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Gender differences in trait aggression in young adults with drug and alcohol dependence compared to the general population

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ABSTRACT

Objective: Data in gender differences in aggression among alcohol and drug dependent subjects are lacking, and no published data are available about gender differences among various subtypes of substance using populations. The goal of this cross-sectional study was to investigate gender differences with regard to types of trait aggression in substance dependent young populations (age: 20–35 years) compared to the general population.

Methods: Subjects were selected from two clinical samples with a diagnosis of alcohol and drug dependence as well as from a representative sample of the general population. Trait aggression was measured by the four individual subscales of the Buss Perry Aggression Questionnaire (physical-PA, verbal aggression-VA, hostility-H and anger AN) whereas alcohol and drug use were characterized by the AUDIT and EuroADAD scales, respectively.

Results: Alcohol and drug dependent subjects showed higher severity on all four subscales of trait aggression compared to the general population. The male–female difference was the highest in the cannabis group. General Linear Model analysis for PA indicated a significant main effect of gender (higher PA for males, $p = 0.034$) with no interaction between substance dependence and gender. For VA, no main effect or interaction for gender was found. Effect sizes for gender difference indicated that while males and females were similar in the control group in the severity in H and A, the level of H and AN was substantially higher in females than in males in the clinical group. These differences between the two genders reached statistical significance in the marijuana group, where female subjects showed a significantly higher severity in these two domains.

Conclusions: Compared to the normal sample chronic substance use is associated with higher scores on certain factors of trait aggression, including hostility and anger, in females than in males. Our data suggest that aggression in substance dependent females is more provocable by chronic use of alcohol and drugs than in males.

1. Introduction

While earlier studies indicated a marked male overrepresentation on different measures of aggression (Maccoby and Jacklin, 1974), a more differentiated picture with regard to gender contribution to violence has been emerging in the last two decades (Amore et al., 2008; Gustafson, 1991; Skara et al., 2008). Gender differences are markedly reduced or eliminated, or female aggression may exceed aggression in males in relation to certain settings, disorders, substances, personality traits, provocation or circumstances. Moreover, females may display higher severity on certain measures such as verbal aggression (VA). In addition, women have been shown to exceed men on indirect, relational, social and expressive measures of aggression (Campbell and Muncer, 2008; Campbell et al., 1997; Crick and Gropeter, 1995, Eagly and Steffen, 1996; Skara et al., 2008). Male dominance has been reduced in hostility (H) (White and Hansell, 1996), anger (AN) (Gerevich et al., 2007a), as well as impulsivity (Ramadan and McMurran, 2005).

In connection with major mental disorders, women were 27 times (men 4 times) more likely than women with no disorder to exhibit violent offense, and 5 times more likely than women without disorder to exhibit criminal behavior (Hodgins, 1992). The analogous number for males with regard to violent behavior was an increase of 2.5 times.

Abbreviations: AQ, Buss–Perry Aggression Questionnaire; PA, physical aggression; VA, verbal aggression; H, hostility; AN, anger; AUDIT, Alcohol Use Disorders Identification Test; EuroADAD, European Adolescent Assessment Dialogue; BDI, Beck Depression Inventory; SUD, Substance Use Disorder; GLM, General Linear Model; ANOVA, Analysis of Variance; SAS, Statistical Analysis System for Windows.

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Amount and type of aggression did not differ by gender in clinically depressed adolescents (Knox et al., 2000), and in adult acute psychiatric inpatients (Amore et al., 2008). Male overrepresentation among violent patients disappears in inpatient psychiatric populations (Binder and McNiel, 1990; Lam et al., 2000). Among psychiatric inpatients, women had much higher VA than men, and a similar percentage of women and men showed physical aggression (PA) (Krakowski and Czobor, 2004). Men were observed to be more violent than women in the 2 weeks before hospitalization, but women were more aggressive than men in the 3 days after admission (Binder and McNiel, 1990), suggesting that closeness and crowding can moderate the gender differences among psychiatric patients in aggression.

With regard to setting, PA in the community has been found to be more common in men than women, and was associated with substance abuse (Krakowski and Czobor, 2004). Substance use is a moderating factor of gender differences in aggression. Alcohol intoxication effects are more than 3 times as great for female vs. male arrestees for violent offenses (Martin and Bryant, 2001).

Investigations of gender differences should take into account that aggression is a heterogeneous phenomenon. It can occur as a manifestation of basic dispositional characteristics ("trait-aggression"), or as a result of contextual and environmental variables such as a high level of agitation and activation ("state-aggression") (Spielberger and Sydeman, 1994). It is noteworthy in this context that gender differences are greatly reduced or even reversed in experimental settings through provocation. Type of provocation and other contextual variables also affect the magnitude of gender differences in aggression (Bettencourt and Miller, 1996). Men and women with low dispositional (trait) aggression did not differ in aggression on the Taylor Aggression Paradigm (Giancola, 2002). Women with trait rumination were more likely to report alcohol-related aggression than men who ruminated (Borders et al., 2007).

Alcohol increased aggression in experimental settings for male social drinkers but not for females (Gussler-Burkhardt and Giancola, 2005). In community settings, the quantity, frequency and heavy episodic drinking and fights after drinking were significantly stronger for females than males in the general population (Wells et al., 2000; Wells et al., 2005). This finding was confirmed by a study with female arrestees (Martin and Bryant, 2001) and by a longitudinal study, which showed that prior alcohol use is a better antecedent of alcohol-related aggression for females than for males (White and Hansell, 1996).

Relational aggression can predict later alcohol and hard drug use in equal manner in males and females (Skara et al., 2008). No interaction effect has been reported between gender and use of marijuana in determining violence in adolescents (Monshouwer et al., 2006). A recent review of the literature demonstrated a positive association between marijuana use and violence (Moore and Stuart, 2005). However, the data on associations between marijuana use and aggression, are inconsistent at best. Some authors suggested that marijuana was not related to violence or suppressed it, except under certain circumstances (Abel, 1977; Miller and Potter-Efron, 1989; Taylor and Hulsizer, 1998), while other authors indicated that marijuana use was associated with an increased risk of violence (e.g., Bushman, 1993; Sussman et al., 1996). Higher level of hostility was strongly associated with marijuana smoking in an epidemiological study of 5115 young adults (Scherwitz et al., 1992). However, the results of many of the aforementioned studies are difficult to interpret due to methodological problems, including the fact that in these studies the aggression levels of cannabis users were not compared with data from a normative sample or from other drug dependent populations. Whereas association between metamphetamine use and violence was not found among street-involved youth, daily alcohol consumption was significantly associated with violence (Martin et al., 2009). Heroin dependent males had a longer total time in prison and longer sentences than females. They had a higher risk of incarceration, criminal activity and arrest than females (Shand et al., 2011).

Mann et al. (1998) compared aggression levels of alcoholics with normal population and found no overall difference. However, this study may have been influenced by referral bias since the authors focused on a socially well-adjusted male population. The majority of studies used a convenience sample; the study populations did not represent all age groups and were unbalanced with regard to gender distribution. Thus, to gain a more complex insight into the association between aggression and substance use, it is important to focus on a representative sample from the general population and clinical populations.

To our knowledge, gender differences in aggression among alcohol and drug dependent clinical populations were not investigated in previous studies. Furthermore, to our knowledge, no published data are available about gender differences among various subtypes of drug using populations. In the previous studies, among most age groups, the young adult population has been considered to be the most at risk with regard to aggressive behavior and violence (Buss and Perry, 1992; Gerevich et al., 2007a). In addition, females may be particularly at risk of aggressive behaviors as a result of certain contextual and environmental factors, including drug and alcohol use that we investigated in the current study. Therefore to address the above problems, in the present study gender differences with regard to four types of trait aggression, as measured by the PA, VA, H, and AN on the Buss–Perry Aggression Questionnaire (AQ), were examined in alcohol and drug dependent young populations as compared to the general population. We hypothesized (Hypothesis 1) that substance dependent subjects, taken together, would show higher severity of trait aggression than the general population with regard to all subscales of AQ. Furthermore, based on the aforementioned data, we also posited (Hypothesis 2) that gender differences in aggression observed in the general population would be greatly reduced or even reversed in substance dependent females as compared to males, especially with regard to anger and hostility.

2. Methods

2.1. Study populations and data collection

For the purpose of this investigation, subjects were selected from two clinical populations with a diagnosis of alcohol and drug dependence as well as from a representative sample of the adult population.

2.1.1. Alcohol dependent patients

Data collection was performed among all the newly admitted patients in 6 special addiction units of psychiatric hospital departments in Budapest. Patients for this study were selected if they fulfilled the clinical diagnosis of alcohol dependence on the basis of DSM-IV, made by the treating addiction psychiatrists. Eligible subjects with alcohol dependence were identified by specially trained physicians or research assistants. Written consent was provided by the participating institutions, and an informed consent was obtained from the participating patients. Based on the cross-sectional demographic data obtained at each of the participating centers, the gender and age distribution of the patients represented the whole treated inpatient population in the same treatment units at the time of the investigation ($p > 0.1$ for all comparisons). Data were collected at the time of admission, in the diagnostic phase of the treatment. The data obtained for the current investigation included socio-demographic questionnaire, the AQ, the Alcohol Use Disorders Identification Test (AUDIT), and the Beck Depression Inventory (BDI). Three percent of the whole sample did not participate because of their serious physical or mental state, determined by a psychiatrist. This study yielded a total of 569 patients. A subsample of these patients included in the current analyses focusing on the young adult population consisted of those subjects who were between 20 and 35 years of age ($n = 101$).