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**The Impact of Adverse Childhood Experiences and Attachment Styles on Digital Sexual
Coercion in College-Aged Adults**

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Abstract

Adverse childhood experiences are often associated with greater attachment insecurity displayed by individuals, which relates to functioning in future romantic and platonic relationships. With emerging technology and new ways to initiate contact, the ability to consent to sexual encounters can be compromised or eliminated with use of coercion to obtain sexually explicit pictures, messages, and content. We investigated whether self-reported attachment insecurity mediated the association between adverse childhood experiences and digital sexual coercion among 584 college-aged students (68.7% female) recruited from a large, public, southeastern university. Results indicated that higher levels of adverse childhood experiences were associated with greater attachment anxiety, which, in turn, was associated with increased perpetration of digital sexual coercion. The data provided insight into the adaptive and maladaptive sexual behavior of college-aged adults and showed the importance of understanding the associated factors.

The Impact of Adverse Childhood Experiences and Attachment Styles on Digital Sexual Coercion in College-Aged Adults

One hallmark of contemporary society is the utilization of social media sites and mobile phones for communication within interpersonal relationships, as it allows individuals to engage freely with strangers, friends, and potential romantic partners (Harwood et al., 2014). Although communication platforms facilitate frequent access to positive and neutral contact with romantic partners, they also create opportunities to perpetrate digital sexual coercion (Smith-Darden et al., 2017). Digital sexual coercion (DSC) is defined as overwhelming pressure (e.g., threats of violence, emotional manipulation, physical force) from one person toward another person to engage in sexual behavior (e.g., sexting, sending explicit sexual photographs and videos) via a digital device (Burns, 2014; Powell et al., 2020; Koss & Oros, 1982). Coercive sexual behaviors, which were previously solely conducted in-person, have transitioned into an online format with mobile phones, social media sites, and other online-based communication methods used as the point of contact between individuals (Powell et al., 2020). Recent studies suggested that perpetration of DSC is related to a range of risky behaviors, such as substance use, unprotected sex, and negative mental health symptoms (Benotsch et al., 2013; Dake et al., 2012).

Adverse Childhood Experiences and Digital Sexual Coercion

Several recent studies examined factors that contribute to in-person sexual coercion perpetration and revealed an association between adverse childhood experiences (ACEs) and later in-person sexual coercion perpetration (Barbaro et al., 2018; Fuertes et al., 2012). ACEs include various forms of abuse (e.g., physical, psychological, sexual), neglect (i.e., physical, emotional), and household dysfunction (i.e., parental loss through divorce, death or abandonment, parental imprisonment, parental mental illness, parental misuse of substances) and

witnessing interparental violence (Finkelhor et al., 2015; Felitti et Al., 1998). Exposure to these forms of adversity is associated with long-lasting poor physical and mental health outcomes, including substance use, mental illness, and delinquency (Merrick et al., 2017; Tomlinson et al., 2022). Some of these long-lasting health concerns can be explained by the altering of brain structure that affects the production of stress-related hormones, which can result in changes in areas of cognitive functioning, emotional regulation, and difficulties in romantic and peer relationships (Anda et al., 2010). ACEs were associated with hypersexuality and engaging in sexually risky behaviors (e.g., sex with multiple partners, sexting, chatting with strangers online) (Anda et al., 2006; Kingston et al., 2016). These sexually risky behaviors can be conducted online and in-person; however, there is limited research into the impact of both ACEs and DSC. Research on convicted sexual offenders showed evidence of greater incidences of ACEs as compared to the general population (DeLisi & Beauregard, 2018; Levenson et al., 2016). Moreover, several studies revealed the increased likelihood of sexual violence perpetration with individuals with high ACEs scores and poor emotional dysregulation (Anda et al., 2006). The association between ACEs and later perpetration is evident (Ecott et al., 2020); however, not all individuals who experience ACEs go on to perpetrate in-person sexual coercion. Thus, mediating factors may contribute to the association between ACEs and sexual coercion, such as attachment insecurity.

Digital Sexual Coercion, Adverse Childhood Experiences, and Attachment Insecurity

Adverse childhood experiences impact children's development in a variety of areas, and these areas of deficit may transition into adulthood. Many adolescents with histories of trauma struggle with interpersonal relationships, and these difficulties can appear as insecure attachments (Grady et al., 2021; Anda et al., 2010). Attachment is the development of a social-

emotional bond with others, which is shaped by the quality of early interactions with caregivers (Flaherty & Sadler, 2011; Bowlby, 1969). These early interactions between infants and caregivers convey a working model of relationships and allow individuals to develop an insecure or secure attachment style (Flaherty & Sadler, 2011). Receiving consistent support and nurturing from caregivers is likely to lead individuals to develop a secure attachment style, while inconsistent affection and warmth, as well as neglect and abuse, can lead one to develop an insecure attachment style (Dinero et al., 2022; Kural & Kovacs, 2022; Flaherty & Sadler, 2011). Transitioning into later adolescence and young adulthood results in a shift in attachment from one's primary caregivers to their peers, thus leading to new emotional bonds outside of the familial circle (Patel et al., 2022; Dinero et al., 2022). New emotional bonds formed with romantic partners serve as a roadmap for later romantic relationships, and the quality of these original relationships is vital to assessing the conflict and anxiety levels within individuals (Kural & Kovacs, 2022; Dinero et al., 2022).

Insecure attachment can be characterized by attention seeking behaviors, mistrust of others, and distortions of reality (Simpson & Rholes, 2017). Moreover, attachment insecurity was linked with aggression and intimate partner violence perpetration, which related to perceived anger and jealousy within romantic relationships (Wright, 2017). In several studies of youth sexual offenders and their families, they were more likely to have kept secrets and to engage in a variety of antisocial behaviors (e.g., deception, sexual offenses) (Baker et al., 2003; Yoder et al., 2019). Moreover, adolescents with a history of sexual crimes and higher levels of anxious attachment had greater difficulties in areas of social engagement, thus resulting in higher levels of social isolation (Miner et al., 2014). These adolescents were also more likely to experience

greater isolation and struggle with emotional reciprocity as compared to their non-criminally charged peers (Miner et al., 2010).

ACEs and other traumatic life experiences were associated with developing insecure attachment (Yoder et al., in press). Several studies investigated the relationship between romantic attachment styles (e.g., anxious attachment, avoidant attachment) and future in-person sexual coercion perpetration (Barbaro et al., 2018; Fraley & Shaver, 2000; Simpson & Belsky, 2016). Few studies have examined DSC with ACEs and attachment insecurity. Within romantic relationships, attachment helps regulate emotional, behavioral, and cognitive feedback from potential dangers to a romantic relationship (Hazan & Diamond, 2000; Kruger et al., 2013). For instance, secure attachment within romantic relationships creates feelings of security, stability, and overall relationship satisfaction (Spielmann et al., 2013) and appears to be a protective factor against potential relationship conflict (Shallcross & Simpson, 2012). These positive feelings act as a protective factor against emotional dysregulation and other behavioral factors (Fávero et al., 2021). Attachment theory posits two main forms of attachment insecurity in romantic relationships: attachment anxiety and attachment avoidance, and these dimensions are linked to individual behavioral and cognitive traits (Fraley & Shaver, 2000; Mikulincer & Shaver, 2008). Attachment anxiety and attachment avoidance are associated with more relationship conflict (Tolmacz et al., 2022; Kuncewicz et al., 2021). Anxious attachment styles are characterized by an overwhelming worry about abandonment and fear of rejection from a romantic partner, thus resulting in individuals acting out in displays of attention seeking behaviors (e.g., being overly clingy to a romantic partner, needing excessive validation) from their romantic partner (Simpson & Rholes, 2017). Avoidant attachment styles, by contrast, are characterized by a distinct display of emotional distance and independence due to fear and mistrust of romantic partners (Simpson

& Rholes, 2017). Research into areas of attachment insecurity and DSC suggested that certain behaviors associated with attachment insecurity may manifest in sexual coercion perpetration (Karantzas et al., 2016; Tracy et al., 2003). Several studies proposed that anxious attachment, as characterized by heightened anxieties within romantic relationships, may elicit coercive behaviors to encourage their partner to engage in sex in order to increase feelings of validation and attention from their attachment figure (Karantzas et al., 2016; Shaver & Mikulincer, 2012). Additionally, several studies postulated that avoidant attachment, as characterized by discomfort with intimacy and need for independence, may increase sexual coercion perpetration by asserting power over a romantic partner to maintain personal control over sexual situations and avoid emotional intimacy (Karantzas et al., 2016; Shaver & Mikulincer, 2012).

Current Study

An abundance of research suggests that experiencing ACEs is related to attachment insecurity (Anda et al., 2006), and ACEs and attachment insecurity are related to DSC (Grady et al., 2016; Barbaro et al., 2018). Our study is the first to test whether the association between ACEs and DSC is mediated by attachment anxiety and avoidance. In the present study, we examined the relationship between ACEs and later perpetration of DSC as mediated by attachment insecurity (i.e., anxiety and avoidance). In addition, we controlled for the effects of age and gender. Advances in technology and increased reliance on digital communication underscores the necessity of research examining predictors of DSC among college students. Consistent with prior research models, we hypothesized that ACEs is related to later DSC perpetration via attachment insecurity, including attachment anxiety and attachment avoidance.

Method

Participants

In the present study, we recruited 588 undergraduate student participants (68.7% female) from a large, public, southeastern university. Participants' eligibility was based on being at least 18 years old and being in a romantic relationship for at least one month ($M_{length} = 18.94$, $SD = 1.72$). The sample was predominantly White (83.5%), with the remaining being Black/African American (7.7%), Asian/Pacific Islander (5.8%), Hispanic/Latinx (4.3%), Indian/Middle Eastern (2.0%), and other (2.4%). The sample was predominately heterosexual (88.1%) followed by bisexual (7.8%), gay (2.6%), and people with other sexual identities (e.g., queer, pansexual, asexual; 1.4%). The majority (99.3%) of participants reported that they owned and used a smartphone (i.e., a phone with Internet access). Participants who did not own a cellphone were excluded from analyses ($n = 4$), which resulted in a sample of 584 total participants. Most of the sample reported using text messaging (75.8%) and social networking sites (e.g., Facebook, Instagram, Snapchat; 65.3%) multiple times per day.

Procedures

The Institutional Review Board (IRB) at the author's institution approved this study. We recruited participants from undergraduate psychology courses where they were informed that they could earn partial course credit for participating. Prospective participants were directed to the psychology department's research website that displayed several studies in which participants could participate. Participants who chose to participate in our study and met eligibility criteria were redirected to a link to the online survey via Qualtrics.com. Prior to completing the online survey, participants provided informed consent. Upon completion of the survey, participants were provided with a list of local and national resources for dating abuse and mental health concerns.

Measures

Demographics

We administered a series of single items assessing age, race, gender, relationship length, and sexual orientation.

Attachment insecurity

We used the 36-item Experiences in Close Relationships-Revised Scale (ECR-R; Fraley et al., 2000) to measure attachment insecurity across two 18-item subscales: attachment anxiety (e.g., “I often worry that my partner will not want to stay with me”) and attachment avoidance (e.g., “I get uncomfortable when a romantic partner wants to be very close”). Using a 7-point Likert scale, respondents rated their responses. Higher scores showed greater attachment anxiety or avoidance. In previous studies, the subscales had strong internal consistency across gender (Goncy & Van Dulman, 2016). In the current study, attachment avoidance ($\alpha = .94$) and attachment anxiety ($\alpha = .94$) subscales showed strong internal consistency.

Adverse Childhood Experiences

The Adverse Childhood Experiences scale (ACEs) captured different instances of childhood adversity experienced during the first 18 years of life (Felitti et al., 1998; Finkelhor et al., 2015). The ACEs uses 10-items to assess emotional abuse (e.g., “Did a parent or other adult in the household often... swear at you, insult you, put you down, or humiliate you?”), physical abuse (e.g., “Did a parent or adult in the household often... push, grab, slap, or throw something at you?”), sexual assault (e.g., “Did an adult or person at least 5 years older than you ever... touch or fondle you or have you touch their body in a sexual way...”), emotional neglect (e.g., “Did you often feel that... no one in your family loved you or thought you were important or special?”), physical neglect (e.g., “Did you often feel that... you didn’t have enough to eat, had to wear dirty clothes, and had no one to protect you?”), parental separation/divorce, household substance use (e.g., “Did you live with another who was a problem drinker or alcoholic or who

used street drugs?”), household mental illness (e.g., “Was a household member depressed or mentally ill or did a household member attempt suicide?”), and incarcerated household member. The respondents indicated either yes or no, which was used to create a total ACE score. There were strong psychometric properties associated with ACEs in past studies (Felitti et al., 1998).

Digital Sexual Coercion

We used the 19-item Sexting Coercion in Intimate Relationships Scale (SCIRS; Drouin et al., 2015) to assess DSC. This version was adapted from Goetz and Shackelford’s (2010) Sexual Coercion in Intimate Relationships Scale and gave options for participants to report their partner’s sexually coercive acts. The participants were asked to indicate how frequently the listed acts occurred. The SCIRS gives a total for different types of coercive acts: resource manipulation/violence (e.g., “I withheld benefits that my partner depended on to get him/her to send me a sexually-explicit picture or video”), commitment manipulation (e.g., “I hinted that if my partner loved me s/he would send me a sexually-explicit picture or video”), and defection threat (e.g., “I threatened to get other people to send me sexually-explicit pictures or videos if my partner refused to send me a sexually-explicit picture or video”). Among a sample of young adults, the resource manipulation/violence ($\alpha = .94$), commitment manipulation ($\alpha = .95$), and defection threat ($\alpha = .98$) scales demonstrated strong internal consistency (SCIRS; Drouin et al., 2015). In the current study, we used a total score of the SCIRS measure. For the current study, the internal consistency of the total scale ($\alpha = .96$) was strong.

Data Analytic Strategy

We used SPSS Version 27.0 to examine descriptive statistics and bivariate correlations, as well as to calculate internal consistency of study variables. As DSC evidenced positive skewness, we log-transformed this variable prior to conducting analyses.

We conducted path analysis using Mplus Version 8.5 to examine the study's hypotheses. Path analysis allowed us to test all regression equations simultaneously and this technique accounts for any nonnormally distributed dependent variables (Kline, 2015). We simultaneously regressed DSC on both forms of attachment insecurity (i.e., anxiety, avoidance). We also regressed attachment insecurity forms and DSC on the ACE total score, while statistically controlling for the effects of gender and age and covarying both forms of attachment insecurity. Since the model was fully saturated and produced a perfect model fit to the data, we did not assess or report model fit indices (Kline, 2015).

We used bias-corrected bootstrap method procedures to assess whether ACEs were indirectly related to DSC through attachment insecurity. Bias-corrected confidence intervals test mediation with less biases that can accompany the use of conventional mediation tests (MacKinnon et al., 2004). Therefore, we used 5,000 bootstrapped samples with 95% bias-corrected confidence intervals to evaluate the significance of indirect effects between ACEs and digital sexual coercion via forms of attachment insecurity. Indirect effects were considered statistically significant if the bias-corrected confidence interval did not contain a 0 value. Indirect effects were also calculated using the product of coefficients approach and were examined for significance with Sobel tests to compare results from the bootstrapping method with traditional methods of testing mediation (MacKinnon et al., 2004; Sobel, 1986).

Results

After analyzing descriptive statistics and bivariate correlations, we tested the study's hypotheses. ACEs scores were positively related to attachment anxiety ($\beta = .230$, $SE = .043$, $p < .001$) and attachment avoidance ($\beta = .091$, $SE = .044$, $p = .038$). Attachment anxiety was related to increased DSC perpetration ($\beta = .102$, $SE = .044$, $p = .021$); however, attachment avoidance

was not significantly related to DSC perpetration ($\beta = -.004$, $SE = .044$, $p = .927$). Due to attachment avoidance being non-significantly related to DSC, we only tested for the mediating effect of attachment anxiety between ACEs and DSC. Utilizing a mediation test with 5,000 bootstrapped samples, ACEs were indirectly related to DSC through attachment anxiety, which means attachment anxiety mediated between ACEs and DSC ($\beta_{indirect} = .023$, $CI_{95\%}: [.005, .050]$). Then, a Sobel test was conducted to see if mediation was consistent with the results of bootstrapped tests of mediation. ($Z = 2.123$, $SE = 0.001$, $p = .033$). The Sobel test also showed an indirect effect was significant. Both tests of mediation and indirect effects were consistent, which supports attachment anxiety mediating between ACEs and DSC.

Table 1

Means, Standard Deviations, and Bivariate Correlations among Study Variables

	1.	2.	3.	4.	5.	6.
1. Age	-					
2. Gender	-.21**	-				
3. ACEs	.94	.86	-			
4. Anxiety	-.02	.08	.231**	-		
5. Avoidance	.06	-.05	.91*	.30**	-	
6. SCIRS	.100	-.139	.08*	.47	.120**	-
<i>M</i>	18.94	1.70	1.91	3.25	2.72	.9349
<i>SD</i>	1.72	-	2.28	1.31	1.20	4.11

Note. ACEs = Adverse Childhood Experiences; Anxiety = Attachment Anxiety; Avoidance = Attachment Avoidance; SCIRS =

Sexual Coercion in Intimate Relationships

*** $p < .001$, ** $p < .01$, * $p < .05$

Discussion

The current study investigated the association between ACEs and later perpetration of DSC as mediated by attachment insecurity (i.e., anxiety and avoidance). We hypothesized that ACEs were positively related to both forms of attachment insecurity, such that higher incidences of ACEs were associated with higher attachment insecurity which, in turn, positively related to

higher DSC perpetration. Although the results indicated that ACEs positively related to attachment anxiety and avoidance and attachment anxiety positively related to DSC perpetration, attachment avoidance was not significantly related to DSC perpetration.

The results from the present study are consistent with theoretical perspectives on romantic and interpersonal attachment that suggested attachment serves as the foundation for all future relationships. The discrepant findings between attachment anxiety and avoidance may be explained by characteristics associated with attachment anxiety. High levels of attachment anxiety in individuals are expressed as overwhelming worry about abandonment, fear of rejection from a romantic partner, displays of attention seeking behaviors from their romantic partner, and overall preoccupation with their romantic partner (Simpson & Rholes, 2017). Additionally, individuals with attachment anxiety are more likely to engage in sexual behaviors to fulfill needs of closeness and intimacy to reduce feelings of insecurity within the relationship (Shaver & Mikulincer, 2012). Individuals with insecurity and abandonment worries are also more likely to associate sexual activities with romantic feelings and love, which are underlying influences for complying and encouraging participation in sexual behaviors (Karantzas et al., 2016). Moreover, people with anxious attachment may have persistent insecurity and abandonment worries, motivation for sexual activities, and their inability to communicate their sexual expectations may result in viewing coercion as a method to satisfy their attachment needs and communicate their feelings (Karantzas et al., 2016). In contrast, attachment avoidance was not significantly related to DSC perpetration. High levels of avoidant attachment in individuals are often expressed as overwhelming distrust of intimacy, desire for control, and extreme self-reliance (Shaver & Mikulincer, 2012). Furthermore, people with avoidant attachment may attempt to minimize closeness and dependence on a romantic partner (Brennan & Shaver, 1995;

Karantzas et al., 2016), and these motivations for limiting sexual relationships might explain the lack of DSC perpetration.

Implications

Results of the present study indicate that ACEs are related to both attachment insecurity and DSC. These results are consistent with reports from the Centers for Disease Control and Prevention (CDC), who identified risk factors that increase the likelihood of sexually coercive behaviors or victimization, such as poverty, familial history of domestic violence, hostility towards the opposite gender, and unhelpful local and federal policies related to sexual violence and victimization (Tharp et al., 2013). Prevention efforts for sexual coercion can decrease prevailing beliefs about DSC and decrease sexually coercive behaviors over varying periods of time (Fuertes et. al., 2012). Working one-on-one with a group of adolescents on prevention techniques can increase levels of empathy for DSC victims (Tharp et al., 2013). Moreover, the Center for Disease Control and Prevention suggests various interventions to reduce ACEs on the governmental and local scales, such as public education programming focused on parental education and teaching social skills in adolescent classrooms (Centers for Disease Control and Prevention, 2019). By targeting ACEs through governmental and local intervention and prevention programming, consequences associated with ACEs – including increased substance use, increased sexually risky behaviors, and poorer mental health – may be addressed (Monnat & Chandler, 2015). Additionally, reduction of negative behaviors (e.g., commitment manipulation, defection threat, resource manipulation/violence) within romantic relationships can be mirrored in relationships online and offline, and individuals with anxious attachment are more likely to experience higher relationship satisfaction, which is associated with quality communication, affection, conflict de-escalation (Collibee & Furman, 2014). Overall, the current study highlights

the potential importance of prevention and intervention programs that decrease ACEs and address consequences associated with them. Further, this study can inform other researchers about the relationship between ACEs, attachment anxiety, and DSC.

Limitations and Future Directions

A few limitations should be considered when interpreting the results of the present study. First, the utilization of cross-sectional data prevents making causal inferences about the relationship between variables. Second, our sample, which consisted of mostly White individuals in heterosexual relationships, may not be generalizable to more diverse populations. Lastly, the current study examined the association between cumulative ACEs score and study variables. Future research in areas of digital sexual coercion and ACEs would benefit from exploring the differential association between different types of ACEs that are more predictive of attachment anxiety and perpetrating sexual coercion. For instance, physical and psychological abuse, as well as early separation from primary caregivers, are predictive factors for attachment anxiety, and different predictive factors for adversity can be studied (Lee & Hankin, 2009).

Conclusion

The current research explored the relationship between ACEs and later perpetration of DSC as mediated by attachment insecurity (i.e., attachment anxiety and attachment avoidance). The results of the study supported the hypothesis that higher ACEs were associated with greater attachment anxiety, which in turn, was associated with increased perpetration of DSC. However, the hypothesis that higher levels of ACEs were associated with greater attachment avoidance and increased DSC perpetration was not supported by these data, which leaves more questions about the association between attachment style and DSC. The value of this research is rooted in the

contribution to the research of DSC in college-aged adults, as well as research into the inimical consequences of ACEs.

According to these findings, interventions aimed at reducing DSC could consider the impact that attachment anxiety and ACEs have on the sexual offending pathway. Attachment anxiety has been highlighted as a potential factor in the current maladaptive sexual behavior of college-aged adults. Additional research in this area should address other mediators between ACEs and DSC and understand the importance of other associated factors. Understanding these influences could have implications for intervention and prevention methods for individuals with histories of ACEs and attachment insecurity.

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