



# A meta-analytic review of the relationship between adolescent risky sexual behavior and impulsivity across gender, age, and race



Allyson L. Dir <sup>\*</sup>, Ayca Coskunpinar, Melissa A. Cyders

Department of Psychology, Indiana University Purdue University-Indianapolis, United States

## HIGHLIGHTS

- Meta-analysis on relationship between impulsivity and risky sex among adolescents.
- The relationship between impulsivity and adolescent risky sex is significant and small.
- Effects are similar across unique risky sexual behaviors and impulsivity traits.
- Gender was a significant moderator in the impulsivity–risky sex relationship.
- Samples with more females showed stronger effects for impulsivity and risky sex.

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## ABSTRACT

**Background:** Impulsivity is frequently included as a risk factor in models of adolescent sexual risk-taking; however, findings on the magnitude of association between impulsivity and risky sexual behavior are variable across studies. The aims of the current meta-analysis were to examine (1) how specific impulsivity traits relate to specific risky sexual behaviors in adolescents, and (2) how the impulsivity–risky sex relationship might differ across gender, age, and race.

**Method:** Eighty-one studies were meta-analyzed using a random effects model to examine the overall impulsivity–risky sex relationship and relationships among specific impulsivity traits and risky sexual behaviors.

**Results:** Overall, results revealed a significant, yet small, association between impulsivity and adolescent risky sexual behavior ( $r = 0.19, p < 0.001$ ) that did not differ across impulsivity trait. A pattern of stronger effects was associated with risky sexual behaviors as compared to negative outcomes related to these behaviors. Gender moderated the overall relationship ( $\beta = 0.22, p = 0.04$ ), such that effect sizes were significantly larger in samples with more females. Age, race, study design, and sample type did not moderate the relationship, although there was a pattern suggesting smaller effects for adolescents in juvenile detention settings.

**Conclusions:** Adolescent samples with more females showed a larger impulsivity–risky sex relationship, suggesting that impulsivity may be a more important risk factor for risky sex among adolescent females. Research and treatment should consider gender differences when investigating the role of impulsivity in adolescent sexual risk-taking.

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## Contents

|      |                                                                  |     |
|------|------------------------------------------------------------------|-----|
| 1.   | Impulsivity as a risk factor for risky sexual behavior . . . . . | 552 |
| 1.1. | Sensation seeking . . . . .                                      | 552 |
| 1.2. | Negative and positive urgency . . . . .                          | 553 |
| 1.3. | Lack of planning and lack of perseverance . . . . .              | 553 |
| 2.   | Disaggregation of risky sexual behavior . . . . .                | 553 |

<sup>\*</sup> Corresponding author at: Department of Psychology, Indiana University Purdue University-Indianapolis, 402 N. Blackford St., LD 124, Indianapolis, IN 46202, United States. Tel./fax: +1 317 274 6752.

E-mail address: allydir@gmail.com (A.L. Dir).

|        |                                                                        |     |
|--------|------------------------------------------------------------------------|-----|
| 3.     | Differential relationships across gender, age, and race                | 553 |
| 3.1.   | Gender                                                                 | 553 |
| 3.2.   | Age                                                                    | 553 |
| 3.3.   | Race                                                                   | 554 |
| 4.     | The current study                                                      | 554 |
| 5.     | Methods                                                                | 554 |
| 5.1.   | Selection of studies                                                   | 554 |
| 5.2.   | Meta-analytic method                                                   | 554 |
| 5.2.1. | Moderator analyses                                                     | 554 |
| 6.     | Results                                                                | 554 |
| 6.1.   | Sample                                                                 | 554 |
| 6.2.   | Research question 1: general impulsivity and risky sexual behavior     | 555 |
| 6.2.1. | Effect size variance across impulsivity and risky sexual behavior type | 556 |
| 6.3.   | Research question 2: gender, age, and race as moderators               | 557 |
| 6.3.1. | Gender                                                                 | 557 |
| 6.3.2. | Age and race                                                           | 557 |
| 6.3.3. | Supplemental moderation analyses                                       | 557 |
| 7.     | Discussion                                                             | 557 |
| 8.     | Limitations                                                            | 559 |
| 9.     | Conclusions                                                            | 559 |
|        | Role of funding sources                                                | 559 |
|        | Contributors                                                           | 559 |
|        | Conflict of interest                                                   | 559 |
|        | Appendix A. Supplementary data                                         | 559 |
|        | References                                                             | 559 |

Adolescent risky sexual behavior is a major public health concern, due to the disproportionate number of adolescents who experience negative sexual health outcomes (e.g., DiClemente, Salazar, & Crosby, 2007; Kotchick, Shaffer, Miller, & Forehand, 2001). For instance, although adolescents and young adults (age 15–24) account for just 25% of sexually active individuals in the U.S., this group constitutes over half of new sexually transmitted disease (STD) cases each year among all sexually active individuals in the U.S. (Centers for Disease Control and Prevention, 2008). On average, one in four female adolescents have a history of an STD, and African Americans are overrepresented (e.g., Centers for Disease Control and Prevention, 2008; Fergus, Zimmerman, & Caldwell, 2007). Also, females aged 18–24 account for the largest proportion of unintended pregnancies in the U.S. (Finer & Henshaw, 2006).

Adolescents are likely at increased risk for such negative sexual health outcomes partly due to their high rates of unprotected sex with multiple partners. Less than 50% of sexually active adolescents report using condoms on a regular basis (e.g., Martinez, Copen, & Abma, 2011), and when asked about their most recent sexual encounter, almost one-third of male and half of female high school students reported not using any form of protection (Centers for Disease Control and Prevention, 2002). Additionally, 14% of sexually active adolescents report four or more lifetime sexual partners (Centers for Disease Control and Prevention, 2004; DiClemente et al., 2010), which is higher than other age groups, especially considering their nascent sexual history. Despite these alarming statistics, some researchers in adolescent development and sexual health emphasize that sexual experimentation is a healthy hallmark of adolescent development (see Smith, Udry, & Morris, 1985; Zimmer-Gembeck & Helfand, 2008); however, the overrepresentation of adolescents in both rates of risky sexual behaviors and negative sexual health outcomes highlights the need to understand risk factors associated with these risky sexual behaviors and possible related medical consequences in order to effectively identify and intervene on those who are at greatest risk for such outcomes.

## 1. Impulsivity as a risk factor for risky sexual behavior

Impulsivity is a prominent personality-based risk factor that is consistently included in models of risky sexual behavior for both adults (Deckman & DeWall, 2011; Hoyle, Fejfar, & Miller, 2000; Miller et al.,

2004) and adolescents (e.g., Broadbuss & Bryan, 2008; DiClemente et al., 2008, 2010; Kahn, Kaplowitz, Goodman, & Emans, 2002; Khurana et al., 2012; Zimmerman, 2010). Impulsivity likely influences risky sexual behaviors among adolescents because (1) adolescence often marks the initiation of sexual exploration (e.g., Smith et al., 1985), (2) learning about sexual encounters is likely related to impulsivity's effects on expectancy formation (Smith & Anderson, 2001); (3) adolescence corresponds with neurobiological changes related to increases in impulsive behavior and reward seeking (e.g., Romer, 2010; Steinberg, 2008), and (4) adolescence is characterized by decreased parental monitoring and increased peer influences on behavior (e.g., Dahl, 2004; Smetana, Campione-Barr, & Metzger, 2006).

However, evidence for the relationship of impulsivity and risky sexual behavior in adolescents is mixed (e.g., Breakwell, 1996; Brown, DiClemente, & Park, 1992; White & Johnson, 1988). One potential reason for such inconsistencies is that impulsivity is a heterogeneous trait. The current study uses the UPPS-P framework (Lynam, Smith, Cyders, Fischer, & Whiteside, 2007) to separate trait impulsivity into separate unique aspects of impulsive behavior: (1) *lack of perseverance*, defined as the tendency to not finish tasks; (2) *lack of planning*, defined as the tendency to act without thinking; (3) *sensation seeking*, defined as the tendency to engage in exciting adventures and seek arousal; (4) *negative urgency*, defined as the tendency to act rashly in response to extreme negative emotions; and (5) *positive urgency*, defined as the tendency to act rashly in response to extreme positive emotions (Lynam et al., 2007). Identification and measurement of these separate traits have revealed discrete relationships with a number of risky behaviors (e.g., Coskunpinar, Dir, & Cyders, 2013; Cyders, Flory, Rainer, & Smith, 2009; Fischer & Smith, 2008; Gunnarsson, Gustavsson, Tengström, Franck, & Fahlke, 2008; Romer, 2010; Zapolski, Stairs, Settles, Combs, & Smith, 2010), including risky sexual behavior (e.g., Deckman & DeWall, 2011; Sher & Trull, 1994; Sultan & Pipon, 1996; Zapolski, Cyders, & Smith, 2009). However, much of this evidence is based on findings from adult samples, and thus this should be examined in adolescent groups.

### 1.1. Sensation seeking

Sensation seeking is a robust predictor of risky sexual behavior among young adults (e.g., Hoyle et al., 2000; Justus, Finn, & Steinmetz,

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