



## The Dark Triad and intimate partner violence among pregnant women

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### ABSTRACT

The current study examines verbal and physical intimate partner violence (IPV) as predicted by the Dark Triad traits (psychopathy, narcissism, and Machiavellianism) above and beyond associations with the Big Five personality variables, depression, and general hostility within a racially and socioeconomically diverse sample ( $n = 203$ ) of pregnant women. Prior research indicates that psychopathy is a robust predictor of both IPV perpetration and victimization, but rarely do these analyses include other personality or psychosocial covariates. Key findings include direct effects of psychopathy as a positive predictor of verbal and physical IPV perpetration, as well as indirect effects of the above associations mediated by general hostility. In contrast, depression, but not psychopathy, was a unique predictor of verbal and physical IPV victimization. These findings expand the current literature by focusing on pregnant women as a uniquely vulnerable population and by examining unique direct and indirect effects of psychopathy in the presence of multiple psychosocial covariates.

### 1. Dark Triad and intimate partner violence

Intimate Partner Violence (IPV) involves a physical, sexual, or psychological assault within the context of a current or former romantic relationship. In the United States, nearly half of women (47.1 %) report psychological aggression in the context of a current or former romantic relationship and nearly a quarter (23.2 %) report physical violence (Smith et al., 2017). Such violence may occur unidirectionally (with only one partner perpetrating violence) or bidirectionally (with each partner perpetrating violence). Among unidirectional IPV there is considerable variability within and across samples regarding perpetration by gender: Langhinrichsen-Rohling et al. (2012) reviewed 48 unique studies of unidirectional IPV and observed gender symmetry (i.e., equal rates of perpetration across genders within heterosexual couples) as well as gender asymmetry with both disproportional male perpetration and disproportionate female perpetration within samples. However, recent research also indicates that possibly more than half (45 % – 72 %) of IPV is bidirectional and characterized as reciprocated violence within couples (Caetano et al., 2005; Langhinrichsen-Rohling et al., 2012; Whitaker et al., 2007). Given such high prevalence rates and its multiple adverse physical, psychological, and relational correlates, IPV is considered a significant public health crisis (Nilon & Centers for

Disease Control and Prevention, 2017). In response, social scientists have examined the typologies, trajectories, antecedents, and consequences of IPV – and within this domain a significant amount of research has focused on personality variables as risk factors for both IPV perpetration and victimization. These studies include diverse subpopulations as defined by gender, race/ethnicity, income, age, and education; however, to date very little is known regarding personality characteristics and IPV among pregnant women.

Currently, estimates of IPV rates among pregnant women in the United States are highly variable, ranging from population-based studies reporting lower ranges of 2.9 % to 5.7 % (Centers for Disease Control and Prevention, 1998) to clinic-based studies reporting rates from 10 % to over 50 % (Bailey & Daugherty, 2007). These rates vary significantly as a function of measurement instrument, study design, sample demographics, and type of IPV assessed (Bailey, 2010). However, researchers examining prevalence data across sources estimate that over 300,000 pregnant women experience some form of IPV every year in the United States (Bullock et al., 2001). As a public health crisis, these numbers are even more alarming when considering that pregnancy is a uniquely vulnerable period for both the pregnant woman and the developing fetus given the already elevated levels of psychophysiological stress experienced normatively during pregnancy. As such, IPV

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poses not only significant risk for the physical safety and well-being of pregnant women, but it also poses clinical risk for women's depression, anxiety, post-traumatic stress, and suicidal thoughts and self-injury (Chisholm et al., 2017). Furthermore, evidence suggests that IPV during pregnancy is associated with the health and viability of the developing fetus, including risk for low birth weight and preterm delivery (Bailey, 2010). Although numerous studies detail the prevalence and demography of IPV during pregnancy, very little is known regarding the contemporaneous psychosocial correlates. The current study examines associations between psychological factors – focusing on the Dark Triad personality traits – and IPV among women in heterosexual relationships during the latter half of pregnancy.

## 2. Dark Triad traits and intimate partner violence

Dark Triad traits (DT) represent three distinct personality dimensions associated with negative social interactions and relationships: psychopathy, Machiavellianism, and narcissism. In this framework, *psychopathy* reflects a constellation of callousness and disregard for others, limited emotional experience and impulsive behavior; *Machiavellianism* reflects a tendency towards manipulation and deception of others to the benefit of oneself; and *narcissism* reflects entitlement, grandiosity, and the need for social recognition (Paulhus & Williams, 2002). Each DT trait correlates with general aggression and violence (Westhead & Egan, 2015), as well as psychological, physical, and sexual abuse between domestic partners (Plouffe et al., 2020). In fact, recent meta-analyses by Collison and Lynam (2021) indicate moderate effect sizes for the correlations between psychopathy and both physical IPV perpetration and physical IPV victimization, as well as a moderate effect size for psychopathy and psychological IPV perpetration and a small effect size for psychopathy and psychological IPV victimization. These analyses also reported smaller effect sizes for correlations between narcissism and both physical IPV perpetration and psychological IPV perpetration, and no correlation between narcissism and victimization (Collison & Lynam, 2021). Similarly robust associations between psychopathy and IPV have been recently reported in recent comprehensive review of psychopathy and IPV (Robertson et al., 2020).

Interestingly, research examining all three components of the Dark Triad traits are limited, and among those, psychopathy was consistently the most robust predictor (compared to Machiavellianism and narcissism). One such study, by Carton and Egan (2017), has specific relevance to the current hypotheses given its simultaneous consideration of all three DT traits and the Big Five personality factors (Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness). Although bivariate correlations revealed positive associations for IPV with Machiavellianism and psychopathy and negative correlations for IPV with agreeableness and openness, the unique associations for each predictor with IPV were less clear. Regression analyses indicated that psychopathy and narcissism only offered modest prediction of specific components of IPV (e.g., psychological abuse in the forms of restrictive engulfment and denigration) above and beyond the effects of Big Five personality factors. In contrast, the authors concluded that – across all measures and components of IPV – lower agreeableness was the most robust and consistent predictor among all Big Five and Dark Triad variables (Carton & Egan, 2017). These findings suggest that, at least within a community-based sample, the more atypical personality dimensions reflected in DT traits may not uniquely predict IPV when examined simultaneously with other personality covariates.

Finally, there are distinct but overlapping scientific literatures on personality domains, aggression and hostility, psychopathology and IPV (Plouffe et al., 2020). It is possible that general aggression and hostility levels may mediate the associations between Dark Triad traits and IPV. Although we are currently unaware of an existing study of these potential indirect pathways, independent studies report positive associations between each DT trait and general hostility (Jones & Neria, 2015) as well as positive associations between hostility and IPV (Birkley &

Eckhardt, 2015; Tiberio & Capaldi, 2019). It is plausible that personality dispositions towards callousness and deceit may underlie general dispositions towards aggression and hostility that ultimately manifest as aggression within the specific context of intimate relationships. It is also possible that depressive symptomatology may mediate the associations between DT traits and IPV (again we are unaware of existing mediational analyses testing these indirect associations). Researchers have documented robust positive associations between women's depression symptomatology and their IPV perpetration (Breet et al., 2019; Swan et al., 2005) and IPV victimization (Graham et al., 2012; for meta-analytic review see Stith et al., 2004). However, the scientific findings linking depression and DT traits remain inconclusive with prior research reporting evidence for positive associations (Al Ain et al., 2013; Bakir et al., 1996; Gómez-Leal et al., 2019; Šram, 2017), negative associations (Hansen et al., 2013), and no associations (Pugovkina & Popinako, 2014). Most recently, Bonfá-Araujo et al. (2021) also reported directional differences among DT traits with psychopathy and Machiavellianism observed as positively correlated with depressive symptoms and narcissism negatively correlated with depressive symptoms. Given recent replications of positive associations between depressive symptoms and (at least some) DT traits, it is plausible that such atypical personality characteristics heighten individual vulnerabilities for experiences of depression and subsequent risks for IPV perpetration and victimization.

### 2.1. The current study

The current study contributes to the existing research on DT traits and IPV in three significant domains. First, it is one of the first studies to simultaneously examine DT traits, the Big Five personality dimensions, and general hostility and depressive symptoms as unique predictors of IPV. Second, it will be the first study to explicitly test potential indirect effects between DT traits and IPV as mediated by general hostility and depressive symptoms. And third, it is the first study to examine this constellation of personality and psychosocial predictors of IPV among pregnant women. Based on the extant empirical literature in these domains, two specific hypotheses are proposed. First, although we anticipate multiple bivariate correlations between predictors and IPV outcomes, we anticipate that psychopathy will be the most robust unique predictor of IPV perpetration and IPV victimization. Second, we anticipate that hostility will function as a significant mediator of the associations between DT traits and IPV perpetration and victimization. Given the inconsistent empirical findings linking DT traits and depressive symptoms, we also examine the potential mediating role of depression as an exploratory analysis.

## 3. Methods

### 3.1. Participants

Data originated from 203 pregnant women who participated in the Brain and Early Experience Study (Mills-Koonce et al., 2022). Participants were in the second half of pregnancy, identified as cisgender and heterosexual, and were currently in romantic relationships with men. The sample was diverse with respect to race (32.7 % identify as Black), ethnicity (7.7 % identify as Hispanic or Latina), and family income (35.6 % report using federal or state public assistance). Participant average age was 30.8 years ( $SD = 5.2$  years) and most participants lived with their romantic partner (92.8 %) and were married (72.6 %).

### 3.2. Procedure

Participants attended a laboratory visit during their second or third trimester, during which they completed the survey items used in the current analyses. The local IRB (study #17-1914) approved all study procedures.

### 3.3. Measures

#### 3.3.1. Intimate partner violence

Intimate partner violence (IPV) was measured using two subscales (verbal aggression and physical violence) of the Conflict Tactics Scale (CTS; Straus, 1979; Newton et al., 2001). Participants completed the questionnaire by reporting on their own behaviors (IPV perpetration) and their partners' behaviors (IPV victimization), which resulted in four variables: (a) verbal IPV perpetration, (b) physical IPV perpetration, (c) verbal IPV victimization, and (d) partner IPV victimization.

#### 3.3.2. Dark Triad traits

Machiavellianism, narcissism, and psychopathy traits were assessed using the Short Dark Triad Measure (SD3; Jones & Paulhus, 2011). The items in the SD3 come from the Self-Report of Psychopathy (Hare et al., 1989), the Mach-IV (Christie & Geis, 1970) and the Narcissistic Personality Inventory (Raskin & Hall, 1979).

#### 3.3.3. Big Five personality traits, depression symptoms, and hostility

The current analyses include measures of extraversion, agreeableness, conscientiousness, emotional stability, and openness as measured by Ten-Item Personality Inventory (TIPI; Gosling et al., 2003). This short, research-focused instrument is based on Goldberg's Big Five Markers (Goldberg, 1992), the BFI (John et al., 1991) and Adjective Checklist markers (John & Srivastava, 1999) and has demonstrated adequate test-retest reliability and convergent and discriminant validity (Gosling et al., 2003). Depression and hostility symptoms were measured by the Brief Symptom Inventory (Derogatis & Spencer, 1982).

#### 3.3.4. Demographic information

Participants provided information about their race and ethnicity, family income-to-needs ratio (calculated as the total household income divided by the poverty threshold for a family of that size), residential status (co-residing with romantic partner or not), marital status (married or not), and their age.

#### 3.3.5. Analytic strategy

Analyses began with the examination of bivariate associations among all variables. Next, using MPlus we conducted regression analyses (using MPlus) to examine the DT traits, the Big 5 Personality variables, and depression symptoms and general hostility as main effect predictors of each of the IPV outcomes. Finally, we conducted indirect pathway analyses (using MPlus) to examine hostility and depression as potential mediators of associations between DT traits and IPV outcomes. All regression analyses included demographic variables that correlated with at least one predictor variable and one outcome variable.

### 4. Results

For descriptive statistics regarding associations between key study variables and sample demographics, see Supplementary Table A. Based on these analyses, participant race, income-to-needs ratio, and marital status were included as covariates in all subsequent regression analyses. Descriptive statistics examining the bivariate correlations between key study variables are presented in Table 1. Of note, all IPV outcome variables were significantly intercorrelated, as were most of the psychosocial predictor variables. Furthermore, IPV variables correlated with most DT traits, did not correlate with the Big Five personality traits (except for emotional stability), and did correlate with both depression and hostility.

Regression parameters for the prediction of IPV outcomes are presented in Table 2. Pregnant women's psychopathy and hostility positively predicted self-ratings of their own verbal and physical IPV perpetration. For their report of their partner's IPV, pregnant women's depression and hostility were unique positive predictors of their experiences of verbal IPV victimization; however, only depression was a unique positive predictor of women's physical IPV victimization. Although conscientiousness predicted verbal IPV perpetration, this was interpreted as a potential regression artifact given the absence of a prior bivariate correlation.

Finally, we introduced hostility and depression as mediators within indirect pathways linking DT traits and IPV outcomes. The model resulted in adequate fit:  $\chi^2 = 21.02$ ,  $p = .021$ ; RMSEA = 0.073; CFI = 0.982; TLI = 0.871; SRMR = 0.032. The indirect pathway from psychopathy  $\rightarrow$  hostility  $\rightarrow$  women's verbal IPV perpetration was significant,  $B = 0.08$  ( $SE = 0.03$ ),  $p = .004$ . In addition to its significant direct effect, this resulted in a total effect of psychopathy on women's verbal IPV perpetration  $B = 0.32$  ( $SE = 0.08$ ),  $p = .001$ . The indirect pathway from psychopathy  $\rightarrow$  hostility  $\rightarrow$  women's physical IPV perpetration was also significant,  $B = 0.06$  ( $SE = 0.03$ ),  $p = .025$ . In addition to its significant direct effect, this resulted in a total effect of psychopathy on women's physical IPV perpetration of  $B = 0.23$  ( $SE = 0.08$ ),  $p = .005$ . No other significant indirect pathways were observed.

### 5. Discussion

Using a racially, ethnically, and socioeconomically diverse sample of pregnant women, the current study replicates previous findings and extends the scientific literature on psychosocial predictors of IPV that, till now, had not been examined within this population. Consistent with prior reports, IPV perpetration and victimization demonstrated significant bivariate correlations with multiple psychosocial predictors. However, in regression analyses, only psychopathy and hostility

**Table 1**  
Correlations across key variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Verbal IPV Perp.	–												
2. Verbal IPV Vict.	0.79**	–											
3. Physical IPV Perp.	0.64**	0.57**	–										
4. Physical IPV Vict.	0.53**	0.54**	0.65**	–									
5. Extraversion	-0.04	-0.02	0.04	-0.01	–								
6. Agreeableness	-0.04	-0.05	-0.06	0.09	-0.07	–							
7. Conscientiousness	-0.06	-0.08	0.02	0.06	0.12	0.17*	–						
8. Emotional stability	-0.22**	-0.18*	-0.08	-0.01	0.16*	0.25**	0.52**	–					
9. Openness	-0.04	0.02	0.08	0.07	0.29**	0.13	0.24**	0.29**	–				
10. Depression	0.29**	0.33**	0.25**	0.20**	-0.20**	-0.02	-0.31**	-0.44**	-0.15*	–			
11. Hostility	0.40**	0.38**	0.31**	0.13	-0.06	-0.18*	-0.31**	-0.45**	-0.11	0.50**	–		
12. Machiavellianism	0.24**	0.22**	0.20**	0.16*	-0.03	-0.15*	-0.21**	-0.17*	-0.02	0.16*	0.21**	–	
13. Narcissism	0.09	0.07	0.19**	0.09	0.46**	-0.02	0.31**	0.22**	0.41**	-0.14*	-0.09	0.28**	–
14. Psychopathy	0.36**	0.30**	0.31**	0.14*	0.11	-0.27**	-0.30**	-0.26**	0.05	0.26**	0.43**	0.52**	0.21**

Notes: "Pert." denotes perpetration of IPV; "Vict." Denotes victimization of IPV.

\*  $p < .05$ .

\*\*  $p < .01$ .

**Table 2**  
Regression analyses.

	Verbal IPV perpetration			Physical IPV perpetration			Verbal IPV victimization			Physical IPV victimization		
	B	SE	p	B	SE	p	B	SE	p	B	SE	p
Race	-0.01	0.07	0.885	0.08	0.08	0.267	-0.09	0.08	0.225	0.04	0.08	0.624
Income	0.07	0.07	0.287	0.00	0.07	0.975	-0.02	0.07	0.810	-0.06	0.08	0.415
Married	-0.08	0.07	0.306	-0.03	0.08	0.703	-0.10	0.08	0.169	0.10	0.08	0.218
Extraversion	-0.02	0.07	0.801	-0.01	0.08	0.879	0.01	0.08	0.894	-0.01	0.08	0.952
Agreeableness	0.08	0.07	0.225	0.01	0.07	0.882	0.02	0.07	0.820	0.09	0.07	0.208
Conscientiousness	<b>0.17</b>	<b>0.08</b>	<b>0.026</b>	0.13	0.08	0.096	0.09	0.08	0.269	0.14	0.08	0.103
Emotional stability	-0.11	0.08	0.197	0.01	0.09	0.901	-0.02	0.08	0.794	0.04	0.09	0.687
Openness	-0.04	0.07	0.604	0.03	0.07	0.677	0.05	0.07	0.474	0.05	0.08	0.488
Depression	0.10	0.08	0.200	0.14	0.08	0.079	<b>0.20</b>	<b>0.08</b>	<b>0.010</b>	<b>0.21</b>	<b>0.08</b>	<b>0.011</b>
Hostility	<b>0.26</b>	<b>0.08</b>	<b>0.001</b>	<b>0.20</b>	<b>0.08</b>	<b>0.014</b>	<b>0.23</b>	<b>0.08</b>	<b>0.004</b>	0.06	0.09	0.485
Machiavellianism	0.06	0.08	0.408	0.05	0.08	0.536	0.08	0.08	0.286	0.12	0.08	0.155
Narcissism	0.03	0.09	0.731	0.08	0.09	0.385	0.04	0.09	0.691	0.02	0.10	0.864
Psychopathy	<b>0.24</b>	<b>0.08</b>	<b>0.004</b>	<b>0.17</b>	<b>0.09</b>	<b>0.047</b>	0.11	0.08	0.181	0.08	0.09	0.403
<i>R</i> <sup>2</sup>	0.26			0.23			0.20			0.11		
SE	0.05			0.05			0.05			0.04		
<i>p</i>	0.001			0.001			0.001			0.01		

Note: Coefficients are standardized betas;

remained as unique predictors of verbal and physical IPV perpetration. These findings align with previous meta-analyses and systematic reviews documenting psychopathy as a robust predictor of IPV, although few (if any) of those cited studies included all Dark Triad traits, all Big Five personality traits, and depression and hostility measures. Furthermore, one of the novel findings from these analyses is that hostility mediated partially mediated the association between psychopathy and both verbal and physical IPV perpetration. It is possible that psychopathy traits among pregnant women may manifest in the form of general hostility, which when expressed in the context of romantic relationships is experienced as intimate partner violence. Such an interpretation suggests that, although psychopathy may be a unique predictor of IPV perpetration, such aggression rooted in psychopathy may be more generally expressed and not limited to specific relational contexts. Here we must note that, due to the cross-sectional design of this study, the proposed direction of effects cannot be established. However, we believe the proposed pathway is more plausible than IPV perpetration leading to greater general hostility and increased psychopathy traits. Future research on this topic should include repeated longitudinal assessment across all variables to better model the directionality of change over time to support stronger inferences of causality.

Interestingly, although previous research reported that psychopathy positively predicted both IPV victimization (in addition to perpetration), this was only observed in bivariate analyses. In regression analyses, pregnant women's depression symptomatology was the predominant predictor of both verbal and physical IPV victimization (hostility also predicted verbal IPV victimization). No directional assumptions can be made regarding this association; it is possible that women's reports of depression may result from IPV victimization as opposed to being an underlying cause of the experience. Previous research suggests both potential directional pathways – Gustafsson and Cox (2012) report subsequent increases in women's depression following increases in experiences of IPV, while Graham et al. (2012) reported that degree of depression may increase the likelihood of victimization of domestic violence. Future longitudinal research should capitalize on repeated measurement to better establish directionality of effects to support inferences regarding causation. Also, although we did not observe an indirect pathway from DT traits to IPV outcomes via depressive symptoms, we believe our exploratory analyses were warranted given the bivariate associations between DT traits and depression symptoms that replicated previous findings by Bonfá-Araujo et al. (2021).

In addition to the cautions inherent to drawing inferences from cross-sectional data, other limitations of the current study should also be noted. First, all data are self-reports from the female partner in the relationship, thus potentially limiting the measurement validity and our

ability to examine person-specific and reporter-specific effects. Second, although measurements of Dark Triad traits, depression, hostility, and IPV utilized well-established measures, the Ten-Item Personality Inventory (measuring the Big Five personality traits) is highly abbreviated compared to traditional personality measures and may have limited measurement sensitivity. This measurement constraint may explain the limited findings – even in bivariate analyses – between Big Five measures and IPV (although it should be noted that most Big Five variables did significantly correlate with Dark Triad traits, depression, and hostility). Third, there is potential construct convergence in the measurement of hostility (including items such as “getting into frequent arguments” and “urges to beat, injure, or harm someone”) and IPV that may artificially inflate their association and the indirect pathway from psychopathy to hostility to IPV perpetration. Although the hostility measure is target general and the IPV measure is target specific (the participants romantic partner), the overlap in overt behavior measurement is acknowledged as a potential weakness in the current study design.

Finally, to examine the unique effects of Dark Triad traits above and beyond other personality, depression, and hostility variables, a total of ten predictors (plus three demographic covariates) were included in the prediction of all IPV variables. Since many of these predictors were correlated with one another, it is possible that collinearity issues may be present in the regression analyses. To compensate for this possibility, we conducted multiple sensitivity analyses that reduced the number of predictors based upon bivariate correlations and regression parameters; none of these analyses resulted in substantively different patterns of results. In addition, given the relatively small sample size ( $N = 203$ ) and the numerous covariates mentioned above, we conducted power analyses that confirmed adequate power ( $> 0.80$ ) to detect small to medium size effects. As such, for the purposes of parsimony and consistency, we maintained the full slate of predictor variables in the final statistical models.

Despite these limitations, the current study provides significant advances in the study of personality traits and IPV. To our knowledge, this is the first study identifying a unique direct effect of psychopathy on verbal and physical IPV perpetration – as well as an indirect effect mediated by hostility – above and beyond other Dark Triad traits, Big Five personality variables, and depression symptoms. Similarly, it is also the first study to identify the unique association of depression and IPV victimization above and beyond Dark Triad Traits, Big Five personality variables, and general hostility. Finally, this is the first study (to our knowledge) to examine these associations among pregnant women. This is a critically important and vulnerable population that already experience elevated pregnancy-based stressors, and the added risks from

exposure to IPV extend to both the pregnant woman and the developing fetus. The current findings suggest that the underlying psychosocial predictors of IPV perpetration and victimization for pregnant women are consistent with risk factors observed in the general population. Future research should attempt to replicate these findings and examine the developmental consequences for women and children.

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### CRediT authorship contribution statement

W. Roger Mills-Koonce contributed to the manuscript in the following forms: data curation, formal analysis, funding acquisition, investigation, methodology, and wrote the original draft.

Maya Bracy contributed to the manuscript in the following forms: formal analysis and co-authored the original draft.

Michael T. Willoughby contributed to the manuscript in the following forms: funding acquisition, investigation, methodology, and review and editing of the manuscript.

Sarah J. Short contributed to the manuscript in the following forms: funding acquisition, project administration, and review and editing of the manuscript.

Cathi B. Propper contributed to the manuscript in the following forms: funding acquisition, project administration, and review and editing of the manuscript.

### Declaration of competing interest

None.

### Data availability

The data that has been used is confidential.

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