Sexual Activity on Mental Health

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ABSTRACT

Purpose: To review the peer-reviewed medical literature evaluating committed and non-committed heterosexual sexual relationships and their impact on mental health in adolescents.

Methods: We reviewed studies from 1966 to the present in peer-reviewed medical literature that evaluated mental health effects of adolescent heterosexual sexual relationships.

Results: This study included 28 articles meeting the inclusion criteria. This review showed a very consistent disadvantage of early sexual debut, adolescent sex, hookups, and casual sex compared to committed unmarried and married relationships. Specific reported measures which worsened with adolescent sex included: depressive symptoms, depression, suicidal ideation, aggressive behavior, psychological distress, anxiety, stress, loneliness, poor wellbeing, regret and guilt. Regarding the relationship itself, there was reduced general and sexual satisfaction. Further, adolescent sex was associated with increased negative social behavior including: substance use and risky sexual behavior as well as in later adolescence a risk for physical and sexual abuse, drug use and antisocial behavior. In contrast, waiting until sex was initiated until there was at least some element of commitment, or until marriage, was associated with better: communication, relationship satisfaction as well as relationship stability, higher sexual satisfaction and a more positive view of sexuality.

Conclusion: This review suggests that sexual debut, adolescent sex, hookups and casual sex are associated with a number of negative effects on their relationships, general wellbeing and lifestyle behavior compared to unmarried or married committed sex.

KEYWORDS

Marriage; traditional; heterosexual; relationships; cohabitation; well-being; wellbeing; sex; sexual intercourse; hookups; casual sex; committed relationship; debut

INTRODUCTION

Heterosexual sexual intercourse is foundational to society at its very base in that it allows for the continuation of humanity from one generation to the next. In many societies, often based on the religious context, sexual intercourse is kept within marriage as a sign of commitment and love (Willoughby, Carroll & Busby 2014). Even with a growing secularization in first world societies polling data overwhelmingly supports the concept that adultery is morally wrong in marriage (Jones & Saad 2013).

However, sexual intercourse is common between unmarried males and females with the average age of sexual debut at 16.8 for men and 17.2 years for women (Centers for Disease Control and Prevention 2017). Further, within the first month of dating, approximately 50% of young adult couples have had sexual intercourse, and 25% initiate sex between 1-3 months into a dating relationship (Sassler & Kamp Dush 2009).

Historically, non-marital sex appears to have always existed and appears to be stable in Western cultures over the past 20 years regarding prevalence and age of sexual debut (Kaiser Family Foundation 2014). However, pressures exist on adolescents and young adults to have early sexual intercourse for a variety of reasons including: social expectations, increasing age of marriage, and the decreasing age of menarche (Meschke et al. 2000).

Nonetheless, physical risks exist in unprotected sexual intercourse from sexually transmitted diseases such as HIV, hepatitis C, syphilis, and papillomavirus (Agardh, Cantor-Graae, & Ostergren 2012). Further, despite its common practice little information is available in terms of reviewing existing studies and the effect on the psychological health of young people who participate and uncommitted sexual intercourse.

The purpose of this article was to review the peer-reviewed medical literature evaluating committed and non-committed heterosexual sexual relationships and its impact on mental health and wellbeing in individuals.

Methods

We searched any study evaluating sexual relations and wellbeing in peer-reviewed medical literature from 1966 to 2018. We included articles evaluating at least 120 subjects. We performed this study using PubMed (<http://www.ncbi.nlm.nih.gov/pubmed/>) to search the published medical literature. We used the following search terms: intercourse, intimacy, hookup, sex, sexual and sexuality in combination with: abstinence, activity, adolescence, adolescent, behavior, casual, cohabitation, cohabiting, committed, marital, marriage, partners, polygamy, and relationships. Articles also needed to measure in some manner: happiness, mental health, quality of life or wellbeing, which were also included in the search terms. Each term was searched once.

A database was compiled from the identified articles. We observed 6 main terms describing the type of sexuality being expressed: 1) *Adolescent sex*, defined as sexual behaviors occurring during adolescence; 2) *Sexual debut*, defined as an individual's first experience of consensual coitus (Kim 2016); 3) *Hookups*, defined as consensual sexual interactions between strangers or acquaintances (Napper et al. 2016), may range from kissing to intercourse (Owen et al. 2010), occur on only 1 occasion, and have little to no expectation of future physical encounters or a committed relationship (Owen & Fincham 2011); 4) *Casual sex*, defined as sexual experiences with partners outside of a committed relationship (Bersamin et al. 2014); 5) *Committed sex*, defined as sexual encounters occurring within the context of long-term, exclusive (Kaestle & Evans 2018), romantic relationships (Reissing, Andruff, & Wentland 2012); and 6) *Marital sex*, defined as sexual encounters within the context of heterosexual, monogamous marriage. From these 6 terms, we categorized the articles into 5 major categories in the literature: *adolescent sex*, *sexual debut*, *hookups*, *casual sex*, and *committed sex*. Articles termed as *marital sex* were included in the *committed sex* section, as there wasn't enough literature to warrant 2 separate sections.

We extracted the following information from each article: citation, number of subjects,

population type, country, study design, methods, results, conclusions, and link (i.e., web address) to the article. In total, 74 articles were chosen for initial review. Of these, 46 were excluded because they did not account for 1 of the following variables: sexual behavior, wellbeing/mental health, or level of commitment.

Results

This study included 28 articles meeting the inclusion criteria noted above (Table 1).

Adolescent sex (12 to 19 years)

Manning and associates examined 1321 adolescents (12-19 years) in the United States using longitudinal data from the Toledo Adolescent Relationships Study and the Center for Epidemiological Studies Depression Scale (CES-D) to examine the relationship between adolescent dating and sexual relationships and wellbeing (Manning et al. 2014). Sexual non-exclusivity during adolescence was associated with more self-reported depressive symptoms ($p<0.001$) and lower self-esteem ($p<0.01$).

Mendle and colleagues assessed 1551 sibling pairs of adolescents (13-18 years) in the United States (Mendle et al. 2013). They used data from the National Longitudinal Study of Adolescent Health and a sibling comparison design to assess levels of depression in nonsexual relationships, sexual relationships with a non-romantic partner, and sexual relationships with a romantic partner. The authors found that adolescents engaging in sexual activity with non-romantic partners (especially under 15 years) showed higher rates of clinical-level depression (29% for 16-18 and 34% for 13-15 years) than those who were sexually inactive (18% for 16-18 and 15% for 13-15 years; $p<0.05$).

Sabia & Rees also used data from the National Longitudinal Study of Adolescent Health to evaluate 14,144 adolescents in the United States and examined the effects of virginity status on prevalence of depression on the CES-D (Sabia & Rees 2008). They noted sexually active females were at an increased risk of depression (19%) compared to their sexually inactive

counterparts (9%; $p < 0.01$).

Espinosa-Hernandez & Vasilenko studied 1436 adolescents (12-18 years) in Mexico for the effects of sexual behavior on adolescents (Espinosa-Hernandez & Vasilenko 2015). They divided participants into 5 classes of sexuality (*inactive* [no dating or sexual relationship], *early stage* [sexually inactive and uncommitted], *waiting* [sexually inactive but committed], *physical* [sexually active but uncommitted], and *committed* [sexually active and committed]) and measured depression symptoms on the CES-D. Sexual relationships in adolescence (*physical* and *committed* classes) were associated with increased depressive symptoms compared to their sexually inactive counterparts (*inactive*, *early stage*, and *waiting* stages; $p < 0.001$). Sexually active students in these 2 classes also performed more poorly in school ($p < 0.001$).

Sexual debut (first coitus)

Spriggs & Halpern assessed 5061 young adults (18-22 years) in the United States for association between age of sexual debut and depressive symptomatology (Spriggs & Halpern 2008). They used data from the National Longitudinal Study of Adolescent Health and collected participants' scores on the CES-D. They concluded that *early* (<16 years) and *typical* (16-18 years) sexual debut among females was associated with depression (11% in *early* and 11% in *typical*) compared with those who sexually debuted *late* (after age 18; 7%; $p < 0.01$). Vasilenko and associates evaluated 8938 young adults (24–34 years) in the United States for incidence of depression as related to timing of first sexual intercourse (Vasilenko, Kugler & Rice 2016). Sex before age 16 was associated with higher rates of depression symptoms (25-38% for women, 10-15% for men; $p < 0.05$). However, those whose first intercourse took place past age 24 had below-average rates of lifetime depression diagnoses (10-15% for women, 1-10% for men).

Kastbom and coworkers surveyed 3432 high schoolers at 18 years of age in Sweden for links between sexuality, mental health, and other risky behaviors (Kastborn et al. 2015). They measured mental health on the Symptoms Checklist-25, which measures psychiatric symptoms, particularly depression and anxiety. Their results indicated that sexual debut before age 14 was

associated with higher depression scores (34% for girls, 25% for boys) compared to those who debuted sexually after age 14 (29% for girls, 11% for boys; $p < 0.05$). They were also at increased risk for physical and sexual abuse, drug use, and antisocial behavior in later adolescence.

Kim examined the effects of age of sexual debut on mental health in 2393 young adults in South Korea 1 year following their high school graduation (Kim 2016). Sexual debut before high school graduation was associated with suicidal ideation in boys (26% of those who debuted compared to 19% of those who abstained; $p < 0.05$), depression in girls ($p < 0.01$), and heightened aggression ($p < 0.001$ for both genders).

Hookups (1-time sexual encounter with a stranger or acquaintance)

Fielder & Carey studied 140 college students (18-19 years old) in the United States to evaluate hookup behavior and psychological distress (as measured CES-D) (Fielder & Carey 2010). Respondents were surveyed at the beginning and end of their first semester of college. Psychological distress was found to be associated with coital hookups among females (28%), compared with noncoital hookups (hookups consisting only of kissing or petting) among females (24%; $p = 0.005$). Napper and associates examined 607 college students (18-26 years old) in the United States for hookup behavior and mental health (Napper et al. 2016). They developed the Negative Impact of Hookups Inventory (NIHI), a 14-item instrument, to assess the emotional, social, and physical outcomes associated with hooking up. Additionally, they used the 21-Item Depression Inventory Stress Scale (DASS-21) to assess mental health. All participants reported at least 1 hookup in the past 3 months. Based on the NIHI, 77% of participants reported at least 1 negative consequence from hooking up. Further, a greater hookup frequency was associated with anxiety ($p < 0.05$) and stress ($p < 0.05$). Additionally, a greater number of sexual partners was associated with depression ($p < 0.05$), anxiety ($p < 0.05$), and stress ($p < 0.05$).

Owen & Fincham surveyed 500 young adults (17-25 years) in the United States for gender differences in emotional reactions to both non-coital and coital hookups using the UCLA

Loneliness scale and CES-D (Owen & Fincham 2011). Sexual hookups were found to cause depression in women ($p < 0.001$) and loneliness ($p < 0.001$) in both sexes. Owen and coworkers evaluated 832 college students in the United States for psychosocial outcomes relating to hookup behavior in the past year (Owen et al. 2010). They measured participants' reactions following hookups and used the Schwartz Outcome Scale-10 to assess wellbeing. They found that 56% of the sample reported purely negative reactions to hookups (e.g., feeling empty and/or confused), which were associated with poorer wellbeing ($p < 0.05$) than those who had positive reactions to hookups. Women were more likely to report negative reactions ($p = 0.001$).

Owen and associates studied 394 young adults (17-25 years old) in the United States for psychosocial correlates of hooking up (Owen, Fincham & Moore 2011). They measured hook-up behavior, depression, and loneliness at the beginning and end of a 4-month period. They found that depression ($p < 0.001$) and loneliness ($p < 0.001$) increased in participants who reported previously low levels of both disorders, compared with those who did not hook up. Strokoff and colleagues examined 879 college students in the United States for psychosocial outcomes associated with hooking up (Strokoff, Owen & Fincham 2015). Participants who experienced a sexual hookup (involving oral sex or intercourse) reported more depressive symptoms than those who experienced non-sexual hookups (involving only kissing or petting; $p < 0.001$).

Vrangalova evaluated 528 college students (18-24 years old) in the United States for the consequences of hookup behavior (Vrangalova 2015). They surveyed students at the beginning and end of an academic year, recording hookup behavior, mental health, and physical health. On average, 37% of participants had taken part in at least 1 sexual hookup during the academic year. Sexual hookups were associated with greater anxiety ($p < 0.01$), physical symptoms (such as cold/flu symptoms, aches/pains, and sleep difficulties; $p < 0.01$) and depression (only in men; $p < 0.05$).

Casual sex (sexual experiences outside of a committed, romantic relationship)

Bersamin and associates studied 3907 young adults (18-25 years) in the United States to examine the relationship between casual sex and its associated psychological impact (Bersamin et al. 2014). Participants reported casual sex data completed the Beck Anxiety Inventory, Social Interaction Anxiety Scale, CES-D, Ryff's Psychological Well-Being Scales (PWB), Rosenberg Self-Esteem Scale, and the 5-item Satisfaction with Life Scale. The authors found that participating in casual sex was associated with negative psychological outcomes (general anxiety, social anxiety, and depression) and negative psychological wellbeing, self-esteem, and life satisfaction for both men and women (all values significant at $p < 0.001$).

Sandberg-Thoma & Kamp Dush conducted a prospective longitudinal study to evaluate 12,401 young adults (18-26 years) in the United States to measure their mental health before and after engaging in casual sex relationships (Sandberg-Thoma & Kamp Dush 2014). They used data from the National Longitudinal Study of Adolescent Health and asked participants to report depression on the CES-D. Subjects were also asked to report suicidality. Over 7 years, engaging in casual sex was associated with depression ($p < 0.01$) and had a 97% greater chance of suicidal ideation ($p < 0.001$).

Vasilenko and coworkers examined 209 college students in the United States who reported sexual intercourse at least once over the previous 28 days and evaluated the subsequent consequences (Vasilenko, Lefkowitz & Maggs 2012). They recorded interpersonal (e.g., feeling not ready) and intrapersonal consequences (e.g., feelings of guilt). Those who had sex with a non-committed, non-romantic partner were nearly 3 times more likely to report feelings of guilt ($p < 0.05$) compared to those who had sex with a committed, romantic partner.

Dubé and associates examined 2304 adolescents (aged 14-20 years) in Canada for psychological wellbeing after engaging in casual sexual encounters (Dubé et al. 2017). Psychological wellbeing was measured using as the 10-Item Psychological Distress Scale, which assesses for anxiety and depressive symptoms. Casual sexual encounters increased girls' psychological distress ($p < 0.05$) and both alcohol ($p < 0.001$) and drug consumption ($p < 0.01$).

for both sexes.

Agardh and colleagues evaluated 980 college students in Uganda for mental health and sexual behavior (Agardh, Cantor-Graae & Ostergren 2012). Mental health was measured on the Hopkins Symptom Check List-25, which measures anxiety and depression symptoms, and the Symptom Checklist-90, which measures psychoticism (aggression and interpersonal hostility). Multiple sexual partners were associated with anxiety and depression in both sexes and psychoticism in men (all values significant at $p < 0.05$). Field and associates assessed 15,162 adults (16-74 years) in the United Kingdom for associations between sexual behavior and depression (Field et al. 2016). They used the Patient Health Questionnaire-2 to measure depression symptoms and recorded participants' self-reported sexual data. Concurrent sexual partnerships (having sexual partnerships with multiple people simultaneously) in the past 5 years was associated with depression in men (17%) and women (12%) compared to those without depression (15% of men, 7% of women; both values significant at $p < 0.05$).

Committed sex (sexual encounters within long-term, exclusive, romantic relationships)

Eisenberg and associates assessed 1311 young adults (mean age: 20 years) in the United States for sexual behaviors and psychological wellbeing (Eisenberg et al. 2009). They used items from the Rosenberg Self-Esteem Scale and measured depressive symptoms. Participants also reported their partner type, indicating commitment level (casual acquaintance; nonexclusive partner; exclusive dating partner; or fiancé(e), spouse, or spousal equivalent). Women whose most recent sex partner was a fiancé(e), spouse, or spousal equivalent reported fewer depressive symptoms than those whose last partner was merely an exclusive partner (11 vs. 12%, $p < 0.05$).

Furman & Collibee evaluated 185 young adults (mean age: 24 years) longitudinally in the United States for links between psychosocial health and sexual activity with 4 types of partners (*casual acquaintances, friends, friends-with-benefits* [relationships in which sexual behavior had occurred more frequently than in the *friend* category, and were otherwise less

intimate than friendships], and *romantic* [committed dating relationships]) (Furman & Collibee 2014). The Scale of Sexual Risk-Taking was used to measure sexual risk-taking tendency, and the Adult Self Report was used to measure internalizing symptoms (e.g., psychological symptoms of loneliness, depression, and negative perceptions of self-worth). Sex with a non-romantic partner (*friend, casual acquaintance, or friend-with-benefits*) was associated with greater substance use and risky sexual behavior (e.g., having unprotected sex or using illicit drugs during sexual activities), while sexual activity with a romantic partner was associated with higher self-esteem and lower internalizing symptoms (all values significant at $p < 0.01$).

Kaestle & Evans examined 471 female college students (18-22 years) in the United States for the impact of no sex, casual sex, or exclusive sex (sex with 1 partner) on sexual wellbeing (Kaestle & Evans 2018). Participants' sexual wellbeing was determined using the Sexual Self Esteem Inventory for Women, which measures the impact of one's sexuality on wellbeing. Exclusive sex in the past 6 months was associated with higher sexual wellbeing ($p < 0.0001$) compared with those having casual sex.

Sprecher studied 101 dating couples ($N=202$; mean age: 20 years) in the United States for associations between premarital sexuality and relationship quality (Sprecher 2002). She measured couples at 5 separate occasions; the initial questionnaire was completed in the fall of 1988, and follow-ups took place in spring and summer of 1989, 1990, 1991 and 1992. At each measurement, love and commitment were significantly associated with sexual satisfaction ($p < 0.05$ for each of 5 measurements). Additionally, sexual satisfaction was moderately to strongly associated with relationship satisfaction for both sexes.

Willoughby and coworkers evaluated 10,932 unmarried adults (mean age: 28 years) in the United States to study outcomes at 4 different points of initial sex in the relationship: *sex prior to dating, sex on the first date or shortly after, sex after a few weeks, or sexual abstinence* (Willoughby, Carroll & Busby 2014). They used the RELATE instrument (Relationship Evaluation Questionnaire), which measures aspects of couple dynamics. Waiting at least a few

weeks to initiate sexual intimacy in unmarried relationships was associated with higher relationship satisfaction ($p < 0.001$) and stability ($p < 0.001$) compared to those who initiated sex prior to or early in their relationship.

Busby and colleagues examined 2035 married adults in the United States for when they became sexually involved (taking part in oral sex or intercourse) as a couple and its relationship to future marital quality (Busby, Carroll & Willoughby 2010). Participants completed the RELATE instrument and reported sexual timing, marital communication, relationship satisfaction, and sexual satisfaction. Sex beginning after marriage was associated with 12% better marital communication, 20% higher relationship satisfaction, 22% higher relationship stability, and 15% higher sexual satisfaction (all values significant at $p < 0.001$), compared to couples who had engaged in premarital sex.

Reissing and coworkers studied 475 young adults (18-29 years) in Canada for the factors affecting subjects' experience of sexual debut (Reissing, Andruff & Wentland 2012). They used the First Coital Affective Reaction Scale (FCARS) to measure individuals' reactions to sexual debut and gauged participants' perception of change in their view of sexuality. Sexual initiation in a committed relationship (defined as "a serious dating relationship") was associated with positive change in the way subjects viewed sexuality (i.e., subjects viewed sex more positively as a result; $p < 0.001$), but less commitment was associated with regret for men ($p < 0.05$) and women ($p < 0.001$).

Discussion

The purpose of this article was to review the peer-reviewed medical literature evaluating committed and non-committed heterosexual sexual relationships and its impact on mental health in adolescents.

The review showed very consistent disadvantage of adolescent sex, early sexual debut, adolescent sex, hookups, and casual sex compared to committed unmarried and married

relationships. Specific reported measures associated with adolescent sex included: increased depressive symptoms, depression, suicidal ideation, aggressive behavior, psychological distress, anxiety, stress, loneliness, poor wellbeing, regret, and guilt. Regarding the relationship itself there was reduced general and sexual satisfaction.

Further, adolescent sex was associated with increased negative social behaviors including: substance use and risky sex (e.g., having unprotected sex, drinking or using illicit drugs during sexual activities) and in later adolescence for increased risk for physical and sexual abuse, drug use, poor academic performance, and antisocial behavior.

In contrast, waiting to initiate sex until there was at least some element of commitment or until marriage was associated with better: communication, relationship satisfaction and stability, sexual satisfaction, life satisfaction, self-esteem, and a more positive view of sexuality. Commitment and sexuality also were associated with lower symptomatology for psychological disorders including depression, general and social anxiety, and stress.

Nonetheless, the authors do not understand from the results of this review if uncommitted sex was the complete cause of the adverse mental health findings and risky social behavior found in the participants or if a certain personality profile predisposes a young person to be attracted to this behavior.

In a review of 137 studies, Allen & Walter identified several factors related to adolescent sex: first, extraversion was associated with increased sexual activity (including casual and uncommitted sex) and risky sexual behavior; second, lower agreeableness and conscientiousness were associated with greater sexual activity (especially in younger people) and casual sex, and lastly, openness was related to liberal attitudes toward sex (e.g., “sex before marriage is not wrong”) (Allen & Walter 2018). Further, drugs and alcohol are recognized as common correlates of early sexual engagement (Cooper 2002). Additionally, van Oosten and associates identified that exposure to sexually explicit internet material was a predictor of willingness to engage in casual sex in their 2017 study (van Oosten, Peter & Vandenbosch

2017).

The negative impact of uncommitted sex in our review was observed in both sexes but if any differences were reported between genders the adverse results were greater typically among women (Table 2). The reasons women would be influenced more than men were not apparent by our review. Campbell studied the effects of casual sex on women and concluded that they more likely felt they had let themselves down and were worried about damage to their reputation (Campbell 2008). Further, women found the experience less sexually satisfying because they did not sense appreciation from the man. The women perceived this lack of gratitude as implying she was non-selective in whom she would have sex.

Why would sex inside a committed relationship have stronger associated wellbeing and mental health than noted with less committed relationships? The answer is not clear by the data, but the authors speculate several reasons: first, socialization and openness with a committed partner provides a potential source of personal enrichment, encouragement and empathy (Fortunato 2011; Lillard & Waite 1995); second, the more committed the relationship, the greater confidence partners may have in each other thus conserving the time, money and emotion required to correct deficiencies in their relationship; third, committed partners can help each other maintain good health by assisting with any medical issues and maintaining a healthy lifestyle in terms of diet and exercise (Lillard & Waite 1995); fourth, a committed relationship may facilitate sexual satisfaction by building confidence that no competing love interest is diverting the attention of their partner (Pedersen & Blekesaune 2003); and last if a household is involved, a committed partner helping with income, home tasks, and raising children can lessen the burden compared to a single individual (Horwitz & White 1991).

This review suggests that sexual debut, adolescent sex, hookups, and casual sex are associated with a number of negative effects on relationships, general wellbeing and lifestyle behavior compared to unmarried or married committed sex.

This review did not evaluate other forms of sexual encounters (such as same-sex, trans-

sexual or polygamous encounters). More research is needed generally to evaluate the benefits or disadvantages of different types of sexual relationships, and associated mental health, in both adolescents and adults. More research is needed as well regarding sexual and relationship quality and personal wellbeing, especially inside marriage.

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Table 1: Overview of the influence of uncommitted sex on mental health and wellbeing

Study	Country	Population	Conclusions and associations
ADOLESCENT SEX			
Manning et al.	US	1321 adolescents	Sex with multiple partners in adolescence associated with worse MH
Mendle et al.	US	1551 adolescent sibling pairs	Sex with non-romantic partners associated with depression
Sabia & Rees	US	14144 adolescents	Sexually active female adolescents at risk for depression
Espinosa-Hernandez & Vasilenko	Mexico	1436 adolescents	Sex in adolescence associated with depression & poor academic performance
SEXUAL DEBUT			
Spriggs & Halpern	US	5061 adults	Sexual behavior among girls under 16 associated with depression
Vasilenko, Kugler & Rice	US	8938 young adults	Sexual behavior before age 16 associated with depression
Kastborn et al.	Sweden	3432 high schoolers	Sexual debut before age 14 associated with poor MH and WB
Kim	S. Korea	2393 young adults	Sexual debut before high school associated with depression in girls & suicidality in boys

HOOKUPS			
Fielder & Carey	US	140 college students	Sexual hookups associated with poor MH in females
Napper et al.	US	607 college students	Hooking up associated with poor MH
Owen & Fincham	US	500 young adults	Hookups associated with depression in women and loneliness in both sexes
Owen et al.	US	832 college students	Hookups associated with poor WB
Owen, Fincham & Moore	US	394 young adults	Hookups associated with increasing depression and loneliness symptoms
Strokoff, Owen & Fincham	US	879 college students	Genital hookups associated with depression
Vrangalova	US	528 college students	Hookups associated with anxiety & physical symptoms in both sexes, depression in men
CASUAL SEX			
Bersamin et al.	US	3907 young adults	Casual sex associated with worse WB & MH
Sandberg-Thoma & Kamp Dush	US	12401 young adults	Casual sex associated with suicidality & depression
Vasilenko, Lefkowitz & Maggs	US	209 college students	Casual sex associated with guilt, dissatisfaction & interpersonal problems

Dubé et al.	Canada	2304 adults	Casual sex associated with depression in girls & increased drug/alcohol consumption in both sexes
Agardh, Cantor-Graae & Ostergren	Uganda	980 young adults	Multiple sexual partners associated with poor MH
Field et al.	UK	15162 adults	Concurrent sexual partners associated with depression
COMMITTED SEX			
Eisenberg et al.	US	1311 young adults	Committed sex associated with better MH
Furman & Collibee	US	185 young adults	Uncommitted sex associated with poor MH; committed sex associated with better WB & MH
Kaestle & Evans	US	471 female college students	Exclusive sex associated with higher sexual WB
Sprecher	US	101 dating couples	Love & commitment associated with sexual WB
Willoughby, Carroll & Busby	US	10932 unmarried adults	Waiting to initiate sex associated with higher relationship WB & stability
Busby, Carroll & Willoughby	US	2035 married adults	Sex after marriage (rather than before) associated with better marital & sexual WB
Reissing, Andruff & Wentland	Canada	475 young adults	Sexual initiation in a committed relationship associated with sexual WB

MH=mental health; WB=wellbeing

Table 2: Studies in which effects were increased in/specific to women or men

Study	Gender	Parameter
Sabia & Rees	Women	Depression
Vasilenko et al.	Women	Depression (in those sexually active and under 16)
Kastbom et al.	Women	Depression
Kim	Women	Depression
Fielder & Carey	Women	Depression
Owen & Fincham	Women	Depression
Owen et al.	Women	Increased negative reactions to hookups
Vrangalova et al.	Men	Depression
Dubé et al.	Women	Psychological distress
Agardh et al.	Men	Psychoticism
Eisenberg et al.	Women	Depression