

Aggression Levels in Treatment Seeking Inpatients With Alcohol-Related Problems Compared to Levels in the General Population in Hungary

József Gerevich, MD, PhD,*† Erika Bácskai, PhD,* and Pál Czobor, PhD‡§

Abstract: Association between aggression and heavy alcohol use is documented in the literature in various disparate samples and settings. Comparison of trait aggression levels using a uniform methodology across different samples is almost entirely lacking. This study compared trait aggression levels of treated inpatients with severe alcohol-related problems with those of a nationally representative sample of the general adult population using the same methodology. Results indicated that in the patient population the trait aggression levels were substantially higher than in the general population. Because several studies have demonstrated that aggressive personality traits are closely linked with violence after drinking alcohol, our results further highlight the importance of treatment programs in this at-risk population. From a methodological perspective, the higher trait aggression level of inpatients with alcohol-related problems compared with the general population supports the assumption that the underrepresentation of alcoholics in the population surveys may restrict the range in the severity of alcohol use and dependence, and may therefore produce severely biased results in such studies.

Key Words: Alcohol-related aggression, treatment seeking alcoholics, general population.

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Association between aggression and heavy alcohol use has previously been documented in various populations and settings, including surveys in the general population (Gudlaugsdottir et al., 2004; Wells et al., 2000), in patients with alcohol-related problems (Fals-Stewart and Kennedy, 2005; Liebschutz et al., 2005; Mann et al., 1998; Schuckit, 1985; Steadman et al., 1998) and in experimental studies (Chermack and Taylor, 1995). Each of these ap-

proaches, when used in isolation, has been criticized for a range of reasons: Laboratory studies may have limited relevance for real life settings (Moeller and Dougherty, 2001); clinical populations may contain a referral bias, whereas general population surveys have difficulty reaching patients with severe mental illnesses who do not live at home (Diaz et al., 2006). This results in a potential underrepresentation of a population of interest in the general sample. Such an underrepresentation may restrict the range of severity of alcohol use, and may therefore produce biased results.

Thus, to gain a more complete insight into the association between aggression and heavy alcohol use, it is important to focus on both the general and the clinical population. Unfortunately, comparison of trait aggression levels using a uniform methodology across different samples, including normal and clinical populations, is severely lacking in the literature. One study (Mann et al., 1998) that compared aggression levels of alcoholics using the Freiburg Personality Inventory (the trait-oriented, factor-analytically derived personality questionnaire) found no overall difference compared with normative data from a general population. However, we note that this study may have contained a referral bias because the authors focused on a “socially well-adjusted” (male-only) population. Indeed, based on post hoc analyses, this study provided evidence that state aggression levels in alcoholics differ with regard to early and late onset “even when patients with evident antisocial personality disorder are excluded” (Mann et al., 1998). The aim of the present study was to compare trait aggression levels of inpatients with alcohol-related problems with a nationally representative sample of the general population.

METHOD

Measures

Trait aggression was measured by the total score of the Buss-Perry Aggression Questionnaire (AQ) and scores of the subscales including physical aggression, verbal aggression, anger, and hostility (PA, VA, A, H). The AQ comprises 29 items of a 5-point Likert format from 0 (extremely uncharacteristic of me) to 4 (extremely characteristic of me). Evidence for the scale’s construct validity has been provided in prior literature (Buss and Perry, 1992). In the current population, the Buss Perry scale’s

*Addiction Research Institute, Budapest, Hungary; †Bárczi Gusztáv Faculty of Orthopedagogics, ELTE University, Budapest, Hungary; ‡Department of Psychiatry, Semmelweis University, Budapest, Hungary; and §Nathan Kline Institute for Psychiatric Research, Orangeburg, New York.

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Send reprint requests to József Gerevich, Addiction Research Institute, Budapest, Hungary. E-mail: gerevichj@t-online.hu.

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internal reliability consistency was measured by the Cronbach alpha coefficient. The alpha coefficients were 0.82, 0.68, 0.70, and 0.75 for the physical aggression, verbal aggression, anger, and hostility, respectively.

Samples

Clinical Sample

In the inpatient sample ($n = 330$), 233 patients (71%) were male. About 55.4% had a high level of education (secondary school or higher). The average age was 46.8 years ($SD = 9.8$). Clinical diagnosis included alcohol dependence on the basis of DSM-IV, and was made by addiction treatment psychiatrists. Specially trained physicians or research assistants identified eligible people with alcohol dependence. Based on the cross sectional demographic data obtained at each of the participating centers, the gender and age distribution of the patients was representative of the whole inpatient population in the same treatment units at the time of the investigation ($p > .1$ for all comparisons).

General Sample

The study population consisted of 1199 people representative of the general population of Hungary over 18 years of age selected by a 2-step, group-stratified sampling method using countrywide census data (National Office of Statistics, 2001). In the first step, a representative sample of geographic areas (neighborhoods) was selected on the basis of the size. In

the second step, the respondents were randomly sampled using a schedule of probability sampling. The overall refusal rate to participate in the study in the current sample was approximately 20.3%. Refusal did not vary as a function of potentially important demographic variables including gender or age. Refusal rates were 19.5% and 21.2% in females and males, respectively; refusal rates were 21.5%, 19.6%, and 19.9% for 3 age groups, including low (18–35 years), medium (36–55), and higher ages (above 55) in the current sample. Overall, 661 females and 538 males agreed to participate in the survey that we report here. The average age was 47.4 years ($SD = 17.3$). Eighteen percent of the respondents lived in Budapest, 35% in a rural environment, and 47% in cities. In this group 43.7% had a high level of education. The selected sample represented 0.015% of the entire adult population in Hungary.

The comparison of general population with the clinical sample in terms of demographic characteristics indicated a statistically significant but clinically modest difference for gender (higher proportion of males; $\chi^2 = 58.4$, $df = 1$, $p < .001$) and education level (higher proportion of patients with higher education; $\chi^2 = 14.4$, $df = 1$, $p < .001$). The 2 study populations did not differ in terms of age ($F = 0.33$, $df = 1.1528$, $p = .57$).

RESULTS

Figure 1 shows the means of total scores and scores of the 4 subscales (PA, VA, A, H) in the general population and

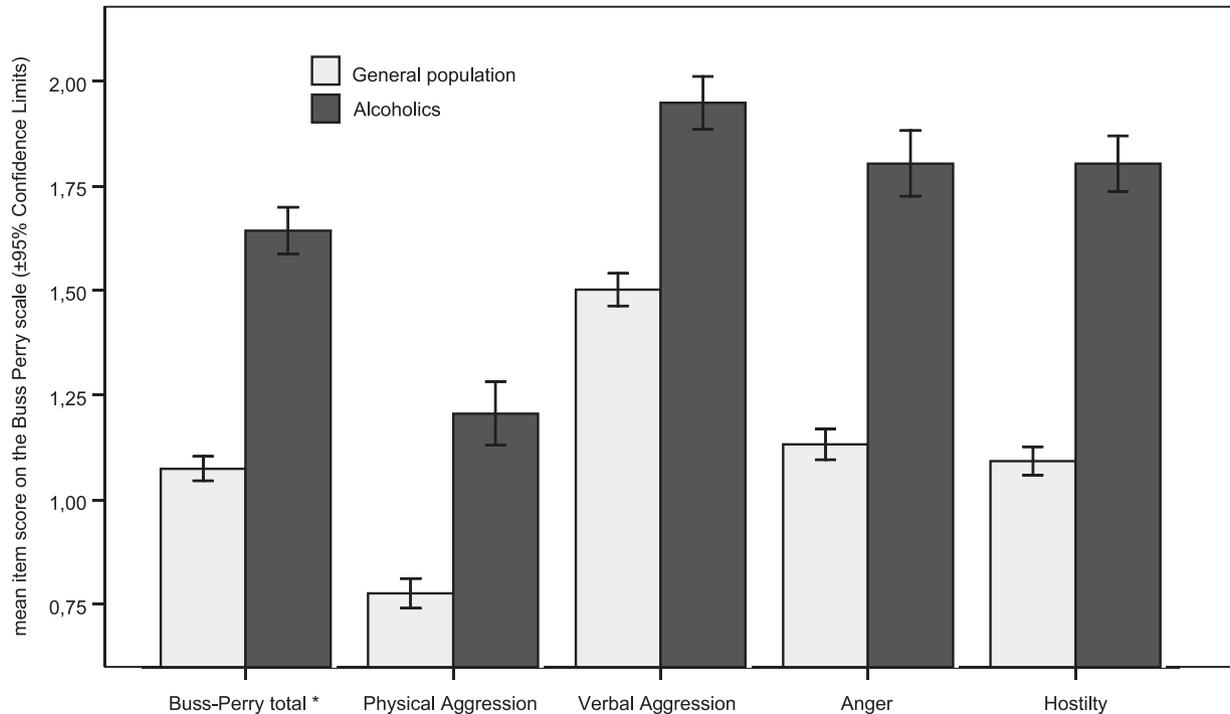


FIGURE 1. Mean item score ($\pm 95\%$ confidence limits) on the Buss-Perry total score and subscales in the general and clinical samples. General linear model analyses indicated statistically significant difference for the total score and each of the subscales (total score $F = 340.0$, $df = 1, 1434$, $p < .001$; Physical Aggression $F = 127.9$, $df = 1, 1456$, $p < .001$; Verbal Aggression $F = 123.3$, $df = 1, 1485$, $p < .001$; Anger $F = 284.3$, $df = 1, 1471$, $p < .001$; Hostility $F = 389.0$, $df = 1, 1470$, $p < .001$).

inpatients. General linear model analyses indicated that the trait aggression level and each component of the aggression (PA, VA, A, H) of the patients were significantly higher than in the general population. The effect size in terms of Cohen's d were 0.66, 0.69, 1.05, 1.21 for the PA, VA, A, and H subscales, respectively, which indicate large and potentially clinically relevant effects. The analyses were repeated including gender, age, and education level as covariates: the significant findings were not changed, the effect size remained essentially the same for each of the subscales.

In supplementary analyses, we applied the propensity analysis technique (Rubin, 1997) to accommodate for potential selection biases, and to solve the problem of reaching erroneous conclusions based on comparisons of unlike groups (Blackstone, 2002). To accomplish this, we constructed a nonparsimonious logistic regression (Hosmer and Lemeshow, 1989) model in which study sample (case [clinical sample], control [general population]) was the dependent variable and gender, age, and education level were the independent ones. With this model, a propensity score quantifying the likelihood of inclusion in each of the samples (case, control) was calculated for all subjects. Patients from the clinical sample and from the general population were then matched on the basis of their propensity score. Specifically, we first attempted to match to 8 decimal points of propensity score (i.e., to the nearest 0.00000001) and gave up on matching if we were unable to match by at least 3 decimal points. In the current study, we were able to match the overwhelming majority of patients ($n = 310$) in the clinical sample with those in the general population. The analyses that we described above for the full sample were repeated with the matched case-control sample. Results indicated that the difference between the 2 samples remained statistically significant for all of the measures and the effect sizes were essentially unchanged.

DISCUSSION

Because several studies have demonstrated that aggressive personality traits are closely linked with violence after drinking alcohol (Moeller and Dougherty, 2001), the findings of this investigation suggest that trait aggression is a very important characteristic of alcoholics compared with the general population. The results indicated not only an overall increase in "dispositional aggression" but an increase in all of its constituent traits, including physical and verbal aggression, anger, and hostility. It is possible that the co-occurrence of high levels of trait aggression and alcohol dependence in the patient population is mediated by the comorbidity of alcohol dependence with antisocial personality disorder (Mann et al., 1998; Moeller and Dougherty, 2001), although in a recent study only half of respondents with antisocial personality disorder (APD) were not violent (Coid et al., 2006). In addition, as mentioned above Mann et al. found that in a "socially well-adjusted" male-only population, state aggression levels in alcoholics differed with regard to early and late onset even when patients with antisocial personality disorder were excluded (Mann et al., 1998).

To empirically address the possibility that the antisocial personality disorder acted as a potential confounding factor for the difference between the clinical and general populations, we conducted additional analyses to explore the general relationship between physical aggression and potential surrogate indices of APD that we obtained in our study. To explore this issue, we used the novelty seeking subscale and the impulsivity item from the Temperament and Character Inventory (Cloninger et al., 1994), which was administered in the clinical sample. Physical aggression was used as the dependent variable in the analyses; the subscale scores of novelty seeking was used as an independent variable. Similar to our principal analyses, age, gender, and education level were applied as covariates. Results indicated statistically significant ($p = .0002$), but clinically modest association ($r^2 = .04$) between novelty seeking and physical aggression. Similarly, only a modest association was found for impulsivity ($r^2 < .01$, $p = .031$). Thus, based on these data, we think (but cannot exclude based on the limited data available in this study), that it is unlikely, that differences between the clinical and normal populations were attributable to APD as a confounding factor.

The higher trait aggression level of inpatients with alcohol-related problems compared with the general population supported our assumption, that the underrepresentation of alcoholics in the population surveys may restrict the range of severity of alcohol use and may therefore produce biased results. On the basis of our findings, we agree with Fals-Stewart and Kennedy that "most substance-abuse treatment programs will need to develop a strategic plan to address the interpersonal violence" (Fals-Stewart and Kennedy, 2005). Our results indicate that case-sensitive aggression exploring and treating service is needed for patients with alcoholism, especially with regard to the traits of anger and hostility, which have been shown to robustly increase the likelihood of violence in such patients and were found to be highly elevated in our study.

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