

Substance Use and Intimate Partner Violence: Neurocognitive Considerations

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Abstract: As reported by the National Intimate Partner and Sexual Violence Survey (NISVS), on average 24 people per minute are victims of intimate partner violence (IPV). IPV constitutes a significant public health concern. The Centers for Disease Control and Prevention (CDC) defines intimate partner violence as “any physical, sexual or psychological harm by a current or past partner.” Aggressive threats, stalking, coercion and control of reproductive and sexual health are all aspects of violence. A major predictor and accelerator for aggression and violence is the use of alcohol and drugs. Substance use has an immediate effect on cognition, by lowering inhibitions and self-control which precipitates the resolution of violence and conflicts between partners. The evidence reporting on substance abuse in concurrent cases of IPV is increasing. The purpose of this paper will be to more closely examine the neurocognitive functions of both substance abusers and violent individuals independently to determine if there are areas of functionality that are impaired and that are also related to aggression.

Keywords: Intimate partner violence, substance abuse, aggression.

As reported by the National Intimate Partner and Sexual Violence Survey (NISVS), on average 24 people per minute are victims of intimate partner violence (IPV). IPV constitutes a significant public health concern. The Centers for Disease Control and Prevention (CDC) defines intimate partner violence as “any physical, sexual or psychological harm by a current or past partner.” Aggressive threats, stalking, coercion and control of reproductive and sexual health are all aspects of violence (Black et al., 2011). While men undoubtedly experience violence in a relationship, overwhelmingly women are victims of intimate partner violence. Male victims mainly endure physical violence, while females face multiple forms of violence. Statistics from the most recent survey of the CDC state 1 in 3 women have been a victim of physical violence in a relationship, compared to 1 in 4 of men (Black et al. 2011). However, 1 in 4 women and 1 in 7 men have reported severe physical violence by a partner in their lifetime. Around 1 in 10 women have been raped and nearly 1 in 6 women have been stalked by a partner in their lifetime (Black et al. 2011). Interestingly enough, half of all men and women have reported psychological

aggression by an intimate partner (Black et al. 2011). In total over 12 million people in the United States have experienced intimate partner violence (Black et al. 2011).

1. LITERATURE REVIEW

1.1. Substance Use and Violence

While there is no excuse for resorting to any form of violence, many factors contribute to the cause. These alarming statistics have roots in low economic status, family stressors, marital tension, infidelity and impulsive personalities. A major predictor and accelerator for aggression and violence is the use of alcohol and drugs. Substance use has an immediate effect on cognition, by lowering inhibitions and self-control which precipitates the resolution of violence and conflicts between partners. According to numerous studies, on average 40-60% of IPV happens in occurrence with alcohol use. Male alcohol dependent patients seeking treatment have rates of physical violence as high as 50-60% in the year prior to treatment (Easton, Sacco, Neavins, Wupperman, & George, 2008). The Bureau of Justice Statistics reports that male and female victims are equally likely to report the presence of alcohol during their

victimization. In one study, Fals-Stewart (2003) observed that men entering an alcohol or domestic violence program were 11 times more likely to inflict physical aggression on a female partner on the days of men's drinking; similar results were reported in the context of illicit drug use. In another study, out of 151 court referred male batterers, 53% used marijuana and 24% used cocaine in the time frame of the abuse. Authors Gilchrist, Blazquez, Segura, Gledschlager, Valls, Colom and Torrens (2015) found that many male substance misusers blamed their violence towards others on cocaine. Cocaine's direct effect on the brains dopamine and serotonin levels may lead to impaired impulse control, resulting in physical expression of aggression. Similarly, in a study by Murphy, O'Farrell, Fals-Stewart, and Feehan (2001), when violent alcoholic patients were compared to non-violent alcoholic patients, the violent perpetrators reported greater degree of antisocial personality characteristics and higher alcohol severity. Awareness of the possibility of concurrent neuropsychiatric disorders and substance abuse is increasing among practitioners and researchers (Punzi, 2015).

1.2. Neurocognitive Considerations in Substance Users and Violent Individuals

The evidence reporting on substance abuse in concurrent cases of IPV is increasing. The current shift will be to more closely examine the neurocognitive functions of both substance abusers and violent individuals independently to determine if there are areas of functionality that are impaired and that are also related to aggression. There is also an increasing interest among clients in undergoing neuropsychological assessment (Punzi, 2015). In identifying any neurocognitive deteriorations in violent substance abusers, treatments can specialize in the realm of neurocognition rehabilitation parallel with substance abuse treatment to make for more appropriate therapy.

To measure neurocognitive functioning, the following different domains are addressed: memory, attention, executive functioning, psychomotor function, spatial processing, processing speed, and emotion processing. Memory (declarative, non-declarative, episodic, and semantic) is the ability to recall or recognize past events (personal experiences, memory of words, facts, or rules) as well as remembering to do something in the future. Memory entails being capable of remembering something without being consciously aware of the process.

Attention encompasses the capacity to multitask in addition being able to maintain behavior/cognitive focus in the presence of distracting stimuli (Fernández-Serrano, Pérez-García, & Verdejo-García, 2011). Executive functioning covers an abundance of cognitive processes a person performs, including working memory, cognitive flexibility, reversal learning, self-regulation, decision making, planning/organizing, analogical reasoning and fluency. Psychomotor function describes a person's motor strength and speed, hand-eye coordination, balance, and dexterity. Spatial processing is the means to judge the relationship between visual stimuli. Lastly, processing speed is the capability to process information automatically and lastly, emotion processing is capacity to recognize experience and express proper emotions (Fernández-Serrano et al., 2011).

The neuropsychological functions that can be impaired as a result of the abuse of alcohol and drugs include: memory, new learning, executive functions, visual-spatial skills, perceptual-spatial abilities, and perceptual-motor and information-processing speed (Desfosses, Meadows, Jackson, and Crowe, 2014). Fernández-Serrano, Pérez-García, and Verdejo-García (2011) mention that not only does the abuse of alcohol and drugs cause these neuropsychological deficits that interfere with cognitive performance (impacting their work, school, quality of life), but that it also plays a key role in a person's attitude, severity, and continuation of their addiction. Furthermore, a significant note to be mindful of is that impairments of these neuropsychological domains have been suggested to predate initial substance use and can influence particular individuals to use certain types of drugs.

A study conducted in Australia by Desfosses, Meadows, Jackson, and Crowe (2014) supports the notion that alcohol use leads to cognitive decline. The study was aimed at understanding the relationship between cognitive performance and emotional functioning in chronic alcohol users. Thirty participants with a history of alcohol abuse or dependence were administered a variety of tools to assess neuropsychological functioning. They were also sent two questionnaires, the DASS and the Coping Orientation of Problem Experience. Results from the first study revealed that chronic alcohol users performed worse than the control group for tasks associated with visuospatial ability and cognitive functioning. In particular, the alcohol

group showed impairments in inhibition, set-shifting, visuospatial construction and cognitive flexibility (Desfosses, Meadows, Jacson, & Crowe, 2014). This group also showed greater emotional dysfunction.

In a study by Latvala et al. (2009), 466 young Finnish adults were measured to determine if there was a correlation between substance use disorders (SUD) and cognitive functioning. The vocabulary subtest of the Wechsler Adult Intelligence Scale - Revised (WAIS-R) was used to measure verbal intellectual ability. The digit symbol subtest of the WAIS-R assessed psychomotor and processing speed performance. Executive functioning was measured by the Trail Making Test (Latvala et al. 2009). Verbal and visual working memory was examined using the Wechsler Memory Scale -R, where verbal learning was evaluated by the California Verbal Learning Test (Latvala et al. 2009). The test findings concluded that poor verbal intellectual ability and inferior psychomotor processing were correlated with lifetime SUD. Further, subtle associations were seen in executive function, verbal working memory, and verbal learning processes (Latvala et al. 2009). Interestingly enough, individuals diagnosed with substance abuse rather than dependence showed more deficits in verbal intellectual ability (Latvala et al. 2009). Another conclusion of this study points to both parental and low basic education as risk factors for SUD, and these are associated with lower verbal intellectual ability (Latvala et al. 2009).

In another study with 62 males, 30 that were substance dependent and 32 that were healthy controls, Cunha, Nicastrí, Guerra de Andrade, and Bolla (2010) used the Frontal Assessment Battery (FAB) to analyze executive cognitive function. They also used the Digits forward (DF) and backward (DB) of the Wechsler Adult Intelligence Scale to measure attention and working memory, respectively (Cunha, Nicastrí, Guerra de Andrade, & Bolla, 2010). The FAB has six subtests examining conceptualization, mental flexibility, motor programming, sensitivity to interference, inhibitory control, and environmental autonomy (Cunha et al., 2010). Overall, the substance-dependent participants scored notably worse on the FAB, specifically on the areas of abstract reasoning, cognitive flexibility and motor programming (Cunha et al., 2010). SDI also did poorly in the DF and DB tests, translating to deficits in attention and working memory (Cunha et al., 2010).

Easton, Sacco, Neavins, Wupperman, and George (2008) used subjects from an alcohol treatment facility to measure neurocognitive functioning of IPV+ (n=9), IPV- (n=9) individuals and controls (n=7) that were not alcohol dependent. All subjects were cigarette smokers. The researchers used a battery of neurocognitive tests aimed at spatial working memory, processing speed, response inhibition, concentration, impulsivity, cognitive flexibility and verbal learning and memory. When compared to the control group, IPV+ reported a lower IQ and considerably more deficits in impulse control, visuomotor sequencing-attention tasks, and cognitive flexibility (Easton et al., 2008). The IPV- group also reported significant executive functioning impairments when compared to control (Easton et al., 2008). Overall both IPV groups showed deficits on impulse control over the control group, but the IPV+ group presented being the most severe (Easton et al., 2008).

Along with the notable amount of literature that reveal alcohol and other psychoactive drugs to be main causes for the decline in cognitive performance, there is speculation from other research that argue other possible risk factors (Fals-Stewart & Bates, 2003). Hill and Colistra (2014) communicate that the amount and prevalence of alcohol use and drug abuse are correlated to neurocognitive performance. Research suggests age of onset of alcohol use (specifically the earlier the age the more deficits) to be indicative of neuropsychological performance. Extended polydrug use is also predictive of poor neurocognitive test performance (Lilliquist & Bigler, 1992). Lastly, sociodemographic traits, family history of substance use, physical health and psychiatric functioning are connected with impairments in neuropsychological test performance (Fals-Stewart & Bates, 2003).

Fernández-Serrano, Perales, Moreno-López, Pérez-García, and Verdejo-García (2012) performed a study that compared cocaine-dependent individuals (CDI) to healthy comparison individuals (HCI) in their impulsivity and compulsivity responses to neuropsychological probes. CDI reported higher scores on trait impulsivity, with worse numbers in response inhibition and response perseveration. This implies that CDI are impaired in areas of inhibitory control and reversal of formally supported response patterns. Other findings linked to this study suggest that these deficiencies in trait

impulsivity are strong predictors of inadequate treatment outcomes for cocaine outpatients. In addition, the severity of alcohol use is the central predictor in inhibitory control (Fernández-Serrano, Perales, Moreno-López, Pérez-García, & Verdejo-García, 2012).

Brown, Tapert, Granholm, and Delis (2000) explored the correlations of early onset alcohol use in adolescents and neurocognitive functioning. Thirty-three alcohol dependent teenagers ages 15-16 were compared to 24 matched non-alcohol users. The alcohol-dependent participants were administered psychological tests at three weeks after their detoxification. Results indicated that long-lasting alcohol use was correlated to poor test performance in the retrieval of verbal and nonverbal information (Brown, Tapert, Granholm, & Delis, 2000). In addition, the alcohol withdrawal was associated with inferior visuospatial functioning (Brown et al., 2000).

Walling, Meehan, Marshall, Holtzworth-Munroe, and Taft (2012) compared intimate partner aggression to non-violent controls in areas of head injury, executive functioning and intelligence. Overall, they concluded that the degree of neuropsychological deficits in violent perpetrators were mild compared to control and were not evident in all participants (Walling, Meehan, Marshall, Holtzworth-Munroe, & Taft, 2012). Male batterers demonstrated lower average performance specifically in verbal proficiency, self-correction and response inhibition (Walling et al., 2012). Results from this study seem to suggest verbal intelligence and self-report head injury to be indicators in physical partner violence. More so, low verbal intelligence, specifically shortcomings in comprehension and effective use of language, could explain for the inability to express emotions or solve problems and instead resort to violence (Walling et al., 2012).

1.3. Treatment Considerations

After reviewing just some of the evidence present on how deficits in neurocognitive functioning play a part in substance use and intimate partner violence, there is good reason to suspect that possessing such impairments would hinder a person's ability to effectively respond to traditional treatments for substance use and/or domestic violence. Research has shifted and current researchers suggest that the effect of cognitive impairment on treatment happens indirectly by mediating and/or moderating a patient's ability to apply cognitive

resources to processes of SUD treatments (Hill, & Colistra, 2014). Although still in infancy, recent literature has shifted to focus on how to adapt SUD treatments for cases of addiction related to cognitive impairment (Hill, & Colistra, 2014). Recovering from such problems usually requires extensive prolonged behavior change and constant learning and practicing of interpersonal skills, which require enhanced neurocognitive functioning (Bates et al., 2002). Seeing that neuropsychological functioning contributes to the outcomes of treatment programs for substance abusers and domestic violence perpetrators, there is need for cognitive rehabilitation to be integrated with individual and group therapy for co-morbid IPV and substance abuse. Future research should examine multiple effective cognitive and behavioral approaches that are refined with neurocognitive skill building that restore and enhance function.

Although there is little research on the effect of adding cognitive rehabilitation in SUD treatment, there is literature regarding the effects on patients with mild Alzheimer's and traumatic brain injury showing that these treatments have a positive effect on patients' recovery. The focus of cognitive rehabilitation includes difficulties most relevant to the individual, with the aim of achieving functional improvements and well-being (O'Sullivan, Coen, O'Hara, & Shiel, 2015). This type of rehabilitation has been used for years with people suffering from traumatic brain injury and stroke. A study testing the effectiveness of cognitive rehabilitation on patients with mild cognitive impairment comprised of six to eight individual sessions of cognitive rehabilitation consisting of personalized intervention to address goals delivered weekly. The results showed an improvement in relation to compensatory strategies, prospective and episodic memory difficulties (O'Sullivan, Coen, O'Hara, & Shiel, 2015). Using the methods implemented in the study discussed could benefit SUD clients seeking treatment, as SUD patients with changed neurocognitive function can be said to have mild cognitive impairment.

2. DISCUSSION

As aforementioned, alcohol and drug use are major predictors of aggression and violence. Some have speculated that there are deficits in the neurocognitive functions of substance abusers and violent individuals. The present paper addressed some of the research pertaining

to these notions. Overall, the findings do provide evidence of cognitive impairments in both of the groups in question. For example, there appears to be poor intellectual ability, inferior psychomotor processing, and poor inhibitory control in substance users. It also appears that the severity and duration of substance use affect the intensity of these impairments. In terms of violence, it seems that violent abusers display lower verbal proficiency and lower response inhibition. Despite all of this information, there is still much work to be done. More specifically, future research should aim to examine the implementation of neurocognitive skill building paired with cognitive and behavioral approaches, in order to facilitate the restoration and enhancement of cognitive function.

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