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The Five-Factor Model of Impulsivity-Like Traits and Emotional Lability in Aggressive Behavior

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Abstract

Factors that increase automatic psychological processes may result in impulsive action and, consequently, aggressive behavior. The current cross-sectional study examined the association between the five-factor model of impulsivity-like traits (negative urgency, positive urgency, premeditation, perseverance, and sensation seeking), emotional lability, and physically aggressive behaviors among college students ($n = 481$) in a negative binomial hurdle model. In the logistic portion of the model, emotional lability was related to a higher likelihood of engaging in aggressive acts in the past 6 months. The association between emotional lability and the likelihood of aggressive behavior was moderated by two impulsivity-like traits: negative urgency and positive urgency. Specifically, emotional lability was related to engaging in aggressive acts among those with high negative urgency, and among those with low positive urgency. In the count portion of the model, emotional lability was uniquely related to the number of aggressive acts in the past 6 months. Our results indicate that emotional lability and facets of impulsivity interactively relate to engagement in aggressive behavior, suggesting that these variables be integrated into models of aggression.

Keywords

emotional lability; impulsivity; aggressive behavior; college students

Introduction

Aggressive behavior is the result of psychological (e.g., emotion, cognition, traits, etc.), interpersonal, situational, and social factors (Baron & Richardson, 1994). Despite significant advances in addressing/treating aggressive behavior (Glancy & Saini, 2005), it remains a complex societal problem (Gilbert & Daffern, 2010). This may be due to the fact that research on aggressive behavior has been approached through a myriad of disparate theoretical models (for a review see Anderson & Bushman, 2002). During the past three

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decades a variety of theorists have suggested that negative mood sets the stage for aggressive behavior. Berkowitz (1989) introduced the concept of aversively stimulated aggression in which negative mood automatically increases the risk of aggression. Crick and Dodge (1994) argued that social information processing is short-circuited under conditions of negative mood leading to more hostile attributional bias and aggression. Huesmann (1988; 1998) proposed that strong negative moods limit the depth of search for behavioral scripts and lead to more impulsive aggression. Anderson and Bushman (2002) in their General Aggression Model proposed that negative mood sets the stage for aggressive behavior by activating an appraisal process. During this process, if effortful control resources are insufficient, the individual is more likely to engage in “hot” information processing. Thus, according to all these theoretical approaches, individuals with diminished control resources may be at an increased risk for aggressive behavior.

Impulsivity-Like Traits

A long history of research has placed personality traits as vital distal determinants of aggressive/violent behaviors. Nearly all major theories of personality include an impulsivity trait (e.g., Cloninger, Przybeck, & Švraki, 1991; Eysenck & Eysenck, 1985). Much research shows that impulsivity traits predict aggressive behaviors (Derefinko, DeWall, Metze, Walsh, & Lynam, 2011; Lynam & Miller, 2004; Miller, Flory, Lynam, & Leukefeld, 2003); however, one problem with impulsivity research is that impulsivity is a very loose, heterogeneous construct (Dick et al., 2010).

To overcome this limitation, Whiteside and Lynam (2001) administered several questionnaires designed to measure impulsivity and used factor analytic methods to identify four distinct impulsivity-like traits measured by the Urgency Premeditation Perseverance Sensation seeking Impulsive Behavior Scale (UPPS). Their primary factor reflected (lack of) premeditation which reflects the tendency to actively think and plan prior to action. They also identified a (negative) urgency factor that generally reflects the tendency to act impulsively when experiencing negative affect. Conceptually, these two initial factors correspond to previous research on dual-processes models of self-regulation (see Carver, 2005). Their third factor represented sensation seeking, or the global tendency to seek excitement. Finally, their fourth factor represented (lack of) perseverance, which reflected the tendency to persist on tasks until completion. They found that 20 subscales from various questionnaires loaded on one of these four factors. Extending the four-factor of impulsivity-like traits, Cyders et al. (2007) found that urgency involves not only negative urgency (i.e., behaving impulsively when experiencing negative affect), but also positive urgency (i.e., behaving impulsively when experiencing positive affect), resulting in a five-factor model of impulsivity.

The four- and five-factor models of impulsivity-like traits have received much attention in research on risky behaviors, including alcohol use and alcohol-related consequences (Fischer, Smith, & Cyders, 2008; Magid & Colder, 2007; Smith et al., 2007), illicit drug use and risky sexual behaviors (Zapolski, Cyders, & Smith, 2009), bulimia symptoms (Fischer, Smith, Cyders, & Swain, 2006), risky driving (Pearson, Murphy, & Doane, in press), and suicidal behaviors/nonsuicidal self-injury (Lynam, Miller, Miller, Bornovalova, & Lejuez,

2011). Indeed, a few studies have examined the relationship between these impulsivity facets and aggression.

Miller, Flory et al. (2003) found that negative urgency predicted aggression as assessed by the Conflict Tactics Scale. Using a laboratory measure of aggressive information processing, Lynam and Miller (2004) found that both negative urgency and lack of premeditation predicted aggressive information processing. Derefinko et al. (2011) found that urgency (positive and negative urgency combined) predicted self-reported intimate partner violence behaviors. Zeichner, Frey, Parrott, and Butryn (1999) generally found a lack of relationships between the impulsivity-like traits and aggression as assessed by a laboratory physical aggression task involving electric shock. Thus, most research supports a link between negative urgency and aggression, and there is more limited support for the link between other impulsivity-like traits and aggression.

Emotional Lability

Another factor that has been shown to predispose individuals to risk is emotional dysregulation (Robertson, Daffern, & Bucks, 2012). Emotional lability refers to the frequency and intensity of changes in emotional states, and is related to many of the same risky behaviors as impulsivity (Oliver & Simons, 2004). Additionally, research has suggested that impulsivity and emotional lability interact to predict engagement in problematic behavior (Simons, Carey, & Gaher, 2004). Simons, Carey, and Wills (2009) have suggested that intense emotional arousal, a characteristic of emotional lability, results in a decrease in “cool” information processing, and a shift to “hot” information processing. This assertion is consistent with research indicating that negative emotion regulation depletes effortful control resources (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Bruyneel, Dewitte, Franses, & Dekimpe, 2009). In fact, research shows that depleted effortful resources increases aggressive behavior (Stucke & Baumeister, 2006). Thus, emotional lability may diminish effortful control resources as individuals attempt to regulate these intense emotional fluctuations. Consequently, individuals with labile emotions may be particularly prone to problematic behavior. Although both impulsivity and emotional lability are related to risk behavior, it is theorized that they operate through different mechanisms; the former through a general over-reliance on automatic processing of salient stimuli, the latter through a persistent pattern of reducing effortful control resources thereby increasing automatic processing. Thus, the effects of impulsivity and emotional lability on problematic behaviors (i.e., aggressive behaviors) are expected to be unique, and these processes may interact such that the relative use of automatic processing is most robust when both impulsivity and emotional lability are high.

Purpose

Given the importance of both impulsivity-like traits and emotional lability for various types of risky behaviors, we examined the association between each of these and aggressive behaviors. Based on previous research (Derefinko et al., 2011; Lynam & Miller, 2004; Miller, Flory et al., 2003), it was expected that negative urgency and (lack of) premeditation would be associated with self-reported engagement in aggressive behaviors. We also

hypothesized that emotional lability would be associated with aggressive behaviors, even when controlling for impulsivity-like traits. Finally, we examined whether the association between emotional lability and aggressive behaviors was moderated by any of the impulsivity-like traits. Given that the urgency traits are specifically associated with emotion-based rash action, we hypothesized that these two constructs were the primary candidates for interactions with emotional lability.

Method

Participants

Participants were undergraduate students ($n = 481$) who were recruited through the university research pool and ranged in age from 18 to 30 years ($M = 19.92$, $SD = 2.07$). Women ($n = 304$) comprised 63.20% of the sample; 91.68% were White, 3.33% were Asian, 1.46% were African American, and 3.53% were of other races or did not respond.

Measures

Impulsivity—Impulsivity-like-traits were assessed with the UPPS-P, which combines the 45-item Urgency Premeditation Perseverance Sensation seeking Impulsive Behavior Scale (UPPS; Whiteside & Lynam, 2001) and 14-item Positive Urgency Measure (Cyders & Smith, 2007). All items are measured on a four-point Likert-type scale (“Strongly Disagree,” “Disagree,” “Agree,” and “Strongly Agree”). The UPPS-P assesses *Negative Urgency* (12 items, $\alpha = .91$, example: “I have trouble controlling my impulses”), *Positive Urgency* (14 items, $\alpha = .91$, example: “When I am very happy, I can't seem to stop myself from doing things that can have bad consequences”), (*lack of*) *Premeditation* (11 items, $\alpha = .86$, example: “I have a reserved and cautious attitude toward life”), (*lack of*) *Perseverance* (10 items, $\alpha = .85$, examples: “I generally like to see things through to the end”), and *Sensation Seeking* (12 items, $\alpha = .81$, example: “I generally seek new and exciting experiences and sensations”). In all cases, higher scores indicate more impulsivity.

Emotional lability—Emotional lability ($\alpha = .94$) was assessed using the 18-item short form of the affect lability scales (ALS-SF; Oliver & Simons, 2004). All items were measured on a four-point Likert-type scale ranging from *very undescriptive* to *very descriptive* (example item: “I shift back and forth from feeling perfectly calm to feeling uptight and nervous”). Higher scores indicate a higher frequency/intensity of changes in affect. For the analysis we utilize a summed score.

Aggressive behaviors—Aggressive behaviors were assessed using four items from the Aggressive and Illegal Behaviors sub-scale of the Cognitive Appraisal of Risky Events (CARE) questionnaire ($\alpha = .86$; Fromme, Katz, & Rivet, 1997). The four items specifically address physical aggression (e.g., hit someone with a weapon; hit or punched someone with fist; grabbed, pushed, or shoved someone; slapped someone). Participants were asked to indicate the number of times they engaged in each specific aggressive behavior in the past 6 months. The sum of these items served as the criterion variable for this study.

Procedure

Questionnaires were completed online and presented in counterbalanced order to prevent ordering effects. All responses were anonymous. Participants provided informed consent and received course credit for participation. The institutional review board approved this study and all participants were treated in accordance with APA ethical guidelines. Data used in this analysis is available for further examination at www.robdvorak.net/data or from the corresponding author.

Analysis Plan

Data was analyzed using Stata 12.0 (StataCorp, 2012). Our primary dependent variable (number of physically aggressive acts) was scored as a count variable, making count regression more appropriate than standard regression techniques. Further, the outcome was positively skewed (skewness = 4.16) and leptokurtotic (kurtosis = 26.56) making methods based on normal theory less appropriate. Only 39.19% ($n = 150$) reported engaging in physically aggressive acts. To analyze this count data, we utilize a negative binomial hurdle model. This two part model allows for the simultaneous modeling of both the likelihood of engaging in any aggressive acts via a logistic model, as well as the frequency of engaging in aggressive acts via a truncated negative binomial count model. Odds ratios (OR) are reported for the logistic portion, incident rate ratios (IRR) are reported in the count portion. All predictors were mean-centered prior to creating interaction terms (Aiken & West, 1991).

Results

Descriptive and Bivariate Statistics

Descriptive and bivariate statistics are provided in Table 1. Men tended to be younger, have less emotional lability, more sensation seeking, and more positive urgency. There were no gender differences in the frequency of acts among those who endorsed engaging aggressive acts ($P = .956$); however, men were more likely to engage in aggressive acts in general, $\chi^2(1) = 5.80$, $P = .016$. Emotional lability was positively correlated with all the impulsivity facets, and each of the impulsivity facets had significant positive bivariate correlations with each other. Aggressive behaviors were positively correlated with all five impulsivity traits and emotional lability.

Multivariate Analysis

The primary analysis is depicted in Table 2. A test of overdispersion indicated a negative binomial distribution was more appropriate than Poisson, $G^2 = 274.10$, $P < .001$ (Long & Freese, 2001). Analyses proceeded in a stepwise fashion with predictors added to each portion of the model simultaneously. At step 1, age and gender were regressed onto aggressive behaviors, $\chi^2(4) = 13.04$, $P = .011$, Cragg-Uhler $R^2 = .03$. At step 2, the five impulsivity predictors and emotional lability were added, $\chi^2(16) = 47.44$, $P = .011$, Cragg-Uhler $R^2 = .11$. At step 3, interactions among emotional lability and the four impulsivity traits were added, LR $\chi^2(26) = 54.81$, $P < .001$, Cragg-Uhler $R^2 = .12$. In this model, only the negative urgency $\times$ emotional lability and positive urgency $\times$ emotional lability interactions in the logistic portion of the model were statistically significant. For parsimony

all non-significant interactions were dropped and the model was re-estimated, $\chi^2(18) = 52.54$, $P < .001$, Cragg–Uhler $R^2 = .12$. Removing these predictors did not affect the model, LR $\chi^2(8) = 2.27$, $P = .972$.

In the count portion, only emotional lability was associated with the frequency of aggressive acts (IRR 1.08, $P = .002$). In the logistic portion, female gender (OR = 0.61, $P = .006$) and age (OR = 0.90, $P = .019$) were inversely associated with the likelihood of engaging in aggressive acts. Emotional lability was positively associated with the likelihood of engaging in aggressive acts (OR = 1.04, $P = .050$). None of the impulsivity factors were independently associated with the likelihood of engaging in aggressive acts, however, the positive urgency $\times$ emotional lability (OR = 0.99, $P = .034$) and negative urgency $\times$ emotional lability (OR = 1.01, $P = .024$) interactions were. These were probed at ± 1 SD on the impulsivity moderators.

Figure 1 depicts the simple slopes of the likelihood of engaging in aggressive acts on emotional lability at high (i.e., $+1$ SD) and low (i.e., -1 SD) levels of negative urgency. At high negative urgency, emotional lability was robustly associated with aggressive acts (OR = 1.03, $P = .005$); however, this association was attenuated at low levels of negative urgency (OR = 0.99, $P = .542$). Figure 2 depicts the simple slopes of the likelihood of engaging in physical aggression on emotional lability at high (i.e., $+1$ SD) and low (i.e., -1 SD) levels of positive urgency. Although both positive and negative urgency are associated with mood-based rash action, this interaction was opposite of that observed for negative urgency. At high positive urgency, the association between emotional lability and aggressive acts was diminished (OR = 0.99, $P = .530$), while at low positive urgency the association was potentiated (OR = 1.03, $P = .011$).

Discussion

Our results provided mixed support for our predictions. When controlling for the five impulsivity-like traits, emotional lability significantly added to the prediction of aggressive behavior, suggesting that the association between emotional lability and aggressive behaviors is independent of impulsivity. Unlike some other studies (Derefinko et al., 2011; Lynam & Miller, 2004; Miller, Flory et al., 2003), we found that none of the impulsivity-like traits had unique associations with aggressive behaviors. However, we found two interactions between emotional lability and impulsivity-like traits. Specifically, there was an interaction between negative urgency and emotional lability such that the association between affect lability and the likelihood of having engaged in an aggressive act in the past 6 months was stronger among those with higher negative urgency. Interestingly, the interaction between emotional lability and positive urgency was in the opposite direction such that the association between emotional lability and the likelihood of having engaged in an aggressive act was stronger among those with *lower* positive urgency. Each of these findings is discussed in detail below.

Guided by previous research on aggression and impulsivity (Derefinko et al., 2011; Lynam & Miller, 2004; Miller, Lynam, & Leukefeld, 2003; Zeichner et al., 1999), we hypothesized that (lack of) premeditation and negative urgency would be positively associated with

aggressive behavior. However, neither of these impulsivity-like traits had direct associations with aggressive acts in the past 6 months. In fact, in the current data, we found an inverse direct association between negative urgency and frequency of engaging in aggressive behaviors, although this did not reach conventional levels of statistical significance ($P = .069$). In contrast, positive urgency had a direct positive association with the likelihood of engaging in aggressive behaviors ($P = .054$) as well as the frequency of aggressive acts ($P = .072$); however, neither reached conventional levels of statistical significance. Thus, the positive urgency association, at least directionally, conformed to hypothesis, while the negative urgency association was counter to hypothesis. Some previous research has only looked at some of the impulsivity-like constructs (e.g., Miller, Flory et al., 2003) while others have chosen to aggregate positive and negative into a global “urgency” measure (e.g., Derefinko et al., 2011). These findings highlight the importance of including all five factors of impulsivity and keeping the urgency constructs disaggregated.

Research has suggested that emotion dysregulation is important in understanding aggressive behavior. Robertson et al. (2012) have suggested that emotion dysregulation may influence aggressive behavior via two separate paths. First, individuals with poor affect regulation (i.e., more emotional lability) may be prone to aggression in an attempt to regulate aversive emotional states. Alternatively, dysregulated emotion may reduce effortful control resources, thereby increasing reliance on “hot” information processing. This explanation is similar to recent theorizing by Simons et al. (2009). The current study adopted the latter explanation as a mechanism for aggressive behavior engagement. Consistent with this notion, emotional lability was positively associated with both having engaged in an aggressive act as well as the number of aggressive acts in the past 6 months, even after controlling for the effects of the impulsivity facets. This finding suggests that emotional instability not only “sets the stage” for impulsive behavior, but also increases impulsive behavior, possibly by depleting effortful control resources. Indeed, negative mood regulation has been shown to deplete these resources (Bruyneel et al., 2009), and this is one pathway to aggressive behaviors (DeWall, Baumeister, Stillman, & Gailliot, 2007; Stucke & Baumeister, 2006).

Previous research has shown that emotional lability and impulsivity interact to predict problematic behavior (Simons et al., 2004). Thus, we hypothesized that emotional lability would interact with impulsivity to increase aggressive behavior. Previous research has shown that negative affect precedes aggressive behavior (Berkowitz, 1989). Additionally, there is a strong positive relationship between emotional lability and negative affect (Oliver & Simons, 2004). Our results suggest that individuals prone to negative emotional fluctuations may engage in more aggressive acts. As expected, the likelihood of this occurring is stronger for those prone to rash action during negative emotion. Thus, the combination of frequent negative emotional states coupled with impulsive behavior brought on by negative emotion appears to be a recipe for aggressive behavior. Of course, given the data, we cannot draw a causal conclusion based on this hypothesis.

It is interesting that the association between emotional lability and aggressive behavior was diminished at high levels of positive urgency. This finding was counter to our original hypothesis. There is some research that suggests positive urgency may actually decrease the

association between emotion and problematic behavior (Karyadi & King, 2011; Simons, Dvorak, Batien, & Wray, 2010; Wray, Simons, Dvorak, & Gaher, 2012). The current findings add to this growing literature. It is interesting to note that all of the above studies were among moderately drinking college students. Although the current study was not exclusively among drinkers, the rate of respondents endorsing some level of alcohol use over the past 6 months was quite high (83.37%). Thus, it is possible that this association is a function of being a college student drinker. Future research may seek to examine differences in various emotions $\times$ urgency interactions among drinkers and non-drinkers to clarify this relationship.

Limitations

There are a number of limitations that should be noted. As the present study is cross-sectional, we cannot make causal inferences and we cannot rule out all “third variable” explanations for the observed relationships. Although our description of emotional lability as a mechanism for depleting effortful control is based on experimental research, further research is needed to replicate these findings using longitudinal and/or experimental designs. Finally, the sample was primarily made up of frequent drinking, white, and college students. Thus, generalizations should be made with caution.

Summary

The current study examined emotional lability and the five-factor model of impulsivity as predictors of aggressive behavior among young adult college students. It was hypothesized that negative urgency, (lack of) premeditation, and emotional lability would be positively associated with aggressive behavior. Only emotional lability had a unique direct association with aggressive behaviors. It was also hypothesized that impulsivity-like traits would interact with emotional lability to predict aggressive behavior. We found interactions between emotional lability and both positive and negative urgency. The positive relationship between emotional lability and aggressive behavior was strongest for those with higher negative urgency and lower positive urgency. These results provide support for the role of emotional lability as a possible mechanism to promote automatic or “hot” information processing. Additionally, they highlight the importance of incorporating multiple facets of impulsivity as well as emotional lability into models of aggression.

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Fig. 1. Simple slopes of physically aggressive acts on emotional lability at ± 1 SD negative urgency

Fig. 2. Simple slopes of physically aggressive acts on emotional lability at ± 1 SD positive urgency

Table 1
Descriptive Statistics and Bivariate Correlations Among all Study Variables

	1	2	3	4	5	6	7	8	Range	Mean	SD	Skew
1. Negative urgency	.91								13–45	27.07	6.79	0.38
2. Positive urgency	.70	.91							18–56	30.07	7.45	0.88
3. Sensation seeking	.23	.24	.81						12–48	32.98	6.88	–0.27
4. Premeditation	.31	.26	.11	.86					11–40	23.02	5.41	0.42
5. Perseverance	.52	.47	–.13	.55	.85				10–40	19.51	5.79	0.77
6. Affective lability	.28	.13	.02	.03	.16	.94			18–72	35.21	13.13	0.62
7. Aggressive behaviors	.12	.17	.10	.10	.10	.14	—		0–35	1.66	3.99	4.16
8. Gender	.04	–.10	–.15	–.00	–.04	.12	–.07	—	0–1	0.63	0.48	–0.55
9. Age	.03	–.04	.02	.01	.01	–.05	–.07	–.15	18–30	19.92	2.07	1.60

Note. Significant correlations ($P < .05$) are bolded for emphasis. Cronbach's alphas for multi-item inventories are listed on the diagonal. Gender was dummy-coded (1, women, 0, men).

Table 2
Negative Binomial Hurdle Regression Model of Aggressive Behaviors

	Logistic model		Count model	
	R^2	OR	IRR	P-value
Step 1: Covariates	.03			
Age		0.90	.019	0.96
Gender		0.61	.006	0.93
Step 2: Impulsivity and affect lability	.11			
Positive urgency		1.03	.054	1.03
Negative urgency		1.00	.994	0.96
Sensation seeking		1.00	.754	1.02
Premeditation		1.02	.254	1.01
Perseverance		1.01	.779	1.01
Affective lability		1.01	.050	1.08
Final step: Interactions	.12			
Neg. urgency $\times$ affective lability		1.01	.024	—
Pos. urgency $\times$ affective lability		0.99	.034	—

Note. Gender was dummy-coded (1, women, 0, men). IRR, incident rate ratio; OR, odds ratio; R^2 , Cragg-Uhler R^2 . Step 1 model: LR, $\chi^2(4) = 13.04$, $P = .011$, $R^2 = .03$. Step 2 model: LR $\chi^2(16) = 47.44$, $P = .011$, $R^2 = .11$. Final model: LR $\chi^2(18) = 52.54$, $P < .001$, $R^2 = .12$.