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The Association between Phencyclidine Use and Partner Violence: An Initial Examination

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Abstract

The association between phencyclidine (PCP) use and violent behavior is unclear. The present investigation evaluated the association between PCP addiction and intimate partner violence, a specific violent behavior, using the substance abuse evaluations of 109 PCP, 81 cannabis, and 97 polysubstance (alcohol and cannabis) abusing offenders. Relative to both comparison groups, PCP users were more likely to receive inpatient referrals, have a significant legal history, and have perpetrated past-year general and intimate partner violence. Data suggest that PCP use may be associated with greater violence perpetration than cannabis use alone or in conjunction with problematic alcohol use.

Keywords

Phencyclidine; PCP; Intimate Partner Violence; Forensic Evaluation

INTRODUCTION

The lifetime prevalence of phencyclidine (PCP) use is estimated at greater than 3% of the population.¹ Samples of the substance are highly variable in terms of concentration and purity as PCP is currently unregulated with production occurring exclusively in illicit laboratories. Existing research links PCP to generally violent and aggressive behavior, including self-injury and violent criminal offending (e.g., assaults, homicide, etc.), possibly through a combination of acute and chronic effects.² Research has not yet explored the link between PCP use and intimate partner violence (IPV), a particular form of aggressive behavior in which the victim of physical violence is the perpetrator's intimate partner. The National Violence Against Women Survey, conducted between 1995 and 1996, estimated annual rates of IPV victimization at 1.3% for females and 0.9% for males.³ The use of licit

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and illicit substances, such as alcohol and marijuana, seem to increase the likelihood of relationship violence.⁴

PCP is most often ingested by smoking leafy substances, such as mint leaves, tobacco, or cannabis, which have been laced with liquid or powder PCP. McCarron and colleagues⁵ reported that PCP is often used in combination with other substances, primarily alcohol (22.3%) and cannabis (11.5%). PCP is commonly found in samples of cannabis, increasing the rate of polysubstance abuse diagnoses within PCP abusing samples.⁶ Given these high rates of comorbidity between PCP use and the abuse of other substances, the true effects of PCP on violent behavior may be difficult to identify and differentiate from the direct and interactive effects of other substances. The current study is the first to examine the PCP-IPV perpetration relationship and utilized both cannabis abuse and joint cannabis and alcohol abuse comparison groups to investigate the association in comparison to associations between IPV and commonly co-occurring substances of abuse among PCP users.

The effect of PCP and subsequent neurological insult on human behavior has not been the subject of laboratory manipulation for obvious ethical reasons. Rather, analogue, naturalistic, and epidemiological studies have contributed to the current state of knowledge about the behavioral side effects of PCP. The greatest intensity of atypical behavior can be observed up to 6 hours after initial ingestion while residual side effects can persist in excess of 12 months.² As with all substance use, behavioral responses to PCP differ from one individual to the next and include a heightened likelihood of delirium, visual disturbances, hallucinations, irregular speech, long term memory disorders, short term memory impairments, disorientation, muscle rigidity, hypertension, convulsions, increased pain threshold, nystagmus, temperature dysregulation, impulsivity, agitation and violence.^{6, 7} Specifically, self mutilation, unprovoked aggression, and homicide have been associated with PCP use.⁸ These effects may occur following chronic use or after a single occurrence.⁹ A comprehensive literature review suggests that PCP use may also be associated with increased violent criminal activity.¹⁰ More recently, Weiss drew upon experiential and empirical data to reach a similar conclusion.¹¹

Contradictory reports indicate that PCP induced aggression may be less common than is perceived by the public and suggest that aggression may be due to individual factors (i.e. dispositional aggressivity), environmental motivators (i.e. efforts to procure PCP), or the effects of other psychoactive substances.^{9, 12} Street use of PCP is difficult to study as users often mix the drug with other illicit substances. Research remains limited on the effects of mixed PCP use.

Etiological Models

Given the absence of PCP research in the greater IPV literature, the three competing, though not mutually exclusive, etiological models most often offered to explain the association between general substance use and partner violence are briefly introduced below. The *spurious* model suggests that a third variable, such as underlying psychopathy, may produce both substance and partner abusive behavior.¹³ The *indirect effects* model concludes that substances contribute to social and cognitive decline over time, resulting in an information processing style that facilitates aggressive interpersonal responding.¹³ Finally, the *proximal*

effects model attributes heightened aggressive responding to the psychopharmacological effects of acute intoxication.¹⁴ These models have not been tested in samples that abuse PCP, but the limited number of published neurological investigations offer a degree of insight into the behavioral consequences associated with acute and chronic PCP abuse.

Research into the psychopharmacological effects of PCP indicate that the greatest density of PCP receptors are located in the anterior forebrain area with the highest selective localization detected in hippocampal subfields.¹⁵ Javitt and Zukin reported that PCP, and similar abused substances like ketamine and methadone, exerts its effects by binding with N-methyl-D-aspartate (NMDA) receptors and other ionotropic glutamate receptors implicated in both drug abuse and schizophrenia.¹⁶ PCP functions as an NMDA receptor antagonist, producing anesthetic, hallucinogenic, and dissociative effects due to the involvement of NMDA in regulating synaptic plasticity and memory functioning. PCP, in large doses, can therefore result in neuronal necrosis as well as long-term damage to the posterior cingulate cortex, hippocampus, and other limbic regions of the brain.¹⁷ As such, anecdotal reports linking PCP to violence have received modest empirical support due to the proximal and chronic neurological effects of PCP addiction, though continued investigation is required to further evaluate the possible association between PCP use and violent behavior.

STUDY OBJECTIVES

The primary aim of the present study was to examine PCP use as a potential risk factor for IPV perpetration as suggested by the observed association between PCP use and general aggression. We were also interested in describing the substance use and legal characteristics associated with PCP use among a forensic population. We examined assessment data gathered from a large group of offenders during a court ordered substance abuse evaluation. Data provided by all participants diagnosed with a PCP use disorder were compared to cannabis and polysubstance (cannabis and alcohol) use diagnosed samples due to the considerable concurrent use of cannabis and alcohol observed across investigations of PCP abuse. We hypothesized that, relative to both comparison groups, PCP users would be more likely to 1) be younger, 2) have a more significant legal history, 3) have more serious charges for the current arrest as evidenced by a greater number of offenses as well as charges for violent crimes, 4) receive a recommendation to a higher level of care for substance abuse treatment and 5) report general aggression in the prior year. Finally, though no research has described an association between IPV and PCP, we hypothesize that 6) PCP users would evidence greater IPV than cannabis users and polysubstance offenders due to the link between general aggressive behavior and PCP use.

METHOD

Participants

Eligible participants were court-referred defendants for whom suspected substance use may have played a role in alleged criminal offending. Participants completed a standardized assessment, including consent to participate in the optional study component of the evaluation. A subset of the sample was retained for the current analysis (N=287) and

included only participants who were given a PCP use disorder (PUD; $n=109$), participants who were only diagnosed with a cannabis use disorder (CUD; $n=81$), and participants who received a polysubstance diagnosis for joint cannabis and alcohol abuse (AUD; $n=97$). Participants who received any other substance abuse diagnosis were not retained for comparison in the current analyses. No additional exclusion criteria were imposed. The final sample consisted of 287 participants with 31 (10.8%) females and 256 (89.20%) males. Participants reported an average of 11.1 ($SD = 1.7$) years of education and ages that ranged from 18 to 66 with an estimated mean of 30.0 ($SD=8.6$) years. Participants reported variable legal histories with 0 to 22 ($M=6.1$, $SD=5.7$) prior arrests. One-hundred thirty-two (46.0%) participants self-identified as Caucasian, 108 (37.6%) as African American, and 42 (14.6%) as Hispanic.

Procedure

Between the years of 2001 and 2009, 1,926 criminally accused offenders with suspected substance involvement were court ordered to complete a substance abuse evaluation in the state of Connecticut. The substance abuse evaluation policy was established under statute CGS 17a-694 to aid in treatment and diversion recommendations for defendants suspected of substance abuse or dependence during the time of their alleged offense. Participants were assigned a clinician and reported to the evaluation clinic for a single, two-hour-long meeting with a licensed clinical social worker trained in substance use assessment and treatment. Each session began by introducing the concept of non-confidentiality regarding the information shared during the session as the clinician was expected to provide a report and recommendation to the court upon the completion of the evaluation. Defendants then completed a general psychosocial interview, a detailed substance use and treatment history, as well as a toxicology screen. Participants were asked to provide information about IPV perpetration over the prior year during the relationship section of the psychosocial interview. Participants were informed that they were not required to respond to the IPV questions, that failure to respond would have no bearing on treatment recommendations, and that the data was being collected strictly for research purposes as approved by the Institutional Review Board at Yale University.

The clinicians reviewed all collateral information, including police reports, medical and psychiatric records, observations from jail staff, and telephone interviews with family members and close friends. Following the evaluation, clinicians provided a recommendation report to the court and summarized demographic, substance use, legal, and violence data into the spreadsheet that was used in the current study.

Measures

Substance use—PCP, alcohol, and cannabis use disorders were diagnosed as informed by participant self-report during the clinical interview. The interview included 22 items drawn from the substance abuse history section of the Addiction Severity Index (ASI-5).¹⁸ Participants were diagnosed according to criteria outlined in the Diagnostic and Statistical Manual of Mental Disorders.¹ Diagnoses were further supported by corroborating reports from collateral informants, treatment records, and toxicology screens at the time of the evaluation, when possible. Disorders of abuse and dependence were aggregated together for

each dichotomized substance use variable to categorize participants who either had or had not been diagnosed with a specific substance use disorder.

Legal—The assigned clinician was responsible for gathering data related to each participant's legal status. Specifically, they collected data pertaining to the total number of prior arrests, the longest period of incarceration, the current charges (i.e. type and number of alleged offenses), and additional information comprising the 27 items of the ASI's legal history section. Clinicians gathered the specified data from multiple sources, including the participant's self-report, the current affidavit of probable cause, and the publicly accessible legal database for the state of Connecticut (<http://jud.ct.gov>). The clinician also provided a treatment referral that was coded as either outpatient or inpatient, with an inpatient referral indicating that the counselor believed the participant's substance abuse problem required intensive treatment to remedy.

Violence—IPV was assessed using a global physical violence inquiry and follow up questions about IPV perpetration drawn from the 12-item physical assault subscale of the conflict tactics scale (CTS2) for any positive response to the global screening question.¹⁹ Participants were categorized by the evaluating clinician as partner violent if they reported one or more physically violent acts directed at an intimate partner over the previous 12-month period. The perpetration of general violent behavior over the previous year was assessed in a similar, open ended fashion.

Overview of Analyses

We conducted group comparisons between PUD participants and the two comparison groups using chi square analyses for nominal and categorical variables (i.e., gender, ethnicity, current violent or drug use charges, treatment referral, prior year violent behavior, and prior year IPV) and t-tests for continuous variables (i.e., age, number of previous arrests, longest incarceration, and number of current charges). Results are presented in the Table.

RESULTS

Prevalence Data

PCP use in the total sample was rare with 109 (94 male and 15 female) participants, or 5.7% of all defendants, meeting criteria for a PCP use diagnosis. PCP commonly co-occurred with cannabis use (n=80; 73.4%) and alcohol use (n=63; 57.7%) with fewer participants reporting co-occurring cocaine use (n=42; 38.5%), opiate use (n=5; 4.6%) and club drug use (n=6; 5.5%). Two (1.8%) PUD participants were diagnosed with only a PCP disorder. Seven (6.4%) PUD participants were identified as a result of a positive toxicology screen after having denied PCP use. One-hundred two participants (93.6%) reported PCP with 20 (18.3%) of them also testing positive for recent use, 20 (18.3%) of them testing negative for recent use, and 62 (56.9%) of them with no recorded toxicology data. The remaining samples were comprised of 81 participants with only a cannabis use diagnosis and another 97 participants who received both an alcohol and a cannabis use diagnosis. Among the 287 participants included in the current study, 87 (30.3%) respondents reported a recent history

of IPV perpetration and 111 (38.7%) endorsed general aggression outside of the relationship.

Demographic Data

In examining the associations between demographic variables and substance use, several distinctions emerged between PCP users and the two comparison groups. Compared to CUD participants, PUD participants were more likely to report ethnic minority status, $\chi^2(1) = 19.2, p < .01$. Further examination revealed that a greater percentage of PCP users, compared to cannabis users, were African American, $\chi^2(1) = 16.4, p < .01$, or Hispanic, $\chi^2(1) = 9.4, p < .01$, rather than Caucasian. No differences were detected between the PUD and the CUD groups in terms of age or gender. Compared to AUD participants, PUD participants were more likely to be minorities, $\chi^2(1) = 32.05, p < .001$. PCP users were more likely than polysubstance users to report African American, $\chi^2(1) = 32.68, p < .001$ and Hispanic, $\chi^2(1) = 10.21, p = .001$, ethnicity. No differences were detected between the PUD and the AUD groups in terms of age or gender.

Legal Data

PCP users evidenced greater legal involvement than observed in the comparison groups. PUD participants reported significantly more prior arrests than the CUD, $t(101) = 4.0, p < .001$, and the AUD, $t(102) = 2.14, p = .01$, groups. PUD participants were more likely to have most recently been arrested for a violent offense, $\chi^2(1) = 3.9, p = .04$, but less likely for drug charges, $\chi^2(1) = 6.3, p = .01$, than CUD participants. PUD and AUD participants were equally likely to be arrested for violence and drug related offenses. PCP users were significantly more likely to be referred to inpatient treatment facilities for a higher level of care than were either cannabis users, $\chi^2(1) = 40.0, p < .01$, or polysubstance users, $\chi^2(1) = 14.38, p < .001$. PCP participants were not charged with a greater number of offenses during the current arrest than CUD or AUD participants.

Violence Data

Finally, PCP users were significantly more likely to have engaged in violence during the prior year than either comparison group. Relative to CUD participants, PCP users were more likely to endorse both general violent behavior, $\chi^2(1) = 12.8, p < .01$, as well as IPV, $\chi^2(1) = 3.5, p = .04, d = .33$. General violence, $\chi^2(1) = 5.44, p = .02$, and IPV in particular, $\chi^2(1) = 4.69, p = .03$, were also more prevalent among PCP users when compared to AUD participants. We conducted a follow-up analysis and discovered that the alcohol abusing PUD participants were no more likely to commit IPV than PUD participants without an alcohol use disorder, $\chi^2(1) = 1.4, p = .49$. Similarly, cocaine dependent PUD participants were no more statistically likely to commit IPV than PUD participants without a cocaine use disorder, $\chi^2(1) = 2.2, p = .14$. We also found that the PUD participants who committed IPV were not necessarily the same ones who were violent outside of the relationship, $\chi^2(1) = 19.2, p < .001$.

DISCUSSION

The current investigation was designed to introduce and explore the association between IPV and PCP use in a unique sample of offenders at the time of a court mandated substance abuse evaluation. PCP users were more likely to be of minority status, but not younger, than comparison participants. PCP use was relatively rare and occurred almost exclusively in the context of polysubstance abuse in the sample of offenders court referred for substance use evaluations. Nearly 75% of all PUD participants were concurrently diagnosed with a cannabis use disorder. Also among the most commonly co-occurring substances of abuse was alcohol, which was abused by more than half of the PUD participants. Given the comorbid substance use disorders and violent behavior observed in PCP users, it is not surprising that PCP diagnosed participants received recommendations for higher levels of care than comparison participants.

PCP use was also associated with more substantial legal involvement and, of greatest relevance to this investigation, violent behavior toward one's romantic partner and others. The rate of IPV in the sample of 287 participants was lower than would be expected based upon estimates from substance treatment studies which indicate that between one third and one half of all substance dependant participants have also perpetrated IPV.^{20,21} The data described above were collected from a unique population of offenders. The majority of substance use and IPV samples are drawn from those actively involved in treatment, whereas this group completed an evaluation prior to sentencing, resulting in the inclusion of a more heterogeneous set of offenses, substance use profiles, and attitudes toward treatment and change than may be observed in the samples of offenders filtered into either treatment or jail. Alternatively, participants may also have been motivated to underreport IPV during their court ordered substance abuse evaluation.

The small but significant effects detected between PCP use and IPV in comparison to both cannabis and polysubstance comparison groups were comparable in magnitude to the composite effects of alcohol and cocaine on IPV observed across studies.^{22,23} Our results strongly suggest that the presence of PCP should be considered as an indicator, though not necessarily a cause, of potential IPV and general violence. We recognize the concerns of Brechner and colleagues (1988) and agree that the overlap between PCP use and other substances associated with violence makes it difficult to conclude that PCP and violence are directly associated. It should be expected that the vast majority of real-world PCP use does not occur in isolation of other illicit substances. Therefore, we cannot conclude that PCP is directly associated with violence but rather that violence may be more likely to occur when PCP is present in the substance use profile than it would be for cannabis or cannabis and alcohol abusing offenders. Violence may be more closely associated with specific substance use combinations or with spurious factors that increase the likelihood of both polysubstance use and violence. It is recommended that future research attempt to capture a larger sample of PCP users to factor out the effects of comorbid alcohol and cocaine use disorders, or use a sample of "pure" PCP users to more directly assess the association of PCP with IPV.

Limitations

The findings presented in the current study should be interpreted with several limitations in mind. First, there were several limitations associated with the screening methods, including self-report and urine toxicology, used to identify specific substance use problems for individual offenders. PCP is not a regulated substance. The quality and purity of the substance cannot be standardized in a naturalistic study with a real-world sample of the sort described in the current investigation. As such, controlling for impurities that may implicate polysubstance use in all PCP users was not possible. Not all participants received a toxicology screen and many had been incarcerated for several weeks before the evaluation, allowing the body an opportunity to remove traces of substances during a controlled detoxification process. To accommodate these limitations, counselors accumulated and reviewed collateral information upon which to base their diagnoses. Second, the external validity of the relationships reported above is limited to male forensic samples with suspected substance involvement. Finally, the data used in the current investigation was drawn from an existing dataset and, thus, was limited in both IPV-specific content and available behavioral outcomes of interest.

Clinical Implications

The clinical implications of the current investigation are numerous. The majority of clients with a PCP diagnosis received referrals to inpatient care. Inpatient facilities must be capable of addressing symptoms of use and withdrawal. No PCP treatment protocols have yet been advanced. Any such protocol would necessitate the integration of treatment for multiple substances of abuse. We further recommend that patients be assessed or tested for PCP more routinely. In evaluating PCP related psychosis or violence, we also suggest that practitioners and legal advisors consider the possibility of poor premorbid functioning and polysubstance abuse as possible mitigating factors. Finally, we recommend that PCP offenders be evaluated and appropriately referred for IPV treatment. Consistent with Holtzworth-Monroe and Stuart's model of batterer subtypes, a significant number of offenders had perpetrated IPV only while others had perpetrated general violence without IPV.²⁴ Some were non-violent while others were violent in both contexts. It may assist in evaluation and treatment to further examine the influence of PCP on IPV in each of the violence subtypes and across genders. Fishbein concluded that females may self-medicate with PCP to reduce aggressive behavior and distress that builds during abstinence while males may experience greater aggressive impulses and distress during intoxication.²⁵ This suggests that male PCP use may be associated with IPV perpetration and female PCP use may be associated with IPV victimization, though further research is needed to test such hypotheses.

In Conclusion

PCP use may be rare but it is associated with serious outcomes, including assaultive behavior, legal problems, risk of injury to self and others, as well as temporary and chronic psychosis. The association between PCP use and violence may extend into IPV as partner violence was more common among PCP users than cannabis or combined cannabis and problematic alcohol users in the current sample. Results suggest that the effects of PCP use should be further explored as a substance that may contribute to the perpetration of IPV. A

more thorough assessment of partner violence and safety factors should be included in PCP emergency evaluation and addiction treatment.

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Table

Demographic, legal, and violence data for participants across substance abuse groups.

Variable	Comparison Groups											
	PCP (n=109)				Cannabis (n=81)				Alcohol/Cannabis (n=97)			
	M	SD	%		M	SD	%	t	χ^2	M	SD	%
Demographic Data												
Age (years)	31.9	7.9	---	---	29.0	7.4	---	0.1	---	29.4	10.0	---
Male	---	---	86.2	---	---	---	92.6	---	1.9	---	---	89.7
Minority Status	---	---	75.2	---	---	---	43.4	---	19.3**	---	---	36.1
												32.1**
Legal Data												
Prior Arrests	8.4	6.0	---	---	4.5	4.1	---	4.0**	---	5.9	6.2	---
Longest Jail Time (Mo.)	9.8	15.8	---	---	2.7	6.7	---	2.6*	---	2.2	5.0	---
Number of Charges	3.9	2.8	---	---	3.5	2.4	---	1.1	---	3.4	1.9	---
Violence Charge	---	---	16.2	---	---	---	6.5	---	3.9*	---	---	13.8
Drug Charge	---	---	61.9	---	---	---	79.2	---	6.3**	---	---	57.5
Inpatient Referral	---	---	93.3	---	---	---	47.5	---	40.0**	---	---	71.6
												14.4**
Violence												
General Violence	---	---	52.9	---	---	---	26.6	---	12.8**	---	---	36.5
Partner Violence	---	---	38.9	---	---	---	25.9	---	3.5*	---	---	24.7
												4.7*

Notes: Mo. = Months

* p<.05

** p<.01