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Dark Personality Traits and Anger in Cyber Aggression Perpetration: Is Moral Disengagement to Blame?

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A number of dark personality traits (e.g., psychopathy and sadism) have been shown to predict cyber aggression perpetration among emerging adults; however, trait anger and moral disengagement, both useful in understanding other forms of aggression, have not typically been included in these models. The present study tested a model in which dark personality traits and trait anger were expected to predict cyber aggression perpetration and moral disengagement was expected to partially mediate these relationships. Emerging adult volunteers ($N = 404$; 41% men, 59% women) between 18 and 29 ($M = 25.16$, $SD = 2.76$) recruited through Amazon's Mechanical Turk completed an online survey assessing the variables of interest. Structural equation modeling showed that sadism ($\beta = 0.450$, $p < .001$), psychopathy ($\beta = 0.118$, $p = .035$), and anger ($\beta = 0.099$, $p = .007$) predicted cyber aggression perpetration when taking respondent sex and college enrollment into account, indicating a small effect for anger and psychopathy and a medium effect for sadism. Moral disengagement partially mediated these relationships (24.11% for sadism, 37.23% for psychopathy, and 29.79% for anger). Both trait anger and moral disengagement may be useful in preventing cyber aggression and informing the development of clinical interventions for perpetrators (e.g., anger management, moral reasoning training, improving distress tolerance). This study adds to the literature on personality traits and cyber aggression among emerging adults.

Public Policy Relevance Statement

Cyber aggression is a serious public health problem among emerging adults with adverse correlates ranging from impaired academic performance to suicidal ideation. Scientifically informed prevention and intervention strategies are needed to mitigate the impact of this behavior. Psychopathic and sadistic personality traits, as well as anger proneness, are important risk factors for cyber aggression among emerging adults. The relationships of these risk factors to cyber aggression perpetration were partially mediated by moral disengagement, suggesting that cognitive processes such as diffusion of responsibility and dehumanization may be key to understanding why some emerging adults engage in cyber aggression.

Keywords: cyber aggression, moral disengagement, dark personality traits, trait anger

Online communication has become essential in modern society (Rivers & Noret, 2010), with nine in 10 U.S. adults using the Internet (Pew Research Center, 2019). Unfortunately, cyber ag-

gression (i.e., aggressive behavior delivered through technologies such as social media and text messaging) has emerged as a means of harming others online (Bauman & Baldasare, 2015; Goodboy & Martin, 2015; Kellerman et al., 2013). This is cause for concern amid mounting evidence of the many adverse correlates of cyber aggression, including depressive symptoms, anxiety, stress, reduced academic performance, and suicidal ideation (Bonanno & Hymel, 2013; Kowalski et al., 2014; Kowalski & Limber, 2013; Patchin & Hinduja, 2010; Wright, 2014). Moreover, the relationship between perpetration and victimization appears to be reciprocal in that perpetrators are often victims (Gibb & Devereux, 2014). An improved understanding of the factors contributing to cyber aggression perpetration is needed to inform efforts to prevent the behavior and develop effective interventions for perpetrators.

Although little research has compared rates of cyber aggression cross-culturally, it has been suggested that its prevalence may be

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higher in the United States due to relatively higher rates of Internet use, more permissible attitudes toward cyber aggression, and differences in self-construal (e.g., an individualist vs. collectivist cultures; Barlett et al., 2014). Within the United States, emerging adults (i.e., those 18–29 years of age) appear to be at increased risk of cyber aggression perpetration and victimization and may be more vulnerable to its effects due to their identity exploration, instability, and interpersonal conflict (Arnett et al., 2014; Kellerman et al., 2013), as well as their substantial technology use. Additionally, Kellerman and colleagues (2013) found that emerging adults in the United States have unique motives for cyber aggression perpetration, including curbing negative emotions, self-protection/privacy, insecurity/jealousy, as a way to engage in deprecating humor, and as a form of retaliation (perhaps in response to previous victimization). Thus, efforts to expand the scientific knowledge of cyber aggression are needed for emerging adults in the United States.

Understanding Cyber Aggression

Historically, research on cyber aggression among emerging adults has been limited by two related barriers: (a) the use of inconsistent terminology and (b) a lack of psychometrically sound measures suitable for use with this population. Briefly, *cyber aggression* is defined as, “intentional harm delivered by the use of electronic means to a person or a group of people irrespective of their age, who perceive(s) such acts as offensive, derogatory, harmful or unwanted” (Grigg, 2010, p. 152). This is a broader construct than *cyberbullying* in that it omits the requirements that the behavior be repetitive and involve a power differential (Olweus, 1993; Pabian et al., 2015; Wright & Li, 2013). It is also broader than *trolling*, which refers to “behaving in a deceptive, destructive, or disruptive manner in a social setting on the Internet with no apparent instrumental purpose” (Buckels et al., 2014, p. 97). Thus, studies involving cyberbullying (Kowalski & Limber, 2013; Zetzulka & Seigfried-Spellar, 2016) or trolling (Buckels et al., 2014; Sest & March, 2017) are relevant to cyber aggression but may not be assessing the full scope of the broader cyber aggression construct.

Several features of cyber aggression distinguish it from overt and relational forms of aggression implemented without electronic assistance (Dempsey et al., 2011). Technology allows some aggressors to remain relatively anonymous (Slonje & Smith, 2008), facilitating aggression by reducing accountability (Zacchilli & Valerio, 2011). Aggressors who do not to conceal their identities may still benefit from a degree of “invisibility” that comes with indirect forms of aggression, especially when delivered via online platforms (i.e., the perpetrator not being personally known to the victim, deletion of aggressive comments; Bauman & Baldasare, 2015; Slonje & Smith, 2008). Other important features of cyber aggression involve the increased accessibility of the victim to the perpetrator and the potential for a larger audience than is typical of traditional bullying (Slonje & Smith, 2008). Victims of cyber aggression may never feel safe from perpetrators who can aggress at any time from any location and who can publicize their attacks (Zacchilli & Valerio, 2011).

Predictors of Cyber Aggression

Runions and colleagues (2017) proposed a quadripartite typology of cyber aggression perpetration involving the perpetrator’s intent and self-control based on Howard’s (2011) Quadripartite Violence Typology (QVT). This typology has been validated with college student samples and provides a useful starting point for examining potential predictors of cyber aggression perpetration among emerging adults. The QVT classifies cyber aggression as either appetitive or aversive (i.e., the act either creating positive affect in the aggressor or removing negative affect from the aggressor) and either impulsive or controlled. Based on this model and the empirical support for these variables as robust predictors of other forms of aggression (Buckels et al., 2013; Cleckley, 1955), we expected that psychopathic traits (appetitive/impulsive), sadistic traits (appetitive/controlled), and trait anger (aversive/controlled and aversive/impulsive) would predict cyber aggression perpetration.

Psychopathic Traits

Psychopathic personality traits refer to a combination of interpersonal (e.g., grandiosity, arrogance, callousness) and affective (e.g., short-tempered, lack of guilt or empathy) characteristics leading to antisocial behaviors and social deviancy (Cleckley, 1955; Hare, 1999, 2003). Patrick et al.’s (2009) triarchic model of psychopathy outlined three key themes (i.e., disinhibition, boldness, and meanness) within psychopathy research (Sellbom et al., 2015). Disinhibition describes the propensity to act impulsively and an inability to regulate affect or refrain from acting on urges (Krueger et al., 2007). Boldness or fearless dominance involves emotional resilience, thrill-seeking behaviors, and social effectiveness (Patrick et al., 2009; Stanley et al., 2013). Lastly, meanness includes decreased empathy, a deficiency of close relationships, dishonesty, and rebelliousness (Patrick et al., 2009; Stanley et al., 2013). These three traits coincide with some of the motives for cyber aggression perpetration among emerging adults (e.g., disinhibition relating to negative affect as a motive, boldness relating to thrill-seeking behaviors such as deprecating humor, and meanness relating to retaliation motives) described by Kellerman and colleagues (2013).

Among the Dark Triad traits (i.e., psychopathy, narcissism, and Machiavellianism), psychopathic traits are considered the most treacherous (Paulhus & Williams, 2002). They are related to risky sexual behavior (Fulton et al., 2010), overt and relational aggression (Schmeelk et al., 2008; Van Baardewijk et al., 2009), violent criminal history (Campbell et al., 2004), bullying (Antoniadou et al., 2016; Ragatz et al., 2011), and differences in moral foundations (e.g., harm/care, in-group loyalty; Mededovic & Petrović, 2016). Several studies have found that the total scores from various measures of psychopathic traits are positively related to cyber aggression among emerging adults (Craker & March, 2016; Goodboy & Martin, 2015; Kokkinos et al., 2014; Nocera & Dahlen, 2020); however, few used psychometrically sound measures of cyber aggression appropriate for emerging adults, and many used brief measures of psychopathy, which may not adequately capture

the construct. Thus, we expected that psychopathic traits would be positively associated with cyber aggression perpetration.

Sadistic Traits

Sadism refers to “the direct achievement of pleasure from harming others” (Baumeister & Campbell, 1999, p. 211), which seems to directly relate to the appetitive facets of the QVT (Howard, 2011). Numerous studies have assessed sadistic behaviors in emerging adults (Buckels et al., 2013; Chabrol et al., 2017; Plouffe et al., 2017; Reidy et al., 2011), and measures of sadistic personality traits or “everyday sadism” (a subclinical form of sadism) such as the Comprehensive Assessment of Sadistic Tendencies (CAST) have been developed using emerging adult samples (Buckels & Paulhus, 2014).

Similar to psychopathy, sadistic traits relate to various antisocial behaviors (Buckels et al., 2013) and warrant further evaluation in relation to cyber aggression perpetration. These traits predict a tendency to continue harming a victim who would not retaliate (Buckels et al., 2013), unprovoked aggression (Reidy et al., 2011), and playing violent video games (Greitemeyer, 2015). There is also evidence linking sadistic traits to cyber aggression (Buckels et al., 2014; Craker & March, 2016) and trolling (Buckels et al., 2014). In fact, Buckels and colleagues (2014) found that sadism was the sole predictor of trolling behaviors when it was assessed along with the Dark Triad traits. Thus, we expected that sadistic traits would be positively associated with cyber aggression perpetration.

Trait Anger

Trait anger, defined as one’s general propensity to experience angry feelings across situations (Spielberger, 1999), is the affective component of trait aggression (Buss & Perry, 1992). It is a theoretically relevant and empirically supported predictor of aggressive behavior and shows greater variability in non-clinical samples than dark personality traits (Greitemeyer, 2015; Kalmoe, 2015; Pailing et al., 2014). Trait anger is positively associated with overt physical aggression (Kolla et al., 2017), intimate partner aggression (Maldonado et al., 2015), and cyberbullying (Lonigro et al., 2015). As Runions and colleagues (2013) suggested that anger can be a motivator for impulsive and measured aggression, trait anger fits with both impulsive and controlled factors of the QVT (Howard, 2011).

In an online setting, where hostile interpretations are amplified (Robson & Witenberg, 2013; Wright, 2016), trait anger is especially relevant (Wilkowski & Robinson, 2010) and is a better predictor of cyberbullying than state anger (Lonigro et al., 2015). Further, Wang and colleagues (2017) found that trait anger predicted cyberbullying and that moral disengagement partially mediated this relationship. Although the generalizability of these findings was limited by the use of a Chinese sample and a focus on the narrower construct of cyberbullying instead of cyber aggression, they support the relevance of trait anger to cyber aggression and suggest a possible role for moral disengagement. We expected that individual differences in trait anger

would be positively associated with cyber aggression perpetration.

Moral Disengagement: A Potential Mediator

Moral disengagement is a self-regulatory process that allows people to behave in ways that conflict with their values without experiencing cognitive or emotional distress (e.g., guilt; Bandura, 1991; Renati et al., 2012). It involves altering the perception of one’s behavior (moral justification, euphemistic labeling, advantageous comparison), the role the perpetrator plays (displacement of responsibility, diffusion of responsibility), the outcome (distortion of consequences), and/or the victim (dehumanization, attribution of blame; Bandura, 2002; Caprara et al., 2014; Renati et al., 2012). The relationship between moral disengagement and aggression is well established, as there is a direct positive relationship between moral disengagement and aggression proneness, and negative relationships with prosocial behaviors (Bandura, 1991; Caprara et al., 2014; Paciello et al., 2008; Wang et al., 2017). Despite support for a direct relationship between moral disengagement and aggressive behavior, moral disengagement has attracted even more interest as a mediator of the relationships between various personality factors (e.g., trait anger) and aggressive behavior (Caprara et al., 2014; Wang et al., 2017). For example, Caprara and colleagues (2014) found that moral disengagement mediated the relationships of hostile rumination and irritability to aggression among emerging adults.

Wang and colleagues (2017) suggested that the general aggression model (Anderson & Bushman, 2002) may help to explain why moral disengagement should mediate the relationships of many relevant predictor variables to aggressive behavior. In this model, personal factors (e.g., personality traits) are thought to impact an individual’s propensity to act aggressively through cognitive scripts used to justify such acts. As moral disengagement involves the use of cognitions to frame aggressive acts, the cognitive processes involved in moral disengagement function as cognitive scripts, connecting personality traits and aggression. Thus, moral disengagement provides one possible mechanism for explaining why individuals with higher levels of certain personality traits (e.g., psychopathic traits, sadistic traits, or trait anger) are more likely to engage in aggressive behavior.

Renati and colleagues (2012) suggested that technology may provide a distinct context in which moral disengagement is particularly relevant due to the less direct and potentially anonymous nature of much electronic communication. The few studies of cyber aggression perpetration to include moral disengagement have produced promising results. Moral disengagement is positively related to cyber aggression just as it is to other forms of aggression (Perren & Gutzwiller-Helfenfinger, 2012; Pornari & Wood, 2010). Less is known about whether moral disengagement might mediate relationships between personality traits and cyber aggression perpetration, though Wang and colleagues (2017) found that moral disengagement mediated the relationship between trait anger and cyberbullying among young adults in China. Thus, we expected that moral disengagement would partially mediate the relationship of psychopathic traits, sadistic traits, and trait anger to cyber aggression perpetration.

The Present Study

The present study examined the relationships of two dark personality traits (i.e., psychopathic traits and sadistic traits), trait

anger, and moral disengagement to cyber aggression perpetration among emerging adults. Although these variables have been linked to aspects of cyber aggression or similar constructs in at least one previous study, no studies have examined them simultaneously using structural equation modeling. Moreover, moral disengagement has not previously been examined as a mediator of the relationships of psychopathic and sadistic traits and trait anger to cyber aggression perpetration. Thus, this study aimed to inform our understanding of the mechanisms through which cyber aggression occurs by examining moral disengagement as one such mechanism. We predicted that psychopathic traits, sadistic traits, and trait anger would positively predict cyber aggression perpetration and these relationships would be partially mediated by moral disengagement.

Method

Participants and Procedure

The sample included 404 (41% men and 59% women) emerging adult volunteers recruited from Amazon's Mechanical Turk (MTurk) website. This sample size was based on Cohen's (1992) recommendations for a fixed power of .08, which would require at least 126 cases based on a medium effect size and $\alpha = .01$ and Stevens' (2012) recommendation to have a ratio of at least 20 to 1 participants to variables and pathways (i.e., 100 and 140). To qualify for the study, potential participants had to be between 18 and 29 ($M = 25.16$, $SD = 2.76$) and currently living within the United States (see Table 1). After reading a brief description of the study, individuals interested in participating were directed to an online consent form hosted through a secure online survey site (i.e., Qualtrics). Those who provided consent to participate were assigned a randomly generated MTurk worker code, and all potentially identifying information was deleted. Participants were then directed to a brief demographic and technology use questionnaire, followed by the Cyberbullying Experiences Survey Perpetration Scale (CESP), and all other study instruments in a randomized order to minimize potential order effects. Consistent with recommendations for detecting careless responding in online survey research (Meade & Craig, 2012), two directed response items (e.g., "Answer 'unlike me' to this question") were included in the survey instruments, and survey completion time was tracked. Participants who completed the study without failing the quality assurance checks received monetary compensation (\$.25). Completion of the study took approximately 15 min. The institutional review board at the researchers' university approved this study's procedures.

Instruments

Participant Demographic and Technology Use Questionnaire

A brief demographic questionnaire and technology use questionnaire developed for this study was administered to collect demographic information, confirm that participants qualified for the study, and collect information about participants' frequency and type of technology use. Respondents completed this question-

Table 1

Participant Demographic Characteristics

Demographic	<i>n</i>	%
Gender		
Male	163	40
Female	237	58
Transgender	2	0.5
Other	3	0.7
Racial identity		
African American	32	8
Asian American	73	18
Caucasian/White	264	65
American Indian/Alaska Native	21	5
Native Hawaiian/Pacific Islander	3	0.7
Other	11	3
Ethnicity identity		
Hispanic or Latino/a	97	24
Not Hispanic or Latino/a	307	76
Region of United States		
Northeast	84	21
Southeast	30	7
Southwest	78	19
South Atlantic	67	17
Midwest	16	4
West	23	6
Residential status		
Dorm	23	6
Off campus	81	10
On campus	31	8
With parents	42	10
Fraternity/sorority	3	0.7
Enrolled in college		
Yes	180	45
No	224	55
Greek status		
Yes	67	17
No	113	28
Type of university		
Public/state	124	31
Private	47	12
Liberal arts college	8	2
Religious affiliated	1	0.2
Size of school		
Less than 2,000 students	17	4
2,000–5,000 students	37	9
5,000–10,000 students	36	9
10,000–15,000 students	29	7
15,000–20,000 students	18	5
20,000–30,000 students	21	5
More than 30,000	22	5
College status		
Freshman	19	5
Sophomore	36	9
Junior	36	8
Senior	64	16
Graduate student or other	28	7

Note. $N = 404$.

naire prior to the other measures to make sure they were between the ages of 18 and 29 and residing in the United States.

Cyberbullying Experiences Survey Perpetration Scale

The 20-item CESP developed by Doane and colleagues (2013) for use with emerging adults was used to assess the participants' engagement in cyber aggression perpetration. Respondents rated the frequency with which they engage in each

behavior using a 6-point scale ranging from 0 (*never*) to 5 (*every day/almost every day*) such that higher scores indicate greater frequency of cyber aggression perpetration. The CESP yields both a total cyber aggression score (calculated by summing the item responses and dividing by the number of items), as well as four subscales: Malice, Public Humiliation, Unwanted Contact, and Deception. The measure has demonstrated adequate internal consistency ($\alpha = .77-.94$) in emerging adult samples (Bauman & Baldasare, 2015; Doane et al., 2013; Snyman & Loh, 2015), as well as support for construct validity, construct validity, and convergent validity (Bauman & Baldasare, 2015; Doane et al., 2013, 2014).

Triarchic Psychopathy Scale

The 58-item Triarchic Psychopathy Scale was developed by Patrick (2010) to assess psychopathic personality traits based on the triarchic model of psychopathy, which conceptualizes the construct as including three facets: Boldness, Meanness, and Disinhibition. Respondents rated each item using a 4-point scale ranging from 1 (*false*) to 4 (*true*). The scale yields both a total score, as well as three subscales scores: Boldness, Meanness, and Disinhibition. The total score, which was selected for this study to provide an overall index of psychopathic traits, was calculated by summing the item responses and then dividing by the number of items so that higher scores reflect more psychopathic traits. The Triarchic Psychopathy Scale has demonstrated adequate internal consistency ($\alpha = .76-.90$; Christian & Sellbom, 2016; Somma et al., 2016) and satisfactory convergent (Sica et al., 2015) and construct validity (Drislane et al., 2014; Sellbom & Phillips, 2013).

Comprehensive Assessment of Sadistic Tendencies

The 18-item CAST developed by Buckels and Paulhus (2014) was used to assess sadistic traits. Respondents rated each item using a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The scale yields both a total score, as well as three subscales: Direct Verbal Sadism, Direct Physical Sadism, and Vicarious Sadism. The total score, which was selected for this study to provide an overall index of sadistic traits, was calculated by summing the item responses and dividing by the number of items so that higher scores reflected more sadistic traits. The total score has demonstrated adequate internal consistency ($\alpha = .75-.89$) in emerging adult samples (Buckels & Paulhus, 2014; Buckels et al., 2014; Gonzalez & Greitemeyer, 2018), and the measure has shown evidence of construct and convergent validity (Buckels & Paulhus, 2014; Plouffe et al., 2017).

Moral Disengagement Measure

The 32-item Moral Disengagement Measure developed by Detert and colleagues (2008) based on Bandura and colleagues' (1996) moral disengagement questionnaire was used to assess participants' engagement in moral disengagement. Respondents indicated their agreement with each item using a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) so that higher scores indicate greater moral disengagement. The scale

yields a total score, as well as eight subscales reflecting the eight moral disengagement techniques (i.e., moral justification, euphemistic labeling, advantageous comparison, displacement of responsibility, diffusion of responsibility, distortion of consequences, attribution to blame, and dehumanization). The total score, which was used to provide an overall index of moral disengagement, was calculated by summing the item responses and then dividing by the number of items. The Moral Disengagement Measure has demonstrated adequate internal consistency ($\alpha = .85-.89$) in emerging adult samples (Chowdhury & Fernando, 2014; Chugh et al., 2014; Detert et al., 2008) and has demonstrated evidence of convergent and discriminant validity (Bandura et al., 1996; Detert et al., 2008).

Buss Perry Aggression Questionnaire–Short Form

The four-item Anger subscale from the 12-item Buss Perry Aggression Questionnaire–Short Form (BPAQ-SF), developed by Bryant and Smith (2001) and modified by Kalmoe (2015), was used to assess trait anger. The BPAQ-SF is a brief version of Buss and Perry's (1992) Aggression Questionnaire and appears to have psychometric advantages over the longer measure (Bryant & Smith, 2001). Kalmoe's (2015) modifications altered the instructions (i.e., "For each of the following statements, indicate whether the statement is true or false for you") and changed the response anchors of the 6-point scale to *completely false for me* (1) and *completely true for me* (6). Higher scores on the anger scale reflect greater levels of trait anger. The BPAQ-SF has demonstrated acceptable internal consistency ($\alpha = .80-.84$) and evidence of construct validity (Bryant & Smith, 2001; Kalmoe, 2015).

Results

Data Screening and Preliminary Analyses

Approximately 943 participants provided at least partial data; however, 70 cases were removed because they contained only missing data (i.e., the respondents did not complete any of the study questionnaires after the demographic and technology use questionnaire). Another 276 cases were removed due to not meeting the inclusion criteria (i.e., respondents fell outside the 18 to 29 age range or did not reside within the United States), and 193 cases were removed for failing the quality assurance checks (i.e., they answered one of more of the directed response items incorrectly and/or completing the survey in less time than approximately 90% of the sample). This resulted in the final sample of 404 participants on which analyses were completed. Two workers were missing data for one item each. These missing data points were replaced using the scale mean for each worker (e.g., the worker's item-level mean score for the CAST was used to replace their missing response).

After scoring all measures via SPSS syntax according to their respective manual and/or scoring procedure provided by their authors, alpha coefficients, descriptive statistics, and bivariate correlations among variables were computed (see Table 2). All measures yielded adequate alpha coefficients ($\alpha \geq .84$). Bivariate correlations revealed a number of significant relationships among variables, including all forms of cyber aggression perpetration (i.e., deception, unwanted contact, malice, and public humiliation).

Table 2*Means, Standard Deviations, Alpha Coefficients, and Correlations for All Study Variables*

Variables	1	2	3	4	5	6	7	8
1. PED	—							
2. PEUC	0.89	—						
3. PEM	0.76	0.80	—					
4. PEPH	0.84	0.95	0.81	—				
5. MD	0.76	0.80	0.72	0.80	—			
6. SAD	0.77	0.82	0.74	0.82	0.88	—		
7. PSY	0.69	0.74	0.69	0.75	0.82	0.80	—	
8. ANG	0.64	0.66	0.59	0.65	0.73	0.69	0.71	—
<i>M</i>	1.19	0.98	1.55	0.99	1.41	1.84	1.38	1.76
<i>SD</i>	1.46	1.44	1.37	1.46	1.02	1.63	0.46	1.43
α	0.91	0.97	0.93	0.93	0.98	0.95	0.94	0.86

Note. PED = CESP–Deception; PEUC = CESP–Unwanted Contact; PEM = CESP–Malice; PEPH = CESP–Public Humiliation; MD = moral disengagement; SAD = sadism; ANG = anger; PSY = psychopathy; CESP = Cyberbullying Experiences Survey Perpetration Scale. All correlations are significant ($p < .01$).

A 2 (sex) $\times$ 2 (college enrollment) analysis of variance was performed to examine potential sex differences in cyber aggression perpetration as well as potential differences between college students and noncollege students. There were significant main effects for sex, $F(1, 400) = 10.30, p = .001, \eta^2 = .03$, and college enrollment, $F(1, 400) = 18.13, p < 0.001, \eta^2 = .04$. Men reported more cyber aggression perpetration than women, and participants enrolled in college reported more cyber aggression perpetration than those not enrolled in college. The sex by college enrollment interaction was not significant, $F(1, 400) = .89, p = ns, \eta^2 = .01$. Due to these results, sex and college enrollment were added to the statistical model as covariates.

Before testing the full hypothesized model, a confirmatory factor analysis (CFA) was conducted on the CESP (Doane et al., 2013) to assess the utility of this measure in the full model. The model fit statistics revealed a root mean-square error of approximation (RMSEA = .0192, 90% confidence interval [0.137, 0.253]), comparative fit index (CFI = 0.985), Tucker Lewis Index (TLI = 0.956), and standardized root-mean-square residual (SRMR = .025). The CFI, TLI, and SRMR indicated acceptable to good fit ($>.95$ and $<.08$, respectively); however, the RMSEA indicated poor fit, as it was greater than 0.08. It should be noted that the RMSEA tends to be amplified when examining models with low degrees of freedom, as was the case with the current model (Kenny et al., 2015). Due to the primary hypothesis aiming to confirm the full model versus only the measurement model, the theoretical backing for a four-factor model (Doane et al., 2013), and the significant loadings for each indicator, the original factor structure proposed by Doane and colleagues (2013) was confirmed despite the RMSEA and entered into the full model analysis. All indicator variables loaded significantly onto the latent variable ($B > 0.82$), and modification indices provided no significant alterations in the authors' proposed factor structure.

Primary Analyses

The mediation model was tested via structural equation modeling (SEM) using M-Plus 7.11 (Muthén & Muthén, 2012). Bootstrapping was used to determine the mediational effect of moral disengagement within the model. The independent variables (i.e., sadism, psychopathy, and trait anger) were allowed to correlate

due to the previously reported relationships among these variables (Craker & March, 2016; Paulhus et al., 2018), and sex and college enrollment were included as covariates as a result of the between-groups differences for these variables described above. Fit statistics for the model include: RMSEA = 0.079 (90% CI [0.060, 0.099]), TLI = 0.968, CFI = 0.984, and SRMR = 0.025. These results signify acceptable fit, and the model was retained. Regarding the covariates, sex related to psychopathy ($p = 0.001$) and sadism ($p < .001$), and college enrollment related to psychopathy ($p < .001$), anger ($p = .001$), and sadism ($p < .001$).

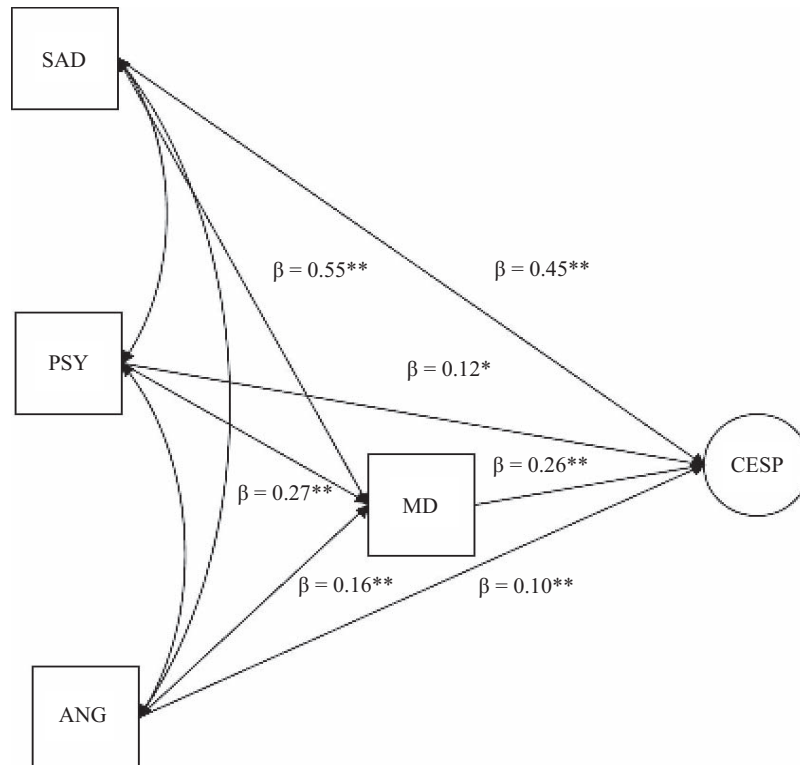
In examining specific direct relationships, the prediction that all of the independent variables and the mediator would predict cyber aggression perpetration was supported. Anger ($\beta = 0.099, p = .007$), sadism ($\beta = 0.450, p < .001$), psychopathy ($\beta = 0.118, p = .035$), and moral disengagement ($\beta = 0.261, p < .001$) directly predicted cyber aggression perpetration (see Figure 1). The effect sizes, as determined by the standardized indirect effect (Preacher & Kelley, 2011), indicated a small effect (e.g., $\beta > 0.1$ and < 0.3) for the pathway from anger, psychopathy, and moral disengagement to cyber aggression, and a medium effect (e.g., $\beta > 0.3$ and < 0.5) for the pathway from sadism to cyber aggression (Cohen, 1988).

To test the prediction that the relationships between independent variables and cyber aggression perpetration would be partially mediated by moral disengagement, the relationships between the independent variables and moral disengagement were examined. As sadism, psychopathy, and trait anger predicted moral disengagement, the mediational effect of moral disengagement between the independent variables and cyber aggression perpetration was evaluated. Bootstrap analyses suggested that this prediction was supported in that moral disengagement partially mediated the relationships between the independent variables and cyber aggression perpetration (see Table 3). The proportion of variance (as calculated by the formula ab/c) mediated by moral disengagement was 24.11% for sadism, 37.23% for psychopathy, and 29.79% for anger.

Discussion

Electronic communication offers many benefits; however, it has opened the door to new forms of aggression to which emerging adults may be especially vulnerable (Kellerman et al., 2013; Zezulka & Seigfried-Spellar, 2016). Improved understanding of cy-

Figure 1
Structural Equation Model Predicting Cyber Aggression Perpetration



Note. Covariates and latent variable factors were omitted from this figure for readability. SAD = sadism; PSY = psychopathy; ANG = anger; MD = moral disengagement; CESP = Cyberbullying Experiences Survey Perpetration Scale.

* $p < .05$. ** $p < .01$.

ber aggression, specifically in the United States where rates are presumed to be higher than many other countries (Barlett et al., 2014), is needed to inform efforts to reduce its occurrence and mitigate its impact. The present study extended the literature on cyber aggression among emerging adults in the United States by testing a structural equation model in which two dark personality traits (i.e., psychopathy and sadism) and trait anger predicted cyber aggression perpetration and moral disengagement partially mediated these relationships while taking respondent sex and college enrollment into account. The key contributions were as follows: (a) We confirmed the factor structure of the CESP, providing further evidence that this is a psychometrically sound measure of cyber aggression among emerging adults; (b) we found that sadistic

traits, psychopathic traits, and trait anger predicted cyber aggression perpetration, supporting their utility in understanding cyber aggression; and (c) we found that moral disengagement partially mediated these relationships, suggesting that it may be one mechanism through which trait anger and dark personality traits are connected to cyber aggression.

By confirming the factor structure of the CESP suggested by Doane and colleagues (2013) in a sample that included both college and noncollege emerging adults, we provide additional support for the use of this measure in assessing cyber aggression as a multidimensional construct. Second, examining psychopathic and sadistic traits in the same model demonstrated that both predict cyber aggression perpetration even when considered together. This

Table 3
Standardized Total, Direct, and Indirect Effects

Effects	SAD	ANG	PSY
Total	0.593	0.141	0.188
Direct	0.450	0.099	0.070
Indirect	0.143	0.042	0.118
95% CI total indirect	[0.043, 0.213]	[0.008, 0.085]	[0.079, 0.396]

Note. All significant effects are in bold ($p < .05$). SAD = sadism; ANG = anger; PSY = psychopathy; CI = confidence interval.

supports previous work suggesting that these dark personality traits are overlapping but distinct (Craker & March, 2016; Paulhus et al., 2018) and suggests that both are likely to be helpful in understanding why some emerging adults perpetrate cyber aggression. Third, our findings supported the role of trait anger as a predictor of cyber aggression even while accounting for the other variables in the model. Relatively few studies have examined dysfunctional anger as a predictor of cyber aggression, and fewer still have included it as an additional predictor alongside measures of dark personality traits. This finding suggests that trait anger, and potentially other indices of dysfunctional anger known to be exacerbated by elevated trait anger, may be worth examining in the context of cyber aggression. Fourth, the finding that moral disengagement not only predicted cyber aggression but mediated the relationships of the other predictors to cyber aggression perpetration suggests that this cognitive process may offer insight into how dark personality traits and trait anger contribute to cyber aggression. Perhaps Caprara and colleagues (2014) were correct to describe moral disengagement as, “the gatekeeper that makes harmful behavior accessible without incurring self-blame and painful emotions” (p. 80).

Limitations and Future Directions

Several limitations of the present study should be considered when interpreting its findings. First, all variables were assessed with self-report measures, raising questions about response bias, common-method variance, and participants' accuracy in recalling their online aggression. In addition to assessing cyber aggression with comprehensive, age-appropriate, and psychometrically sound measures like the CESP, future research would benefit from including observer ratings, direct examination of online communication via simulated scenarios, or retroactive examination of online communication where feasible. Second, the cross-sectional design makes it impossible to demonstrate causal relationships between variables through the mediator. Although our findings are consistent with the possibility that dark personality traits lead emerging adults to use moral disengagement that facilitates the perpetration of cyber aggression, establishing causal relationships of that sort would require longitudinal and experimental designs. Third, White, non-Hispanic, women enrolled in college were overrepresented in the present sample, and the use of MTurk likely resulted in a sample with characteristics that differ from that of the general population (e.g., desire for compensation, technological prowess). Such factors limit the generalizability of the results, and future studies would benefit from using more diverse samples and determining whether models vary based on demographic characteristics. For example, the finding that emerging adults enrolled in college reported more cyber aggression perpetration than those not enrolled in college suggests that contextual factors may be important to consider. Finally, our use of the total score on the Moral Disengagement Measure prevented an examination of specific moral disengagement techniques. Future studies that use subscale scores may yield additional information about the role of moral disengagement in cyber aggression, which may be helpful in informing prevention and intervention efforts. For example, online safety courses that emphasize the importance of users viewing profiles as the individuals behind such profiles might be useful if dehumanization were found to be most predictive. On the other

hand, if diffusion of responsibility was a better predictor, techniques aimed at providing information on cyber aggression rates might be more beneficial.

Implications

With respect to broader clinical implications of our findings for the prevention and treatment of cyber aggression perpetration, our results suggest that psychopathy, sadism, and trait anger are personality characteristics that should be assessed as potential risk factors for cyber aggression perpetration. Admittedly, psychopathic and sadistic traits may not be easily modifiable; however, there is some evidence of success even with offender populations (Wong & Olver, 2016), and these variables predicted cyber aggression perpetration in our nonclinical sample. Difficulty treating criminal psychopaths or clinical sadists should not deter efforts to modify these traits in nonclinical populations. Evidence-based anger management interventions that have been shown to reduce trait anger (Deffenbacher & McKay, 2000) could be adapted for use with cyber aggression perpetrators. Additionally, prevention and treatment programs may benefit from considering moral disengagement. Bauman and Baldasare (2015) provided program and policy recommendations for colleges and universities that included statements in course syllabi about harmful communication and developing clear policies defining cyber aggression, explaining the consequences for perpetrators, and providing resources for victims. Perhaps these efforts could be supplemented with brief moral reasoning interventions (e.g., peer modeling) aimed at decreasing moral disengagement, as they have been shown to be beneficial for adolescents (Bandura, 1991; Bonanno & Hymel, 2013). Interventions to improve coping skills (e.g., anger management, distress tolerance, mindfulness) may also be useful in reducing the incidence of cyber aggression perpetration.

Ultimately, the adverse correlates of cyber aggression and its increased prevalence among college students suggest that universities need effective policies and programming focusing on psychoeducation, raising awareness, and mobilization of university personnel (e.g., Title IX officers, new student/retention programs, student/faculty-led organizations, university police), as well as community resources for noncollege students (e.g., community mental health and advocacy organizations). Our findings suggest that some specific interventions for perpetrators (e.g., anger management, moral reasoning training, distress tolerance) may be helpful. When combined with interventions developed to assist victims (e.g., coping skills training, assertiveness training, cognitive reframing techniques), these have the potential to benefit both college and noncollege student populations.

Conclusion

The present study extended the literature on cyber aggression among emerging adults in three important ways. First, we confirmed the factor structure of the CESP in an emerging adult sample. Second, we found that psychopathic traits, sadistic traits, and trait anger were positive predictors of cyber aggression perpetration. Third, we found that moral disengagement partially mediated the relationship of dark personality traits and anger to cyber aggression perpetration. Future research on cyber aggression may benefit from assessing dysfunctional anger and learning more about how moral disengagement facilitates perpetration.

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