A FAILURE TO REPLICATE ALCOHOL-INDUCED LABORATORY AGGRESSION AMONG COLLEGE MEN WITHOUT EVIDENCE OF PERSONALITY DISTURBANCE

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Summary.—The effect of acute alcohol intoxication on laboratory-induced aggression among men has been fairly well established. The present study hypothesized that alcohol effects on Point Subtraction Aggression Paradigm (PSAP) responding would not be replicated among “low-risk” college men distinguished by their absence of personality disorder features. Participants were assigned to either Alcohol (n = 18), Placebo (n = 7), or Time (n = 8) comparison groups with each completing 25-min. sessions during the baseline, ascent, peak (70 mg%), and descent (40 mg%) phases of absorption and elimination process. Participants assigned to the Alcohol condition received a .80 ml/kg dose of 95% ethanol mixed with soda in a 1:5 ethanol/soda ratio. As hypothesized, alcohol was associated with stable Point Subtraction Aggression Paradigm responding across the course of absorption, peak, and elimination for all three groups. Aggression Paradigm responding was least variable among the men administered alcohol. The present procedure served to identify a subset of “low-risk” college men whose Point Subtraction Aggression Paradigm responding was not adversely affected by alcohol. The extent to which aggressive personality dispositions contribute to alcohol-induced laboratory aggression remains to be identified. Low-risk college drinkers warrant systematic examination to specify what factors attenuate their reactions to alcohol and other situational provocations.

Laboratory procedures such as the Taylor Aggression Paradigm (Taylor, 1967) and Buss Aggression Paradigm (Buss, 1961) provided historic behavioral measures of aggressive acts elicited under controlled conditions. These tasks required participants to administer shocks of optional intensities to a fictitious, provocative competitor seated in a separate location. Lab-based aggression research relies on operational definitions of aggression that revolve around the delivery of noxious stimulation to others without the verification of malicious intent (Buss, 1961; Taylor, 1967; Bushman, 1993).

The Point Subtraction Aggression Paradigm (PSAP) (Cherek, 1981) later emerged as a popular alternative laboratory procedure derived instead from the retaliatory responses of participants engaged in a competitive, monetarily reinforced computer game. The object of the task is to log as many nonaggressive Button A responses as possible (one point earned per 100 presses). B button responses presumably serve to reduce the profits of an annoying,

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i.e., one who interferes with the monetary gain of the participant, fictional opponent at the expense of a temporary diversion from the ultimate Button A objective. PSAP Button B aggressive responses have typically been averaged over 25-min. sessions which varied in number from a low of one in a single day (Gera, Zainovic, Ampollini, Giusti, Delsignore, Raggi, Laviola, Macchia, & Brambill, 2001) to a high of 78 over a 13-day period (Moeller, Dougherty, Rustin, Swann, Allen, Shah, & Cherek, 1997). The relationship between the number of sessions and the reliability (and validity) of the resulting count remains unestablished. Most of the three dozen published studies reported on 12 to 18 individual sessions scheduled over about five days of testing. High-risk individuals such as violent parolees tend to generate around 350 to 475 aggressive (Button B) responses per session which is double that expected for control participants (Cherek, Moeller, Schnapp, & Dougherty, 1997).

The construct validity of laboratory-induced aggression procedures has been challenged (Tedeschi & Quigley, 1996), defended (Giancola & Chermack, 1998), and revisited (Tedeschi & Quigley, 2000) over the years. Point Subtraction Aggression Paradigm responses have, however, discriminated between individuals with and without violent (Cherek, et al., 1997; Cherek, Lane, Dougherty, Moeller, & White, 2000), antisocial (Moeller, et al., 1997; Moeller, Dougherty, Lane, Steinberg, & Cherek, 1998), substance abuse (Allen, Moeller, Rhoades, & Cherek, 1997; Kouri, Pope, & Lukas, 1999), and even contact-sport athletic (Huang, Cherek, & Lane, 1999) histories.

Alcohol effects on lab-induced aggression among women appear to be modest (Rohsenow & Bachorowski, 1984; Bond & Lader, 1986; Dougherty, Cherek, & Bennett, 1996; Dougherty, Bjork, Bennett, & Moeller, 1999) and not always observed (Gustafson, 1991; Giancola & Zeichner, 1995). Alcohol-induced aggression has been found more consistently among men (Bushman & Cooper, 1990; Gantner & Taylor, 1992; Giancola & Zeichner, 1995; Moeller, et al., 1998; Dougherty, et al., 1999) and is more likely to appear as a dose-dependent function (Taylor & Gammon, 1975; Kelly, Cherek, & Steinberg, 1989; Dougherty, et al., 1999). These experimental studies of lab-induced aggression under the influence of alcohol are supplemented by an extensive literature establishing intoxication as a high-risk predictor of violent behavior in naturalistic settings (Leonard, Bromet, Parkinson, Day, & Ryan, 1985; Bushman & Cooper, 1990; Murdoch, Pihl, & Ross, 1990; Leonard & Senchak, 1993; Taylor & Chermack, 1993; Miczek, Debold, Haney, Tidey, Vivian, & Werts, 1994; Zhang, Wieczorek, & Welte, 1997).

The potential role of personality disturbance as a mediator of aggression has been suggested within the Diagnostic and Statistical Manual (DSM-IV–R; American Psychiatric Association, 2002). Antisocial personalities were characterized by a lack of remorse (criterion A7), disregard for the safety of
others (criterion A5), and irritability and aggressiveness as manifested in repeated physical fights or assaults (criterion A4). Paranoid personalities were described as suspecting harm from others without sufficient basis (criterion A1), bearing grudges (criterion A5), and quickly and angrily reacting with counterattack in response to provocation (criterion A6). In the preceding DSM-III-R (American Psychiatric Association, 1987), the concept of sadistic personality disorder was characterized by physical cruelty or violence for purposes of establishing dominance (criterion A1), lying for purposes of harming or inflicting pain on others (criterion A5), and the humiliation and demeaning of others (criterion A2). Craig (2003) recently concluded in a literature review that antisocial, aggressive-sadistic, narcissistic, and passive-aggressive personality disorder scale elevations on the Millon Clinical Multiaxial Inventory (MCMI) provided useful markers to identify men at risk for perpetrating domestic abuse.

Personality disorder traits have been used to account for significant variance in the Point Subtraction Aggression Paradigm responding observed among men. Differences between antisocial and control participants have been found in two previous studies (Moeller, et al., 1997, 1998). Available studies demonstrating alcohol effects on lab-induced aggression have typically not examined the host of personality disorder traits which are distributed among participants assigned to various treatment conditions in the alcohol literature. The present study hypothesized that alcohol effects on Point Subtraction Aggression Paradigm responding would not be replicated among "low-risk" college men distinguished by their absence of personality disorder features. Low-risk college drinkers warrant systematic examination to identify factors, e.g., absence of personality disorder traits, associated with reactions to alcohol and other situational provocations.

**Method**

**Participants**

Thirty-three Euro-American male college students above the age of 21 were awarded course extra credit and an average of $30 to participate in a single data-collection session of about six hours duration. Potential participants were excluded if they generated Michigan Alcoholism Screening Test (Selzer, 1971) scores in excess of 11, Khavari Alcohol Test (Khavari & Farber, 1978) reports of alcohol consumption in excess of 1000 ounces in the prior year, or elevations (>74) on any of the 13 MCMI-II (Millon, 1987) personality disorder scales. A brief medical history was used to exclude individuals describing prior chemical abuse or a present physical illness, e.g., ulcers, hypertension, cardiovascular disease, epilepsy, diabetes, allergies, etc., which might affect metabolic or behavioral responses to alcohol. These criteria were employed to assure comparison groups comprised of healthy college
men who were not distinguished by alcohol abuse histories, physical illness, or personality disorder features.

**Design and Procedure**

Participants were assigned to Alcohol \((n = 18)\), Placebo \((n = 7)\), or Time \((n = 8)\) groups for comparison. Participants assigned to the Alcohol condition were required to complete 25-min. PSAP sessions during the baseline, ascent, peak \((70 \text{ mg\%})\), and descent \((40 \text{ mg\%})\) phases of absorption and elimination process. Participants assigned to the other two groups were tested at the same time intervals as the most recent participant in the Alcohol group. The Alcohol group was of primary interest so two participants were assigned to this condition for every one included in the Place and Time comparison groups (cell size discrepancies as three did not come). All participants were asked to abstain from food and drink after noon on the day of their 4:00 p.m. session. Blood alcohol levels were based on breath samples using an Alcomonitor CC Series 02.XX (Intoximeters Inc., St. Louis, MO). Participants assigned to the Alcohol and Placebo conditions were told that alcohol would be administered after completion of an initial 25-min. session. Standardized instructions and equipment have been described elsewhere (Moeller, et al., 1998). Participants assigned to the Time comparison group were informed subsequently that alcohol would not be administered during the remainder of the estimated 4-hr. period which would include the completion of three additional Point Subtraction Aggression Paradigm sessions.

Participants assigned to the Alcohol condition received a \(.80 \text{ ml/kg}\) dose of \(95\%\) ethanol mixed with soda in a \(1:5\) ethanol/soda ratio. The placebo \((1 \text{ ml of ethanol added to soda})\) was matched on volume across drinking groups, and \(95\%\) ethanol was swabbed around the rim to obscure the low alcohol content. Equal amounts of alcohol and placebo beverages were poured into cups of three equal amounts and consumed at a rate of 5 min. each. Immediately after ingestion of the beverage (or 15 min. for the Time group), participants completed the second session which coincided with absorption of the beverage into the bloodstream (ascent). Breath samples were taken every 5 min. after completion of the second session to establish the 70 mg\% point (expected peak) when the third PSAP session was initiated. Breath samples were collected every 10 min. until the 40 mg\% point was reached (descent), and the final Point Subtraction Aggression Paradigm session was initiated. Participants were not allowed to see BAL readings as they were collected.

**Results**

Daily ethanol consumption (ounces per day) did not differ significantly among participants assigned to the Time \((M = .29, SD = .26)\), Placebo \((M = .83, SD = .48)\), or Alcohol \((M = .76, SD = .63)\) conditions \((F = 2.62, \text{ ns})\). Partici-
pants administered ethanol achieved a peak blood alcohol concentration of 0.067 mg% \( (SD = 0.008) \) within an average time of 54.0 \( (SD = 7.6) \) minutes from the beginning of ingestion.

PSAP Unaggressive Button A responses (see Table 1) did not differ as a function of group \( (F = 3.04, \text{ ns}) \), session \( (F = 1.18, \text{ ns}) \), or group by session \( (F = 1.67, p = 0.14) \) factors. PSAP baseline aggressive responding (see Table 1) did not differ among participants assigned to the Time, Placebo, or Alcohol conditions \( (F = 1.46, \text{ ns}) \). These unadjusted mean response rates appeared consistent with those reported in other published similar research. A 3 \( (\text{group}) \times 4 \ (\text{session}) \) analysis of variance of unadjusted Point Subtraction Aggression Paradigm scores yielded no effects for factors of group \( (F = 1.61, \text{ ns}) \), session \( (F = 1.31, \text{ ns}) \), or group by session \( (F = 1.14, \text{ ns}) \).

### TABLE 1

**Point Subtraction Aggression Paradigm Response Means and Standard Deviations by Comparison Group and Session**

<table>
<thead>
<tr>
<th>Period</th>
<th>Time</th>
<th>Placebo</th>
<th>Alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSAP “B Button”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggressive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>7.45</td>
<td>7.96</td>
<td>7.75</td>
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<tr>
<td>Ascent</td>
<td>4.59</td>
<td>5.65</td>
<td>4.80</td>
</tr>
<tr>
<td>Peak</td>
<td>11.56</td>
<td>18.93</td>
<td>8.62</td>
</tr>
<tr>
<td>Descent</td>
<td>6.48</td>
<td>7.19</td>
<td>14.02</td>
</tr>
<tr>
<td>PSAP “A Button”</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Unaggressive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>4.33</td>
<td>.62</td>
<td>3.92</td>
</tr>
<tr>
<td>Ascent</td>
<td>4.55</td>
<td>.58</td>
<td>4.37</td>
</tr>
<tr>
<td>Peak</td>
<td>4.31</td>
<td>.83</td>
<td>4.02</td>
</tr>
<tr>
<td>Descent</td>
<td>4.71</td>
<td>.57</td>
<td>3.78</td>
</tr>
</tbody>
</table>

Baseline PSAP “B” button responding was correlated with aggression observed in the second (ascent: \( r = .77, p < .001 \)) and third (peak; \( r = .43, p < .01 \)) data-collection sessions. Baseline and fourth session (descent) responding were not significantly correlated. Analysis of covariance results indicated a significant session effect on baseline-adjusted Point Subtraction Aggression Paradigm scores \( (F = 3.79, p < .05) \). The analysis of covariance process adjusts Point Subtraction Aggression Paradigm scores in the ascent, peak, and descent sessions based on the amount of aggression shown by the participant in the baseline condition. Baseline-adjusted aggressive responses were higher in the descent as opposed to the ascent session. Significant differences for group \( (F = .38, \text{ ns}) \) and group by session \( (F = 2.38, \text{ ns}) \) were not found.

**Discussion**

Dozens of studies have now documented success of laboratory aggression paradigms in discriminating between participants at risk for aggression,
e.g., antisocial personalities, felons, substance abusers, etc., and controls. The effects of alcohol on laboratory aggression have been reported in about eight experimental studies to date. The present study examined the effects of .8 ml/kg of alcohol on the Point Subtraction Aggression Paradigm responding of healthy and relatively adjusted college men. This design was unique in its incorporation of a Time comparison group that identified the effects of repeated testing on Point Subtraction Aggression Paradigm scores. Initial baseline scores were also used to adjust these scores from subsequent sessions.

Alcohol ingestion was associated in this study with stable Point Subtraction Aggression Paradigm responding across the course of absorption and elimination. In fact, the scores showed the least variability within the Alcohol condition. College men in this study, generating MCMI-II profiles without personality disorder scale elevations, rapidly consumed significant amounts of alcohol without the increased aggressiveness observed in many prior Point Subtraction Aggression Paradigm studies. Average daily alcohol intake and general level of motor activity in the form of Button A responses were not useful in accounting for this absence of group differences. The present procedure instead appeared to identify a subset of “low-risk” college men who might often be included in Point Subtraction Aggression Paradigm research. The extent to which aggressive personality dispositions contribute to alcohol-induced aggression in the laboratory remains to be clarified, but these results suggested the value of personality disorder measures in the identification of individuals who are relatively unreactive to frustration and provocation induced in the laboratory. College students may react differently to alcohol than others solicited from the general population. This potential interaction of sample source on laboratory aggression warrants further attention.

REFERENCES


Accepted April 5, 2004.
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