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The Interplay of Trait Anger, Childhood Physical Abuse, and Alcohol Consumption in Predicting Intimate Partner Aggression

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Abstract

The current study examined three well-established risk factors for intimate partner aggression (IPA) within Finkel and Eckhardt's I^3 model, including two impellance factors—trait anger and childhood physical abuse history—and the disinhibiting factor of alcohol consumption. Participants were 236 male and female college students in a committed heterosexual dating relationship who completed a battery of self-report measures assessing childhood physical abuse, trait anger, alcohol consumption, and IPA perpetration. Results revealed a significant three-way interaction showing that as the disinhibition factor alcohol consumption increased, the interaction of the two impelling factors, trait anger and childhood physical abuse, became increasingly more positive. Individuals who had high levels of childhood physical abuse and alcohol consumption were at greater risk of IPA perpetration when trait anger was high. Consistent with the I^3 model, these findings suggest that trait anger and a history of childhood physical abuse may increase tendencies to aggress against one's partner, whereas alcohol con-

sumption may reduce individuals' abilities to manage these aggressive tendencies. The importance of interplay among these risk factors in elevating IPA risk is discussed, as are the implications for clinicians working with male and female IPA perpetrators.

Keywords: intimate partner aggression, anger, childhood physical abuse, alcohol, violence

Intimate partner aggression (IPA) on college campuses is recognized as a serious problem nationwide, with 20% to 30% of college men and women admitting to perpetrating aggression toward their partner in the past year (Shorey, Cornelius, & Bell, 2008). IPA not only causes physical harm, but is also associated with increased psychological difficulties (Amar & Gennaro, 2005), substance abuse (Bagner, Storch, & Preston, 2007), and relationship dissatisfaction (Testa & Leonard, 2001). These negative effects may create additional stress among college students, which is the main obstruction to student's academic performance (American College Health Association, 2003). The prevalence and negative consequences of IPA among college students highlight the need for understanding the risk factors that can inform prevention and treatment programs.

The etiology of IPA perpetration defies single-factor explanations. Rather, IPA is better viewed as resulting from an abundance of risk factors that function alone and in combination to increase risk (Finkel, 2008; Kantor & Straus, 1989; Straus, Gelles, & Steinmetz, 1980). One theoretical model that aids in the examination of this interactive process is Finkel and colleagues' I^3 model (Finkel & Eckhardt, 2013). This model asserts there are three key processes that work together to set the stage for IPA perpetration. Instigation refers to provoking situational experiences that elicit an urge to aggress (e.g., verbal couple conflict). Impellance includes dispositional or situational factors that may increase how strongly a person experiences aggressive urges following instigation (e.g., trait anger, childhood abuse history). Inhibition (or disinhibition) refers to dispositional or situational factors that serve to increase or decrease one's ability to override aggressive urges following instigation (e.g., self-control, alcohol consumption). According to the I^3 model, these three processes converge such that, following instigation, the risk of IPA occurring is greatest when impelling forces are strong and inhibiting forces weak, and lowest when inhibition is strong and overpowers the urge to aggress (Finkel & Eckhardt, 2013).

Trait anger, which refers to a person's tendency to experience anger in a variety of situations (Spielberger, 1999), may function as an impelling force because of its potential to heighten a person's readiness to respond

aggressively to instigation. Findings that those who are high in trait anger are more likely to experience intense anger during verbal conflict (Deffenbacher, 1992) suggest the presence of strong aggressive impulses that may impel individuals to perpetrate IPA. Indeed, trait anger is related to increased IPA among a variety of samples, including college men reporting a history of dating violence (Eckhardt, Jamison, & Watts, 2002), maritally violent men from the community (Barbour, Eckhardt, Davison, & Kassonov, 1998), and women who were arrested for domestic violence (Shorey, Brasfield, Febres, & Stuart, 2011). Recent work using daily diary methods shows a proximal link between anger experiences and IPA for both men and women (Elkins, Moore, McNulty, Kivisto, & Handsel, 2013). Despite the clear associations between trait anger and IPA, the general tendency to experience anger does not always result in IPA (Norlander & Eckhardt, 2005), suggesting the importance of examining risk factors that may influence the anger-IPA relationship.

An important distal risk factor that may work in conjunction with trait anger to impel IPA is a history of childhood physical abuse. Experiencing early physical abuse may lead individuals to interpret events as hostile, making them more likely to respond to interpersonal conflict with aggression (White & Widom, 2003). In addition, individuals are more reactive to events perceived as hostile when they possess high trait anger (Bettencourt, Talley, Benjamin, & Valentine, 2006), further heightening inclinations to aggress when instigated. This adverse early experience has been linked to adult IPA perpetration (Ehrensaft et al., 2003; Herrenkohl et al., 2004; McKinney, Caetano, Ramisetty-Mikler, & Nelson, 2009). Furthermore, studies show that the risk of IPA increases significantly when these individuals possess cumulative risk factors (Whitfield, Anda, Dube, & Felitti, 2003). Although research has frequently explored variables that mediate between childhood physical abuse and IPA perpetration (Capaldi, Knoble, Shortt, & Kim, 2012), the I^3 model suggests that moderating relationships may also exist among these known risk factors. Thus, the combination of experiencing greater trait anger and higher levels of childhood physical abuse history may work together to heighten the risk of IPA in the face of couple conflict.

According to the I^3 model, the conditions for IPA are ripe not only when impelling forces are strong, but also when inhibitory processes are weak, leaving impelling forces to operate more freely. Alcohol intoxication may serve this function by impairing inhibitory control and rendering an individual less able to override aggressive urges when instigated. A large literature linking alcohol consumption to IPA supports the role of drinking as a disinhibiting factor (Eckhardt, 2007; Moore, Elkins, McNulty, Kivisto, & Handsel, 2011; Rapoza & Baker, 2008). However, as

with other risk factors, alcohol consumption does not invariably lead to behavioral disinhibition, but is most potent in predicting IPA in the presence of other risk factors (e.g., Schumacher, Coffey, Leonard, O'Jile, & Landy, 2013). For example, trait anger is likely to be strongly related to IPA perpetration among individuals who consume more alcohol because these individuals will be less able to inhibit anger responses when provoked. Here, we propose that high trait anger and a history of childhood physical abuse prime individuals to respond aggressively—and that this tendency is exacerbated by alcohol consumption, which undermines an individual's ability to manage aggressive urges that arise during conflict. Conversely, an individual who possesses the same level of risk factors, but drinks less alcohol, may be more capable of overriding aggressive urges in response to instigation.

Present Study

Drawing on the I³ model, the current study examines the role of trait anger and childhood physical abuse history as impelling factors, and alcohol consumption as a disinhibiting factor, in contributing to IPA perpetration arising from couple conflict (instigation). Specifically, we hypothesized a positive three-way interaction in which increased trait anger and childhood physical abuse would predict IPA most strongly when alcohol consumption was high but that this interaction would be weaker when alcohol consumption was low. Furthermore, to illustrate the pattern of the three-way interaction, we hypothesized simple effects for trait anger because trait anger is the most robust and more proximal predictor of the three risk factors examined. Specifically, we predicted simple effects in which trait anger would be related to IPA at higher levels of alcohol consumption and higher levels of childhood physical abuse history, but weakly related when alcohol consumption and childhood physical abuse history are lower.

Method

Participants

Participants were 236 students (138 women, 98 men) recruited from a Midwestern university who were involved in a committed heterosexual dating relationship (mean length of relationship = 18.91 months, *SD* = 21.64). The majority of participants were European American (88.6%), followed by Hispanic (3.8%), Mixed/Biracial (3.4%), Asian/Pacific Islander (3.0%), African American (2.5%), and Other (2.5%). The mean age of participants was 19.88 years (*SD* = 2.75).

Measures

State-Trait Anger Expression Inventory-II (STAXI-II) Trait Anger subscale. This 10-item self-report measure assesses the frequency of experiencing angry feelings or reactions over time (Spielberger, 1999). Each item is scored from 0 (*almost never*) to 4 (*almost always*), with higher scores indicating a greater tendency to experience anger. The STAXI-II Trait Anger subscale has demonstrated strong psychometric properties (Eckhardt, Norlander, & Deffenbacher, 2004), including good internal consistency and high reliability (Spielberger, 1999). The coefficient alpha for this sample was .80.

The Childhood Trauma Questionnaire-Physical Abuse subscale (CTQ-PA). The CTQ-PA (Bernstein & Fink, 1998) is a five-item scale that assesses the occurrence of physical abuse retrospectively from adults. Using a 5-point Likert scale ranging from 1 (*never true*) to 5 (*very often true*), participants indicated the degree to which they experienced bodily harm from an adult or older person while they were growing up. Higher scores on the CTQ-PA indicate greater exposure to childhood physical abuse. The CTQ-PA has demonstrated good psychometric properties (Bernstein et al., 2003). The coefficient alpha for this sample was .74.

The Alcohol Use Disorders Identification Test-consumption questions (AUDIT-C). The AUDIT-C (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998) has three items that measure alcohol consumption. One item examines quantity of alcohol consumption, whereas the other two items examine frequency of alcohol consumption and heavy alcohol use. Items were scored from 0 to 4, with higher scores indicating greater alcohol use. The AUDIT-C has demonstrated high internal consistency (Meneses-Gaya et al., 2010), similar to the full AUDIT (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993), and is an effective brief measure for problem drinking (Bush et al., 1998). The coefficient alpha for this sample was .75.

The Revised Conflict Tactics Scales (CTS2)-Physical Assault subscale. This 12-item self-report measure (Straus, Hamby, Boney-McCoy, & Sugarman, 1996) assesses the presence of a variety of physically aggressive acts that intimate partners may engage in during conflicts (e.g., "I slapped my partner"). Using a 7-point scale ranging from 0 (*never*) to 6 (*more than 20 times*), participants indicated how frequently they engaged in each of the physically aggressive acts toward their intimate partner during the past 6 months. The number of endorsed items was summed as a measure of IPA perpetration, with higher scores reflecting more acts

of partner aggression. Using this scoring method increases the accuracy of reporting IPA perpetration, because a person is more likely to accurately remember whether or not an aggressive behavior occurred rather than how many times the behavior occurred. This widely used measure of IPA has demonstrated adequate internal consistency reliability and good construct validity (Straus et al., 1996). The coefficient alpha for this sample was .85.

Procedure

Participants responded to flyers posted throughout the college campus and Experimentix, a website used for recruiting students enrolled in psychology courses. The advertisements requested participation for "a research study investigating the cognitive and emotional aspects of interpersonal functioning." The University's Institutional Review Board approved this study. After providing informed consent, participants completed a battery of measures, including those used in the current study. Measures were administered via MediaLab software.

Results

Descriptive Data

Descriptive statistics and bivariate correlations among study variables are presented in Table 1. In the current sample, 28.8% of individuals reported perpetrating at least one act of physical aggression against their partner during the past 6 months. Using a cut-score of 8 as suggested by the authors of the CTQ (Bernstein & Fink, 1998), 16.5% of participants reported a history of childhood physical abuse. Bivariate correlations revealed that both trait anger and childhood physical abuse experiences were significantly related to increased IPA perpetration.

Statistical Analysis Approach

Initial examination of the dependent variable, IPA perpetration, revealed a non-normal distribution; therefore, it was inappropriate to use standard analysis of variance models that assume normal distribution of the residuals. Thus, we examined alternative statistical models for non-normal count data to determine the most appropriate model for examining study hypotheses. Specifically, we tested four general linear models, including Poisson, zero-inflated Poisson, negative binomial, and zero-inflated negative binomial models. The Poisson model assumes that the model-predicted mean of IPA perpetration is equal to its residual vari-

Table 1. Descriptive Statistics and Correlations Among Study Variables.

Measure	% endorsed	M	SD	Range	1	2	3	4
1. IPA perpetration	28.8	0.51	1.01	0-5 ^a	—			
2. Childhood physical abuse	16.5	6.34	2.54	5-25	.187**	—		
3. Trait anger	—	17.12	3.97	10-31	.243**	.011	—	
4. Alcohol consumption	85.6	6.98	4.91	0-22	-.023	-.006	-.017	—

IPA = intimate partner aggression.
a. The figure reflects number of IPA acts.
** $p < .01$

ance; the negative binomial model does not make this assumption, allowing the residual variance to exceed the mean (i.e., overdispersion) if necessary. The zero-inflated versions of each model also include a separate model to predict the probability of excess zeros using a logit link and a binomial residual distribution.

To determine the best model for describing the distribution of IPA perpetration, each count model was estimated using maximum likelihood within SAS PROC GENMOD (with a logit link for zero-inflated models). All models included main effects for trait anger, childhood physical abuse history, alcohol consumption, and all interactions, as well as a main effect for gender. Using likelihood ratio tests, we first compared the fit of the Poisson and negative binomial models and found that the negative binomial model fit significantly better than the Poisson model, $-2\Delta LL(1) = 11.55, p < .0001$. We then examined the Akaike information criteria (AIC) and Bayesian information criteria (BIC) values to compare the fit of the negative binomial model (AIC = 433.55; BIC = 468.19) with the fit of the zero-inflated Poisson (AIC = 438.53; BIC = 473.17) and zero-inflated negative binomial (AIC = 435.55; BIC = 473.66) models. Smaller AIC/BIC values indicate better fit. Therefore, this examination indicated that a zero-inflation factor was not necessary. Accordingly, a negative binomial regression model was used to examine the study hypotheses.

Gender Differences

Results did not reveal a significant main effect for gender, $\chi^2(1) = 3.13, p = .08$, indicating no gender differences for IPA perpetration. In addition, no interactions were found between gender and trait anger, $\chi^2(1) = .19,$

Table 2. Negative Binomial Model Results Predicting IPA Perpetration.

Measure	<i>b</i>	<i>SE</i>	β	χ^2
Trait anger	.14	.03	.55	18.34***
Childhood physical abuse	.16	.05	.40	11.43***
Alcohol consumption	.01	.03	.04	0.08
Trait anger \times Childhood physical abuse	-.03	.01	-.30	6.24*
Trait anger \times Alcohol	-.001	.001	-.06	0.22
Childhood physical abuse \times Alcohol	-.02	.01	-.29	2.77
Trait anger \times Childhood physical abuse \times Alcohol	.0075	.003	.37	5.34*

IPA = intimate partner aggression.

* $p < .03$; *** $p < .001$

$p = .66$; gender and alcohol consumption, $\chi^2(1) = 1.14$, $p = .23$; gender and childhood physical abuse, $\chi^2(1) = 3.51$, $p = .06$; gender, trait anger, and alcohol consumption, $\chi^2(1) = .50$, $p = .48$; gender, trait anger, and childhood physical abuse, $\chi^2(1) = .02$, $p = .88$; gender, alcohol consumption, and childhood physical abuse, $\chi^2(1) = 2.63$, $p = .11$; and gender, trait anger, alcohol consumption, and childhood physical abuse, $\chi^2(1) = .29$, $p = .59$. Therefore, data for men and women were examined collectively; however, a main effect of gender was included in the model as a control when examining study hypotheses to reduce any potential biases (however small) within analyses.

Negative Binomial Model Results

For the current analyses, the continuous predictors (trait anger, alcohol consumption, and childhood physical abuse) were mean-centered to maintain interpretability. Results for the negative binomial regression model are presented in Table 2. As a measure of effect size ($r = .40$), we obtained the correlation between the model-predicted and actual outcomes. As expected, the three-way interaction of .0075 was significant (see Figure 1), indicating that as the disinhibiting factor of alcohol consumption increased, the interaction of the two impelling factors, trait anger and childhood physical abuse, became increasingly more positive, $\chi^2(1) = 5.34$, $p = .02$. More specifically, the interaction of trait anger by childhood physical abuse for individuals reporting low alcohol consumption (-1 SD below the mean) of -0.0665 was significantly negative, $\chi^2(1) = 7.35$, $p = .007$, and the interaction of trait anger by childhood physical abuse for individuals reporting high alcohol consumption of 0.0071 was non-significantly positive, $\chi^2(1) = .26$, $p = .61$.

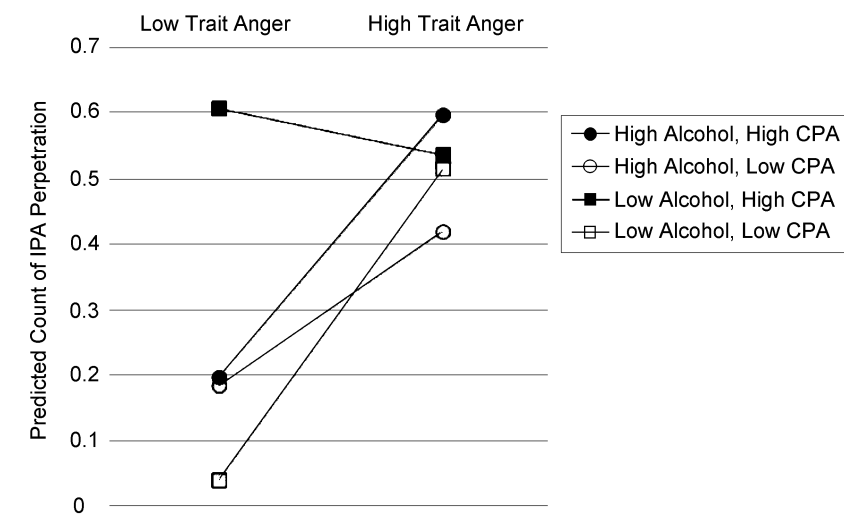


Figure 1. Negative binomial predicted mean IPA perpetration for the three-way interaction of trait anger by childhood physical abuse by alcohol consumption. IPA = intimate partner aggression; CPA = childhood physical abuse.

Simple effects of trait anger were estimated to illustrate the three-way interaction. Consistent with hypotheses, for persons with high alcohol consumption and high childhood physical abuse, the effect of trait anger of .10 was significantly positive, $\chi^2(1) = 4.62, p = .032$. Also, for persons with high alcohol consumption and low childhood physical abuse, the effect of trait anger of .22 was significantly positive, $\chi^2(1) = 13.59, p < .001$. However, contrary to hypotheses, for persons with low alcohol consumption and low childhood physical abuse, the effect of trait anger of .17 was significantly positive, $\chi^2(1) = 9.42, p = .002$. Furthermore, for persons with low alcohol consumption and high childhood physical abuse, the effect of trait anger of .06 was not significant, $\chi^2(1) = 1.14, p = .29$. Accordingly, when alcohol consumption was high, trait anger significantly predicted IPA regardless of childhood physical abuse history. However, when alcohol consumption was low, trait anger only significantly predicted IPA when individuals reported fewer childhood physical abuse experiences.

Discussion

The present study examined the joint contributions of three IPA risk factors within the framework of the I³ model (Finkel & Eckhardt, 2013).

Consistent with the I³ model, the relationship between IPA perpetration and trait anger (an impellor) varied depending on a person's history of childhood physical abuse (a distal impellor) and his or her level of alcohol consumption (a disinhibition factor). The significant positive three-way interaction found here suggests that these factors work together to increase risk for IPA perpetration among both men and women. While the overall three-way interaction was consistent with expectations, as described below the pattern of the interaction between trait anger and childhood physical abuse and simple effects of trait anger were not always consistent with study hypotheses.

As expected, the three-way interaction between trait anger, childhood physical abuse, and alcohol consumption was significantly positive, indicating that the relationship between trait anger and IPA was modified by the distal impellor of childhood physical abuse and the disinhibition factor alcohol consumption. When individuals had high levels of both childhood physical abuse and alcohol consumption, trait anger was positively related to IPA. Participants with a more severe history of childhood physical abuse may experience more aggressive urges at the time of instigation because of learned responses to experiencing conflict or anger (White & Widom, 2003), whereas alcohol consumption may have limited these individuals' ability to control aggressive urges. In addition, individuals who had high levels of childhood physical abuse and alcohol consumption were at greater risk of IPA perpetration when trait anger was high, suggesting that high levels of all three risk factors put men and women at particular risk of perpetrating IPA. As predicted by the I³ model, the strength of the urge to aggress, impelled by both childhood physical abuse and trait anger, may have exceeded the strength of forces inhibiting aggression, which were further compromised by alcohol consumption.

Although in general, higher levels of trait anger were related to greater IPA perpetration, not all results were consistent with our hypotheses. For instance, the negative two-way interaction between trait anger and childhood physical abuse in predicting IPA for individuals reporting low alcohol consumption was unexpected. To clarify this finding, we will describe it through its simple effects. Specifically, the relationship between trait anger and IPA was not significant when alcohol consumption was low and childhood physical abuse was high. Thus, when consuming smaller amounts of alcohol, these participants may not experience a disinhibiting effect, making it less likely for them to aggress at the time of conflict. Consistent with this possibility, past research has shown a positive relationship between trait anger and aggressive tendencies, but only among individuals who were legally intoxicated (Eckhardt, 2007). However, it is unclear why trait anger was not related to IPA when childhood

physical abuse was high and alcohol consumption was low, but was positively related to IPA when childhood physical abuse and alcohol consumption were *both* low. In general, childhood physical abuse has a low-to - moderate significant association with later IPA (Capaldi et al., 2012). Nonetheless, it may be that when alcohol consumption is low among some individuals who have a history of childhood physical abuse, resiliency serves as a buffer to the anger-IPA relationship. Past research indicates that a substantial proportion of individuals who experience childhood abuse are resilient and experience success across multiple domains of functioning (McGloin & Widom, 2001). One element of resilience for adult survivors may be a conviction not to repeat the mistakes of their parents (Pryce & Samuels, 2010). In the current sample, survivors' past abuse may have served as an example of what not to do when angry. Hence, when consuming no or only small amounts of alcohol, these individuals may be able to inhibit the urge to aggress, even when angry.

Although trait anger has been examined extensively as a risk factor for male-perpetrated IPA, only a few studies have examined it as a risk factor for female-perpetrated IPA (e.g., Shorey et al., 2011; Stuart et al., 2006; Taft et al., 2006). Similar to our results, these studies tend to find that trait anger is an important predictor of women's IPA perpetration. Furthermore, the few studies that have examined IPA perpetration by both men and women suggest that the relationship between trait anger and IPA does not differ across genders (Elkins et al., 2013; Taft et al., 2006). The present findings corroborate this prior work and add to a growing literature suggesting that trait anger, even when in the presence of other IPA risk factors, works similarly across genders to impel IPA perpetration.

The present sample consisted primarily of European American college students, and although IPA is a significant problem on college campuses, the severity of IPA in this group is not as great as that found in more diverse community samples. Future work is needed to examine the present risk factors for IPA in more ethnically diverse, community samples. Moreover, we investigated two impellance factors and one disinhibition factor within the framework of the I^3 model. However, the I^3 model describes processes believed to occur at the time of instigation. Thus, although our findings support categories of risk factors proposed in the I^3 model, our use of a cross-sectional design does not provide a direct test of the proximal processes inherent to the model. For instance, though we consider trait anger to be impelling IPA perpetration through its impact on aggressive urges at the time of instigation, we were unable to test this directly. Similarly, disinhibition was represented through a self-report measure of general alcohol use, which cannot assess whether participants were consuming alcohol at the time of IPA perpetration. This approach

may have contributed to our finding that alcohol did not play as strong of a disinhibiting role as expected. We also did not measure or manipulate instigation, but relied on participants' reports of IPA during conflict during the past 6 months. Future work might examine these factors experimentally (e.g., with lab-based alcohol administration and anger induction among victims and non-victims of childhood physical abuse).

Despite these limitations, the current study has important implications for IPA prevention and intervention work. This study may be the first to examine trait anger, childhood physical abuse, and alcohol consumption collectively among a sample of men and women. The positive three-way interaction between these risk factors is consistent with the I³ model and suggests that these factors work together to increase the risk of IPA perpetration. Our findings that trait anger was related to IPA perpetration across varying levels of childhood physical abuse and alcohol consumption make this an important intervention target. Cognitive restructuring techniques can be effective in reducing trait anger (Del Vecchio & O'Leary, 2004), and may be helpful for both men and women who are at risk of perpetrating IPA. Findings also suggest the importance of addressing alcohol use and childhood physical abuse in interventions targeting IPA. Indeed, reductions in drinking following alcohol treatment are associated with corresponding declines in IPA (O'Farrell, Fals-Stewart, M. Murphy, & Murphy, 2003). Although an individual's history of childhood physical abuse cannot be changed, these early experiences may promote violence-supportive beliefs that interfere with later conflict resolution skills. In such cases, clinicians may need to help adult survivors examine these experiences as a means of learning new approaches to effective conflict resolution with partners. Ultimately, multifaceted treatments that target many risk factors are needed to best address the problem of IPA perpetration.

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