The Effects of Alcohol Dosage and Dosage Expectancy on Aggressiveness and Assertiveness

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TABLE OF CONTENTS

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LIST OF TABLES

Page

LIST OF FIGURES

ABSTRACT

In an attempt to assess the psychological (expectancy) and physiological (dosage) effects of alcohol on aggressive and assertive behavior, two experimental manipulations were employed in the present study. The expectancy manipulation was accomplished by informing subjects that the beer they were to receive was either half as strong or twice as strong as commercially available beer. The dosage manipulation involved administering blind subjects either 0.0 (placebo), 0.5, or 1.0 milliliter of 95% pure ethanol per kilogram body weight. Fifty-four male, social drinkers were administered self-report and behavioral measures of aggressiveness and assertiveness following consumption of alcohol.

Results of the present study indicate that both alcohol's psychological and physiological effects can influence aggression. A moderate dosage of alcohol was found to increase ($p < .05$) Buss-Durkee aggression scores. Subjects given the expectation that they were drinking a doubly potent beer scored higher in aggressiveness on the Buss-Durkee ($p < .05$) than subjects expecting a beer one half as potent as commercially available beer. In addition, a high dosage of alcohol was found to increase occurrences of profanity ($p < .05$) on the Behavioral Assertiveness Test. Neither dosage expectancy nor actual dosage was found to influence assertiveness, and it appears that aggressiveness and assertiveness are different constructs.

REVIEW OF LITERATURE

For many years alcohol researchers have investigated the relationship between alcohol consumption and aggressive behavior. Much of this research was stimulated by early correlational studies (Shupe, 1954; Wolfgang and Strohm, 1956), which suggested that there was a significant relationship between alcohol intoxication and crime. Among the most frequently used explanations for this relationship is the "disinhibition theory," (Carpenter and Armenti, 1972). The underlying assumption of this theory is that the human organism is aggressively motivated, but guilt, fear of reprisal, and social restraints inhibit this behavior. The release of aggression can be viewed as a result of alcohol's ability to decrease the individual's fear of disregarding the restraining influences. Other research has indicated that alcohol serves to elevate drive levels and thus increase the level of aggressive drive, (Weis, 1958; Barry, Koepfer, and Lutch, 1965). Still other researchers have concluded that aggressive behavior following alcohol intake is due to social learning rather than the physiological effects of alcohol, (McAndrew and Edgerton, 1969).

Much of the information we have concerning the relationship between alcohol and behavior is based upon the work of animal researchers. Several experimental investigations have examined alcohol's ability to decrease conditioned fear and mitigate neurotic behavior patterns in albino rats. Conger (1951) trained rats in an approach-avoidance conflict situation. Approach was first conditioned by training sub-

jects to run down a straight alley for food. The avoidance aspect was added later by shocking rats as they began to eat. Subsequent trials consisted of creating a delicate balance between approach and avoidance tendencies, followed by administration of alcohol. Conger found that those subjects who had received alcohol showed a significantly increased approach tendency over the control group, and inferred that alcohol was responsible for decreasing the subjects' fear in the avoidance situation. These findings by Conger and similar findings by Scarborough (1957) and Pawloski (1961) have provided us with some confirmation for a "disinhibition theory," and can be used as supporting evidence that there is a direct relationship between the consumption of alcohol and physical aggression.

Research attempting to replicate Conger's findings has yielded conflicting results. Weis (1958), using the same dosages of alcohol as Conger, found that fear, measured in terms of the number of rat's defecations, appeared only in subjects receiving alcohol and not in a control group. Since the experimenter could find no evidence to indicate alcohol increased defecations as a result of its effects on the digestive system, defecation was attributed to extreme fear in the experimental group.

Weis (1958) explained the dimunition of avoidance tendencies in Conger's experimental group using principles set forth by Masserman (1946). Masserman believes that alcohol consumption disorganizes behavior and exercises its greatest effects on more complex learned behaviors. The conditioned fear in Conger's avoidance was newly acquired

whereas the approach to food response was present at birth.

Weis reasoned that alcohol functions by heightening the general drive level, and depresses organizational and perceptual processes necessary to produce behaviors oriented toward lessening the higher drive level. Barry, Koepfer, and Lutch (1965) found further evidence in support of alcohol's ability to increase drive level. Food deprived rats were trained in a T-maze discrimination task in which subjects would find food at the correct arm. Although the group that received alcohol made as many errors as the control group, their running times were significantly shorter, indicating an increased hunger drive.

Evidence that alcohol is capable of increasing drive level can be used in explaining alcohol's effect of producing aggressive behavior. Increased drive level implies an increased activity level (Brown, 1961), and a subsequent increase in aggressive behavior.

Recent evidence by McAndrew and Edgerton (1969) cast serious doubt as to whether the evidence obtained by these animal researchers can successfully be used to explain human aggressive behavior following alcoholic intake. These researchers turn away from psychopharmacological explanations of violent drunken comportment and have gathered a wide variety of cross-cultural and anthropological evidence indicating that aggressive behavior following alcoholic intake may be the exception rather than the rule.

McAndrew and Edgerton (1969) closely examined the social structure of the Mixtecan Indians of Mexico. These Indians place a high

value on tranquility, and parents regard control of aggression as a value which should be deeply instilled in their children. One might expect that in a society such as this, aggressive impulse would be greatly inhibited, and the consumption of alcohol would release these inhibitions producing profoundly violent behavior. However, this is not the case. Reports of incidents in which these Indians became grossly intoxicated reveal no incidence of violent behavior. In fact, the Mixtecans believe that alcohol is incapable of producing violent behavior in themselves.

Although McAndrew and Edgerton found definite behavioral differences between sober and drunken states, they suggest that an individual's drunken comportment reflects a hypothetical "within limits" clause, in which members of a society adhere to socially sanctioned cultural limits even in a drunken state. Society, rather than the psychopharmacological effects of alcohol, is seen as controlling the individual's behavior following alcoholic intake.

Drunken comportment is also viewed as a "time-out," a socially prearranged period of time in which the individual's behavior is permitted to differ from the norm, even though the individual has not necessarily consumed alcohol. Such alcohol-free "time-out" periods have been observed in certain African societies. Reports of trobesmen engaged in acts of indescribable lewdness following socially sanctioned ("time-out") events, such as planting, harvesting, birth, and drouth, indicate that in social situations where alcohol is commonly consumed, alcohol may function as a cue for a socially sanctioned "time-out" period.

Bandura's research (1973) suggests that alcohol may function as an "informative cue." He believes that human aggressive behavior can be brought under control by environmental cues in the same way that learning experiments with animals have demonstrated that aggressive responses can be conditioned to a tone or light which serves as a discriminative stimulus. "Informative cues" in the environment aid the individual in determining the probable outcome of his behavior, and he can choose to act accordingly. These cues account for the fact that the same behavior can have different consequences depending on the time, place, people, and circumstances involved.

In summary, alcohol may be viewed as an "informative cue" which signifies that violent or uninhibited behavior is permissable. Sobell and Sobell (1973) stress this fact in their statement that, "Alcohol intoxication is socially accepted as an excuse for engaging in certain otherwise inappropriate behaviors, such as extremes of flirtation, extremes of aggression, or homosexuality, which are generally considered socially unacceptable when engaged in by a sober individual, but are tolerated from a person who is drunk."

The work of McAndrew and Edgerton (1969) and Bandura (1973) indicates that aggressive behavior following alcohol consumption may be a result of social or vicarious learning. McAndrew and Edgerton's historical survey of the American Indians reveals that their extremely violent behavior following alcohol intake has not always been the case. Initial reports concerning the drunken comportment of these Indians yield little evidence of aggressive behavior. Indians, such as the Crees and the Assinibones,

were known to drink for several days without violent occurence. McAndrew and Edgerton contend that the Indians learned to behave violently by observing the early trappers and traders. These men were recruited from the European low-life and spent much of their time in drinking and gambling which often erupted in fighting. The Indians, after observing the behavior of these poor models for some time, adopted it as their own.

Bandura's social learning theory of aggression also stresses the importance of modeling in the development of aggressive behaviors. Social learning theory "conceives of aggression as a learned conduct that like other forms of social behavior, is under situational reinforcement and cognitive control." The actions of those who behave violently can be considered social cues which facilitate similar behaviors in observers.

Consistent with the vicarious or social learning viewpoint, it appears that drunken comportment can not only be learned from one society by another, but is also learned from society by the individual. Violent behavior following alcoholic intake does not always occur, but occurs only in those societies which "permit" it. In fact, McAndrew and Edgerton's examination of societies such as the Aritama of northern Columbia, reveals that individuals may become more inhibited following alcohol ingestion.

Aside from evidence obtained in cross-cultural and experimental animal research, research concerning the nature of the relationship between alcohol and aggression has been sparse. The earliest studies with human subjects were primarily correlational. For instance, Wolfgang and Strohm (1956) conducted a study to determine the relationship between alcohol

consumption and homicide. The researchers collected data from the files of the Homicide Squad of the Philadelphia Police Department for five hundred eighty-eight homicide cases occurring between January 1, 1948 and December 31, 1952. The authors determined that alcohol was a contributing factor in sixty-four percent of the cases examined. Wolfgang and Strohm also found that alcohol was related to the method in which death was inflicted. The presence of alcohol was detected in seventy-two percent of stabbing, sixty-nine percent of beating, and fifty-five percent of shooting homicides. The researchers concluded that there was a significant relationship between alcohol and homicide, and this is frequently a "genuine causal relationship."

Shupe (1954) conducted a similar study in which he obtained records of urine alcohol concentration for felons arrested during or immediately following the commission of the crime. Reports on eight hundred and eighty-two persons, covering a two year period, were gathered from the Columbus Police Department files. Shupe found that sixty-four percent of those arrested for a felony were under the influence of alcohol. The author concluded that, "crimes of physical violence are assosciated with intoxicated persons," and estimated that fifty percent of persons committing rape or felonious assault are under the influence.

There are a number of criticisms that make it difficult to reach conclusions from the studies of Shupe (1954) and Wolfgang and Strohm (1956). Shupe himself raises the question, "What about those persons who do not get caught during the crime or do not get caught at all?" It is well known that alcohol impairs muscular coordination and reaction

time, and it seems quite possible that those who drink prior to committing a crime may be apprehended more easily. This suggests that a higher proportion of those who escape from the law are not intoxicated. Therefore, the high incidence of intoxication reported by the researchers may not be representative of the entire criminal population.

There have been several experimental studies with alcohol that have involved human subjects. Doleys, Otto, Osborne, Harris, and Snyder (1967) administered alcohol to eighty paid female subjects, twenty in each dosage condition, in an attempt to determine the effect of alcohol consumption on personality as measured by the Buss-Durkee Hostility Inventory, the Edward's Personal Preferance Scale, the Rokeach Dogmatism Scale, and the Edward's Social Desirability Scale. The experimenters found no significant change in either self-reported aggression, social desirability, need heterosexuality, or judgements of what is socially acceptable following alcoholic intake. The experimenters have suggested that their measures were too insensitive to detect changes which might have occurred.

It may be true that the sample of graduate students, graduate student's wives, and business and professional women used by Doleys, Otto, Osborne, Harris, and Snyder is not representative of the general population as far as education, intelligence, and proclivity toward certain behaviors, especially violent or aggressive behaviors. Examination of a male population might have also yielded more fruitful results as the socially accepted behavior of the drunken male differs from that of the drunken female. The image of the barroom brawler is more commonly seen as male rather than female.

An ecologically oriented study by Boyatzis (1975) sought to determine the personality characteristics of subjects who demonstrated increased interpersonal aggression following consumption of relatively high dosages of alcohol. One hundred forty-nine male subjects were given the Thematic Apperception Test, the California Personality Inventory, and an activities questionnaire concerned with past and present behavior. Subjects were sequentially assigned to receive either wine, beer, or mixed drinks. Their behavior during experimental parties was videotaped and later coded for instances of interpersonal aggression.

Results showed that persons with a low degree of social integration were more prone to act aggressively. Social integration is an indication of the degree to which an individual has internalized the values of society, and was determined by Self-control, Responsibility, and Socialization scores on the California Personality Inventory. Just as important was the finding that subjects who drank heavily were prone to act more aggressively than subjects who drank less.

These results cannot be accepted at their face value. Subjects were assigned to groups sequentially rather than randomly. It is certainly possible that those subjects who volunteered first were significantly different from those who volunteered later. The experimenters did not consider this in their data analysis. Neither did they consider that the raters of the videotapes for aggressive behavior were not blind as to the dosage consumed by each subject. The raters' belief that higher dosages of alcohol produce greater aggression could have biased their subject ratings. In the same way, during the experimental parties, the two

leaders whose job it was to encourage competition among the subjects in various games, could have been biased by encouraging those who drank more to be more competitive.

Another serious flaw in this study was the qualification of certain variables as aggressive. The experimenters defined aggressive as joking, expertising, surprising, moralizing, controlling, baiting, and disagreeing. The definition of these behaviors as aggressive was in no way empirically tested for validity. Many current researchers set forth a much different, more parsimonious definition of aggression. Aggression measurement will be discussed later in this paper.

Several studies which have investigated aggression in a laboratory setting have yielded conflicting results. Bennett, Buss, and Carpenter (1969) sought to determine the effect of different dosages of alcohol on direct, physical aggression in an environment which kept social variables carefully controlled. The method of direct measurement, the Buss aggression machine, involves a determination of the mean shock level a subject will deliever to the experimenter's confederate who is attempting to learn a bogus discrimination task. The experimenters found no significant effect of dosage on aggression, and concluded that alcohol does not produce aggression.

An experiment by Shuntich and Taylor (1972) using a similar type of Buss machine in a different context yielded much different results. These experimenters used a task in which groups of subjects competed for speed of reaction time. Of the three dosages of alcohol administered,

one was a placebo, an alcohol-like tasting beverage which contained no alcohol. Subjects receiving alcohol showed higher levels of aggression than either the control or placebo groups. The experimenters concluded that under conditions of provocation, alcohol has a definite effect in producing aggressive behavior.

Taylor later repeated his experiment with Gammon in order to examine what may have accounted for results which differed from those of Bennett, Buss, and Carpenter (1969). The investigators increased the range of shock levels subjects could administer from five to ten, so that measurement of aggression would be as sensitive as that used by Bennett, Buss, and Carpenter. In order to assess the effects of the two different beverages used by the two groups of experimenters, and the corresponding differences in congener content, Taylor and Gammon used both vodka and bourbon, the latter beverage containing higher levels of congener. The alcohol administered by Bennett, Buss, and Carpenter was vodka, while that used by Shuntich and Taylor was bourbon. The results of an investigation by Katkin and Hayes (1967) indicate that beverages, such as bourbon, which are higher in congener content, are likely to have a greater effect on complex decision making processes. An experimental study by Teger, Katkin, and Pruitt (1969) had also indicated that risk taking behavior is affected by congener content.

The results obtained by Taylor and Gammon (1974) showed no significant differences in the effects of the high and low congener content beverages. However, the experimenters found evidence that there was a relationship between the consumption of alcohol and the expression

of physical aggression in that subjects who received alcohol, regardless of the beverage congener content, exhibited significantly more aggression than controls who received no alcohol. Those who received high dosages of alcohol were more aggressive than controls.

While previous studies did not differentiate between physiological and psychological (expectancy) effects of alcohol, a study by Lang, Goecker, Adesso, and Marlatt (1975) sought to determine the individual effect of these two variables on aggressive behavior. The experimenters used ninety-six male, heavy drinkers in a paradigm similar to that of Shuntich and Taylor (1972). Measurement of aggression consisted of a "Buss type" aggression machine which allowed subjects to deliver shocks of selected intensity and duration to an experimenter's confederate based upon competitive performance in a speed of reaction time task. An effective placebo manipulation was used. Half the subjects were told they would receive alcohol (vodka and tonic), while the remaining half were told they would be drinking tonic water only. These groups were further subdivided so that half actually did consume alcohol, and half actually received tonic water. The experimenters contend that the advantage of their design was that it controlled for the expectancies assosciated with drinking both an alcoholic and nonalcoholic beverage.

Lang, Goecker, Adesso, and Marlatt found evidence indicating that expectancy effects, rather than physiological effects, were responsible for the increase in aggression that was found. Those subjects who believed that they had consumed alcohol delivered shocks of significantly greater ($p < .001$) intensity and duration than those who believed that

they had not, regardless of the actual beverage alcohol content.

Lang et al. made several suggestions in an attempt to explain results which differ from those obtained by previous researchers. The fact that other studies using placebos failed to verify the placebos' effectiveness is one consideration. The authors state that other investigators have used social drinkers, while their sample consisted of heavy drinkers. Lang et al. also explain that their subjects consumed a higher dosage of alcohol than had been used in previous studies. This suggests that had the experimenters used more than one dosage of alcohol, preferably several dosages commensurate with those used by others, results more compatible with those previously obtained might have been found.

Measurement of Aggression

In accordance with the ecological point of view presented by Willems (1965), if one were to choose a device that would best measure aggressive behavior, we would expect the task which was to permit the measurement of aggressive response to parallel as closely as possible the situations we find in real life. This may account for the fact that primarily behavioral methods of assessment have been used in alcohol-aggression research.

The device used by Bennett, Buss, and Carpenter (1969) permitted the subject to shock the experimenter's confederate with the knowledge that the confederate would not retaliate. Shuntich and Taylor (1972) argued

that the subject's perception that the confederate was 'helpless' was responsible for the low level of aggression found by Bennett, Buss, and Carpenter. Nevertheless, the prerequisite of aggressive behavior is often the perception that the victim is unable to retaliate. Leibowitz (1968) investigated the effectiveness of the Buss machine as an instrument of aggression measure in a paradigm similar to that used by Bennett, Buss, and Carpenter. Leibowitz's investigation led him to state that "evidence derived from a number of studies contributes to the formation of a network of construct validational evidence for the Buss aggression machine as a measure of aggression in adults."

The aggression machine used by Shuntich and Taylor (1972), Taylor and Gammon (1974), and by Lang, Goecker, Adesso, and Marlatt (1975) permitted the confederate to retaliate by shocking the subject when he responded less quickly on a competitive task. Although they offer no construct validational evidence for their device, they claim that their machine is a better measurement device, and speak of their paradigm as creating "provocative conditions." Their results could only explain alcohol's effect on aggressive behavior in instances where the aggressor was provoked by another individual; in this case alcohol is viewed as an aggression-enhancer rather than an aggression-inducer. The subject need not fear reprisal or provocation when the Buss machine is used, and may administer any level of shock he chooses, from barely perceptible to noxiously painful. As such, the Buss machine can be used to determine if alcohol is an aggression-inducer. The Buss machine is a superior measurement device in that if alcohol could induce aggression, it could certainly enhance it,

and the induction or non-induction of aggression would determine if alcohol induces aggression without provocation, in a situation which controlled for social influence in terms of subject interactions.

Pitkanen (1973) has suggested another form of aggression machine, because he feels that subjects using the Buss machine may deliever strong shocks out of "a sense of duty." Pitkanen also feels that his machine, which involves a pictorial representation of an aggressive act imparted to the subject and the possibility for the subject to retaliate or instigate aggression by pressing a button corresponding to a pictorially represented act, compensates for the obscurity of the aggressive stimulus and response involved in the use of the Buss machine.

Pitkanen's machine suffers from the same weakness as that of Shuntich and Taylor (1972). To date, no construct validational evidence has been provided for this measure. Therefore, the Buss aggression machine is currently the only behavioral measure of aggression which has received support for use in experimental research. However, recent evidence suggests that this device may also suffer from drawbacks, primarily involving the feasibility of obtaining naive subjects.

Stanley Milgram (1963) pioneered the use of the aggression machine in an experiment designed to assess the effects of social pressure in inducing subjects to commit antisocial acts. Subjects could choose the level of shock to be administered to an experimenter's confederate in a bogus learning task. Milgram continued using a similar type of paradigm for several years and his work has recently received wide recognition. It is this recognition which is a cause of concern.

A brief survey of introductory psychology texts reveals that many, if not all, devote at least several pages to Milgram's work. Many professors have found their students interested in these studies and have discussed Milgram's work in their psychology class lectures. Milgram has received recognition not only in psychology classes, but in the media as well. Several leading national magazines have featured articles on Milgram, and a one hour television special, "The Tenth Level," was recently aired across the country.

This recognition has made it difficult to obtain completely naive subjects for aggression measurement. A recent pilot study done by Lisman and Kreutzer (Note 1) revealed that of ten subjects tested on the aggression machine, only two were naive. Six subjects revealed during debriefing that their responding was influenced by their knowledge of the Milgram study and their belief that aggressive responses were the focal point of the study. Another two subjects were discontinued during testing because they were absolutely certain the study was similar to Milgram's and they did not wish to go on. None of the subjects gave shocks over level four, of the ten levels available, and most subjects gave level one and two shocks. Level five was judged by subjects to be moderately painful. In fact, during one week of testing, some of the introductory psychology students were being tested in class on their knowledge of Milgram's work. This lack of naivite could explain the lack of significant results in the Bennett, Buss, and Carpenter study (1969), although the experimenters gave no evidence that they post-tested

subjects to determine how much they knew or suspected.

In light of the fact that Milgram's work has received so much attention in the media and academic circles, it would appear that this direct measure of aggression would be too highly reactive to accurately reflect aggressive tendencies. Recent pilot work (Lisman and Kreutzer, 1976) has confirmed this notion. This, along with criticism by fellow psychologists suggesting that experiments involving shock administration to humans is unethical, indicates the need for alternative measures of aggression.

In the final process of selecting an appropriate measure of aggression it would seem important to discuss ways in which aggression has been defined. Buss (1961) defines aggression as "the delivery of noxious stimuli to another organism." This would imply that behavioral methods which involve shock administration, or similar forms of aversive stimuli, would be most preferable. However, Bandura (1973) points out, "A comprehensive theory of aggression must include both aggressive actions reinforced by the satisfaction of hurting others, and a broader class of aggressive behavior in which infliction of suffering is irrelevant or secondary." Bandura suggests that noninjurious outcomes of aggressive acts, such as gain in status, power, or resources, may provide reinforcement for the aggressive act. Therefore, it seems that in a comprehensive investigation of alcohol's effect on aggression, assessment should concern aggression intended to produce both injurious and noninjurious outcomes.

The authors of the Buss-Durkee Hostility Inventory (BD), a self-report measure (1957), contend that they have developed an inventory "for assessing different kinds of hostility." A validity report by Renson, Adams, and Tinklenberg (1978) and a study by Leibowitz (1968) suggest that the Assault, Negativism, Verbal Hostility, and Indirect Hostility subscales in addition to the Total Hostility scores are the most useful in assessing aggression. The original inventory designed by Buss contained seventy-five True-False items which were subdivided into eight scales. Subjects are asked to indicate the probabilities they would engage in various forms of aggressive behaviors. The Assault subscale assesses proclivity toward physical violence against others. The Indirect Hostility subscale is intended to measure "indirect" forms of aggression such as gossip or temper tantrums. The Negativism subscale assesses oppositional behavior, primarily directed toward authority figures. The Verbal Hostility subscale measures negative affect reflected in speech. These four subscales may be additively combined into a Total Hostility measure reflecting all four forms of hostility. Specific items and their subscale assignments are given in the Appendix.

Additionally, most discussions concerning the relationship between alcohol and aggression assume that alcohol is a disinhibitor which releases the inhibition of aggressive tendencies (Carpenter and Armenti, 1972). Researchers in the area of assertiveness (Alberti and Emmons, 1970) suggest that lack of assertiveness, assertiveness, and aggression lie along a continuum. Lack of assertiveness involves an inhibition to

act, while aggressive behavior involves a lack of inhibition with a corresponding inability to behave appropriately.

A combination of validated behavioral and self-report measures of assertiveness will allow a measurement of inhibition relating not only to assertiveness but to aggressiveness as well. The Rathus Temperament Survey is a thirty item self-report measure of assertiveness. Rathus (1973) found significant positive correlations between Temperament Survey scores and a number of other behavioral and self-report measures of assertiveness. Subjects are presented with a series of statements describing situations involving assertive and nonassertive behaviors. Each statement calls for the subject to respond by indicating how characteristic of himself the behavior is. A resulting total score ranging from minus sixty (nonassertive) to plus sixty (assertive) is obtained.

The present study also employs a version of the Behavioral Assertiveness Test (BAT) developed by Eisler, Miller, and Hersen (1973). In addition to validity reports from the authors, a recent study by Pachman, Foy, Massey, and Eisler (1978) found significant positive correlations between measures obtained from the Behavioral Assertiveness Test and subjective ratings of global assertiveness. The test involves the subject responding to a role model in a series of hypothetical situations which have been audiotaped. Responses are later rated for latency, affect, loudness, compliance, and requests for new behavior. This experimenter has also recorded occurrences of profanity as a measure of verbal aggression.

It is hoped that through the use of a range of self-report and

behavioral measures a greater clarification of the relationship between alcohol consumption and aggression will be obtained.

The Placebo

The placebo can be a valuable tool in determining the effects of subject expectancies. Marlatt, Demming, and Reid (1973) investigated loss of control drinking in alcoholics after verifying the effectiveness of their placebo. Alcoholic subjects, when permitted to drink freely, drank as much of a placebo (a tonic mixture which they were told contained alcohol) as they drank of an alcoholic beverage. The total amount consumed in either case exceeded the amount subjects drank when they were given tonic and had been told they were given tonic. The experimenters state, "... beverage consumption rates for both the alcohol mixture and tonic alone were determined largely by the subject's expectancy of the content of the beverage. This finding, obtained with both alcoholic and social drinker subjects, is in marked opposition to assumptions which suggest that the physiological effects of alcohol alone are responsible for increases in the alcoholic's drinking behavior." In the same way, results obtained with the use of an empirically tested placebo could indicate that psychological factors play a large role in determining the appearance of aggressive behavior in persons who believe they had consumed alcohol.

Shuntich and Taylor (1972) also used a placebo in their study.

Although the subjects in the placebo group believed that they had consumed alcohol, their aggression was no greater than the control group's, and significantly less than the group that received alcohol. Statistical examination of subjects' ratings of beverage alcohol content indicated significantly higher estimates for the group that had consumed alcohol over the group receiving the placebo. The higher aggressiveness of the alcohol group may have been due to their expectancy that they had consumed enough alcohol to behave aggressively. Subjects in the placebo group may have believed that they hadn't consumed enough alcohol to "release their inhibitions."

A group of researchers (Lisman, Keane, and Kreutzer, Note 2) recently completed a study to determine the best placebo available. Following a comprehensive review of the literature, they selected six different placebo beverages for which there was some evidence for effectiveness. Subjects were asked to rate these six placebo mixtures, and two others the experimenters had developed, for taste and alcoholic content. Metbrew Near Beer(c) and the beverage used by Marlatt, Demming, and Reid (1973) had the highest ratings for alcoholic content. Marlatt et al. had tested their placebo for effectiveness and chose it because their subjects could not determine better than fifty percent of the time that the beverage contained alcohol. However, this experimenter is interested in choosing a beverage which induces the expectancy that it does contain alcohol, and for this reason Metbrew had been chosen for the present study.

STATEMENT OF THE PROBLEM

A number of studies have demonstrated that there is a direct relationship between alcohol consumption and aggression. Unfortunately, these studies have done little to clarify the exact nature of this relationship. The main focus of alcohol/aggression studies has been on the measurement of human physical aggression. Bandura (1973) has suggested that aggression is a multi-faceted phenomena, and as such it appears that other forms of aggressive behavior, not only those intended to convey physical harm, should have been considered. In view of aggression as a multi-faceted phenomena, the present study employed a combination of behavioral and self-report measures of aggression and assertiveness.

Only one study to date (Lang, Goecker, Adesso, and Marlatt, 1975) has sought to discriminate between the physiological (dosage) and psychological (expectancy) effects of alcohol. The present study sought to determine the effects of both dosage expectancy and actual dosage on aggression through the use of two experimental manipulations. The expectancy manipulation was accomplished by informing subjects that their beer was either half as strong or twice as strong as commercially available beer. The dosage manipulation involved administering to blind subjects either 0.0 (placebo), 0.5, or 1.0 milliliter of ethanol per kilogram body weight. In view of the conflicting results reported by alcohol/aggression researchers, the following hypotheses were chosen: (a) The dosage of alcohol administered will not affect aggression/assertiveness; (b) Subjects' dosage expectancy will not affect aggression/assertiveness.

METHOD

Design

The design used was a 2 x 3 factorial analysis of variance (see Fig. 1). One factor involved alcohol dosage. Subjects were administered 0.0 (placebo), 0.5 (moderate), and 1.0 (high dosage) ml. of 95% pure ethanol per kilogram body weight. The second factor involved the manipulation of subject expectancies concerning alcohol dosage. Two equal groups of subjects were given two different sets of instructions (see Dosage Information, Appendix A). One half of the subjects were told they would be given beer which was half as potent as commercially available beer, and one half of the subjects were told they would be given beer which was twice as strong as commercially available beer. The dependent variables included behavioral and self-report measures of aggressiveness and assertiveness.

DOSAGE

EXPECTANCY	0.0	0.5	1.0 ml/kg body weight
LOW	N=9	N=9	N=9
HIGH	N=9	N=9	N=9

Fig. 1 Diagram of the experimental design

Subjects

Fifty-four male subjects were selected from introductory psychology courses at Appalachian State University. The first step in the selection process involved distribution of Alcohol Questionnaires (see Appendix B) to all students in each class. Students were told that the questionnaire was being used to prepare an alcohol education program, and that if anyone wanted to participate in an experiment involving alcohol consumption they should sign their name to the last page of the questionnaire. Students were told that academic credit would be given in exchange for their participation.

Subjects were actually selected based on their responses to the drinking history portion of the Alcohol Questionnaire. Those subjects whose total score for questions numbered 1, 2, and 4 on Part IV was one or less were rejected because of possible adverse reactions to alcohol. Those subjects scoring greater than five were rejected because of possible alcohol dependence. This selection process helped to ensure that the subject population would consist primarily of social drinkers. In addition, subjects were randomly assigned to each of the six experimental groups.

As part of the experimenter's responsibility to ensure the rights of subjects, each participant was required to read and sign an Informed Consent form (see Appendix C). Subjects were told that following consumption of a dosage of alcohol based on their weight, they would be asked to complete a number of questionnaires designed to measure the

influence of alcohol on such aspects of mental functioning as hand-eye coordination, decision making, and reasoning ability. Each subject was asked to indicate the maximum number of beers he would be willing to drink. Subjects who were ill or under medication were eliminated based on their responses to the Informed Consent. In order to ensure the safety of intoxicated subjects, all subjects were informed that they would be required to remain in the experimental area until the experimenter had decided that their level of intoxication had decreased sufficiently. The Informed Consent stressed that, excluding the mandatory detoxification period, subjects were free to discontinue their participation in the study at any time.

Apparatus

Three measures of assertiveness and aggressiveness were used in this study. Subjects were administered the Temperament Survey designed by Rathus (1973). This measure involves the subject responding to thirty statements describing nonassertive and assertive behaviors. The subject may respond as to how characteristic the behavior is of himself on a scale that ranges from +3 to -3, very characteristic to very uncharacteristic. The dependent measure is the total score of all items.

Each subject was administered an audiotaped version of the Behavioral Assertiveness Test (BAT) developed by Eisler, Miller, and Hersen (1973). The test involves presenting a series of ten different hypothetical situations to each subject. A narrator gives a brief description of the situation, which is followed by a remark made by a role model. The subject is

asked to respond to the model as if the situation were really occurring. The situations originally used by Eisler, Miller, and Hersen with hospitalized psychotics were modified for the college population in the present study (see Behavioral Assertiveness Test-Transcript in Appendix D).

The Behavioral Assertiveness Test was used as a measure of aggressiveness as well as assertiveness. A dependent measure of verbal aggression was tabulated by recording the total occurrences of profanity for each subject. Five different measures of assertiveness were also recorded for each situation, response latency, affect, loudness, compliance (compliance content), and requests for new behavior (content requesting new behavior). Behavioral Assertiveness Test scoring criteria are found in Appendix E. Reliability was established for each dependent measure using two judges. The first judge independently rated all ten situations for each subject. The second judge independently rated all ten situations for the first ten subjects, and each tenth subject following. Reliability data was calculated on tapes recorded from a total of fifteen subjects. A percentage of aggreement was determined by dividing the total number of situations by the number of inter-judge aggreements. For response latency reliability ratings judges' estimates that were within three tenths of a second were considered as being in agreement. For affect, loudness, compliance content, and content requesting new behavior, judges' estimates within one point (for each inividual situation) were considered in agreement. For the remaining measures exact agreement was necessary. Eighty-five percent was set as the minimum level of agreement.

The Buss-Durkee Hostility Inventory (1957) was also used in the present study. For this measure, subjects are asked to reply True or False to a series of seventy-five statements which may describe them. The dependent measure is the sum of raw scores for each of the subscales and the Total score. Although Buss originally designed the inventory with eight subscales, only four of these in addition to the Total score have received support for validity. Therefore, the thirty-six questions of the Assault, Negativism, Verbal Hostility, and Indirect Hostility subscales were used in the present study. Specific items and their subscale assignments are given in Appendix F.

Two additional measures were added in order to reduce the reactivity of aggressiveness/assertiveness measures and ensure that later subjects would be naive. Subjects were instructed by the Informed Consent that the study was primarily concerned with decision making, hand-eye coordination, and reasoning ability. To reinforce this belief, subjects were administered the Digit Symbol subtest of the Wechsler Adult Intelligence Scale (WAIS) and the Shipley Institute of Living Scale. The Digit Symbol of the WAIS is a measure of visual-motor coordination. The Shipley Institute of Living Scale is a measure of general intellectual ability which was found to correlate .92 with the WAIS full scale score (Shipley, 1940).

The placebo consisted of Metbrew Near Beer(c), a nonalcoholic beer. Those subjects assigned to groups receiving alcohol were given Metbrew to which an appropriate amount of 95% pure ethanol had been added. Those subjects assigned to the placebo groups received Metbrew only. Alcohol

dosages were based upon body weight, and all subjects consumed aproximately twenty four ounces of beer. The particular dosages selected- 0.0, 0.5, and 1.0 ml. of ethanol per kilogram body weight- were commensurate with those commonly used by alcohol/aggression researchers (Bennett, Buss, and Carpenter, 1969; Shuntich and Taylor, 1972).

Procedure

Following completion of the Alcohol Questionnaire subjects were scheduled for a testing session. Upon arrival, subjects were sequentially assigned, in blocks of six, to one of six treatment conditions. The six treatment conditions were created by two dosage expectancy conditions- High and Low-, each with three actual dosage conditions- 0.0 (placebo), 0.5, and 1.0 milliliter of ninety-five percent pure ethanol per kilogram body weight.

Each subject was escorted into the experimental room and asked to read the Informed Consent. After signing the consent form, the subject was presented with the Dosage Information card explaining that he was to receive aproximately twenty-four ounces of beer which was either one half as strong (low dosage expectancy) or twice as strong (high dosage expectancy) as commercially available beer. Subjects were then weighed in order to determine the exact amount of ethanol to be added to their beer.

The experimenter brought a pitcher containing the beer mixture to the subject along with an eight ounce cup. Subjects were told they would have twenty minutes to consume their beer. The experimenter explained that there were aproximately four cupfuls of beer in the pitcher.

In order that the beer be consumed at approximately the same rate for all subjects, each subject was informed that he was to drink one cupful of beer each five minute period. The experimenter returned to the experimental room after ten, fifteen, and twenty minutes had elapsed to inform subjects of the time.

Those subjects who were unable to finish thir beer in twenty minutes were given a maximum of an additional two minutes to finish. Following beer consumption, subjects were asked to wait alone in the experimental room for twenty minutes to enable the alcohol to take effect. The experimenter then returned to the experimental room to administer the tests.

In a counterbalanced sequence, subjects were administered the Buss-Durkee Hostility Inventory, the Rathus Temperament Survey, and the Behavioral Assertiveness Test (BAT). The experimenter was present only during the completion of the Behavioral Assertiveness Test. The function of the experimenter in this case was to operate the playback and the record tape recorders, and to answer any questions the subject might have. Following one demonstration, and two practice situations, the subjects' responses were recorded for the ten test situations. In completing the Buss-Durkee and the Rathus, subjects were given a pencil, asked to read the test directions, and instructed to complete all test items. Subjects were informed that the experimenter would be available in an adjacent room in the event any questions arose.

Following completion of the assertiveness/aggressiveness measures, subjects were administered the Shipley Institute of Living Scale and

the WAIS Digit Symbol in a counterbalanced sequence. Instructions for the two tests were given via a cassette recording.

Each subject was debriefed using the Post-Experimental Questionnaire (See Appendix G). The questionnaire contained a number of questions regarding the subjects' perception of the amount of alcohol consumed, the purpose of the experiment, and the expected experimental results. All subjects were then questioned concerning the degree of their intoxication. Additional assessment of the subject's condition was made by the experimenter based upon the subject's speech, balance, and gait. All subjects showing significant difficulty were asked to remain in the experimental area until their intoxication was significantly decreased. In addition, those subjects who actually received alcohol were required to give their word that they would not operate a motor vehicle less than two hours after leaving the experiment. Before departing, subjects were asked not to discuss the experiment with anyone. The importance of this was explained, subjects were given their experimental credit, and thanked for their cooperation.

RESULTS

Aggression

The first series of dependent measures investigated were those pertaining to aggression. These measures included the four subscale scores of the Buss-Durkee Hostility Inventory (BD), the Buss-Durkee Total score, and the total number of occurrences of profanity obtained from the Behavioral Assertiveness Test (BAT). The following is a brief summary of the overall findings. Subjects in the high dosage expectancy condition scored higher in aggressiveness than subjects in the low dosage expectancy condition. The only exception was the Buss-Durkee Negativism subscale in which means for both expectancy conditions were equal. Subjects in the moderate (actual) dosage condition scored higher on all Buss-Durkee measures than either the placebo or high dosage groups. For the Behavioral Assertiveness Test occurrences of profanity measure, subjects in the high dosage group scored higher in aggressiveness than either the placebo or moderate dosage groups.

A 2 x 3 analysis of variance was performed on each of the six aggression measures. Each analysis compared dosage expectancy (high versus low) and actual dosage (0.0, 0.5, 1.0 ml. ethanol/kg. body weight). These six analyses as well as means and standard deviations for all treatment groups on each dependent measure are presented in Tables 1-6. All tables, excluding Table 13, contain the ANOVA summary data (section a.) as well as means and standard deviations for treatment groups (section b.).

An examination of analysis of variance results for the Buss-Durkee

Table 1

ANOVA Summary Tables and Means and Standard Deviations for Verbal Hostility

a. ANOVA Summary

Source	Df	Mean Square	F
Expectancy	1	46.296	8.460**
Dosage	2	18.463	3.374*
Expectancy x Dosage	2	0.685	0.125
Within Subjects	48	5.472	
Total	53	6.552	

*p < .05 **p < .01

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b. Means and Standard Deviations

DOSAGE EXPECTANCY	0.0ml/kg	0.5ml/kg	1.0ml/kg
Low Dosage Expectancy	6.7(2.9)	8.9(3.1)	7.8(1.6)
High Dosage Expectancy	8.6(2.6)	10.3(1.9)	10.0(1.7)

*(Standard deviations are presented in parentheses)

Verbal Hostility score (see Table 1) revealed that the low versus high dosage expectancy factor was significant ($p < .01$, $F(1,53)=8.5$). This indicated that subjects in the high dosage expectancy group scored significantly higher on the Verbal Hostility subscale than the low dosage expectancy group. The mean scores for the high and low expectancy groups were 9.6 and 7.8 respectively. Additional examination of analysis of variance results revealed that the actual dosage factor was also significant ($p < .05$, $F(2,53)=3.4$). The means for the placebo, moderate, and high dosage groups were 7.6, 9.6, and 8.9 respectively. A t-Test comparison of means (Bruning and Kintz, 1968) indicated that the moderate dosage group had significantly higher Verbal Hostility scores than the placebo group ($p < .05$, Critical difference=2.22, df=3.4). This suggested that a moderate dosage of alcohol may increase verbal hostility. No significant differences were found between any of the other actual dosage groups. The two-way interaction between actual dosage and dosage expectancy was not significant ($p > .05$, $F(2,53)=0.10$).

Analysis of variance data for the Buss-Durkee Total score is presented in Table 2. Examination of the data revealed that the low versus high dosage expectancy factor was significant ($p < .05$, $F(1,53)=7.0$). This indicated that subjects in the high dosage expectancy group scored significantly higher on Total hostility than the low dosage expectancy group. The means for the high and low dosage expectancy groups were 23.7 and 20.0 respectively. Additional examination of analysis of variance data indicated that the actual dosage factor was also significant ($p < .05$,

Table 2

ANOVA Summary Tables and Means and Standard Deviations for BD Total Scores

a. ANOVA Summary

Source	Df	Mean Square	F
Expectancy	1	196.463	7.008*
Dosage	2	113.389	4.045*
Expectancy x Dosage	2	3.352	0.120
Within Subjects	48	28.032	
Total	53	33.500	

*$p < .05$

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b. Means and Standard Deviations

DOSAGE EXPECTANCY	0.0ml/kg	0.5ml/kg	1.0ml/kg
Low Dosage Expectancy	17.2(5.6)	23.0(4.3)	19.6(5.2)
High Dosage Expectancy	22.0(6.3)	26.1(6.1)	23.1(3.8)

*(Standard deviations are presented in parentheses)

$F(2,53)=4.0$). Means for the placebo, moderate, and high dosage groups were 19.6, 24.6, and 21.3 respectively. A comparison of means using a t-Test revealed that the moderate (actual) dosage group scored higher on Total hostility than the placebo group ($p<.05$, Critical difference= 2.54, df=34). No other significant differences were found between any of the other actual dosage groups. The two-way interaction between actual dosage and dosage expectancy was not significant ($p>.05$, $F(2,53)=0.1$).

An examination of analysis of variance results for the occurrences of profanity on the Behavioral Assertiveness Test (see Table 3) revealed that the low versus high dosage expectancy factor was not significant ($p>.05$, $F(1,53)=0.7$). However, the data revealed that the actual dosage factor was significant ($p<.05$, $F(2,53)=3.6$). Means for the placebo, moderate, and high dosage groups were 0.2, 0.3, and 1.1 respectively. Interrater reliability for occurrences of profanity was 100%. A t-Test comparison of means indicated that the high (actual) dosage group used significantly more profanity than either the placebo ($p<.05$, Critical difference=2.40, df=34) or moderate ($p<.05$, Critical difference=2.33, df=34) dosage groups. This suggested that only a high dosage of alcohol would serve to elevate the use of profanity. The two-way interaction between dosage expectancy and actual dosage was not significant ($p>.05$, $F(2,53)=1.4$).

Analyses of variance were also performed on the Assault, Negativism, and Indirect Hostility subscales of the Buss-Durkee (Tables 4, 5, and 6, Appendix H). Evaluation of analyses for all three of these dependent

Table 3

ANOVA Summary Tables and Means and Standard Deviations for Profanity Scores

a. ANOVA Summary

Source	Df	Mean Square	F
Expectancy	1	0.907	0.718
Dosage	2	4.474	3.619*
Expectancy x Dosage	2	1.352	1.070
Within Subjects	48	1.264	
Total	53	1.385	

*$p < .05$

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b. Means and Standard Deviations

DOSAGE EXPECTANCY	0.0ml/kg	0.5ml/kg	1.0ml/kg
Low Dosage Expectancy	0.2(0.4)	0.3(0.7)	0.7(1.1)
High Dosage Expectancy	0.1(0.3)	0.3(0.7)	1.6(2.2)

*(Standard deviations are presented in parentheses)

measures revealed that both the actual dosage and dosage expectancy factors were not significant. None of the two-way interactions between factors were significant for any of the three measures.

Assertiveness

The second series of dependent measures investigated were those pertaining to assertiveness. These measures included the Rathus Temperament Survey total score as well as the five Behavioral Assertiveness Test (BAT) measures, Response Latency, Loudness, Compliance Content, Content Requesting New Behavior, and Affect. Statistical analyses of all six assertiveness measures indicated no significant differences between treatment groups. Additionally, no consistent relationships were found for any of the group means on the five Behavioral Assertiveness Test measures. See Tables 7-12, Appendix H, for the means and standard deviations of all treatment groups on each of the dependent measures.

A 2 x 3 analysis of variance shown in Table 7, Appendix H was performed with the total Rathus score as the dependent measure. The analysis compared dosage expectancy and actual dosage. An examination of Table 7 revealed that neither the dosage expectancy ($p > .05$, $F(1,53)=1.8$), nor the actual dosage ($p > .05$, $F(2,53)=2.3$) were significant. The two-way interaction between the actual dosage and dosage expectancy factors was found not to be significant ($p > .05$, $F(2,53)=0.3$). Although no significant differences were found, the trends were in the expected direction.

Interrater reliabilities for the Behavioral Assertiveness Test measures, Response Latency, Loudness, Compliance Content, Content Requesting New Behavior, and Affect were 90%, 98%, 93%, 99%, and 99% respectively.

Analyses of variance performed for all five of the Behavioral Assertiveness Test (assertiveness) measures (Tables 8-12, Appendix H) revealed that in no case was the actual dosage or dosage expectancy a significant factor. In addition, none of the two-way interactions between any of the five measures were found to be significant.

Comparison Between Assertiveness and Aggressiveness Measures

In order to test the earlier assumption that a relationship exists between assertiveness and aggressiveness, Pearson Product-Moment Correlations were obtained between all twelve dependent measures. See Table 13, Appendix H for these correlations.

The Rathus was significantly correlated with the Buss-Durkee Verbal Hostility score ($r=.23$, $p < .05$). None of the other four Buss-Durkee subscales were significantly correlated with the Rathus score. Of the six Behavioral Assertiveness Test measures only occurrences of profanity was significantly correlated with any of the Buss-Durkee hostility scores. The Total hostility score correlated significantly ($r=.22$, $p < .05$) with occurrences of profanity. This correlation defines the relationship between a self-report and behavioral measure of aggression rather than an assertiveness and aggressiveness measure per se. No significant

correlations were found between any of the five assertiveness measures of the Behavioral Assertiveness Test and the Buss-Durkee.

Visual-Motor/Cognitive Measures

An additional series of dependent measures investigated were those designed to reduce the reactivity of the assertiveness/aggressiveness measures as well as provide general indices of visual-motor coordination and intellectual functioning. These measures included the WAIS Digit Symbol and the Shipley Institute of Living Scale. Analyses of variance performed for both measures (see Tables 14, 15) revealed that in no case was the actual dosage or dosage expectancy a significant factor. In addition, none of the two-way interactions between factors were found to be significant.

Debriefing

Following the experimental session subjects were asked to estimate the amount of alcohol, in ounces, they had consumed. This measure was used as an indication of the placebo's effectiveness. Additionally, it allowed for evaluation of effects of the two factors, actual dosage and dosage expectancy, in the process of determining beverage alcohol content. The means and standard deviations for all treatment groups on this dependent measure are given in Table 16, Appendix H.

A 2 x 3 analysis of variance shown in Table 16 was performed with estimated ounces of alcohol received as the dependent measure. The analysis compared dosage expectancy with actual dosage. Examination of

Table 16 revealed that the high versus low dosage expectancy factor was significant ($p < .001$, $F(1,53)=56.6$). Those subjects who were told they would receive a doubly potent beer apparently believed they had consumed more alcohol than those subjects expecting a beer one-half as strong as commercially available beer. The mean estimates for the low and high dosage expectancy groups were 1.9 and 4.0 respectively. Additional examination of analysis of variance data revealed that the actual dosage factor was significant ($p < .01$, $F(2,53)=7.8$). The means for the placebo, moderate, and high dosage conditions were 2.4, 2.7, and 3.7 respectively. A t-Test comparison of means indicated that the high dosage group perceived that they had consumed significantly more alcohol than either the placebo ($p < .05$, Critical difference=2.40, df=16) or the moderate ($p < .05$, Critical difference=2.33, df=16) dosage groups. Most important, there was no significant difference obtained for perceived alcohol content between the placebo and moderate dosage groups. This suggests that regardless of the alcohol content, subjects in the placebo (no alcohol) group believed they had consumed as much alcohol as the moderate dosage group. The two-way interaction between the main effects, dosage expectancy and actual dosage, was not significant ($p > .05$, $F(2,53)=0.2$).

In addition to being questioned about beverage alcohol content, all subjects were asked to indicate what they thought were the purpose and expected result of the experiment. Through these questions an effort was made to determine how much each subject knew about the experiment beforehand and how much he had learned through participation. Responses

to these questions revealed that no subject had been given additional information from earlier participants. Most important, no subject was aware that assertiveness or aggressiveness was being measured.

DISCUSSION

The results of this study suggest that two factors are involved in the determination of aggressive behavior following alcohol consumption. The first of these factors is alcohol dosage. Apparently, a moderate dosage of alcohol (0.5 ml./kg.) tends to increase several forms of self-reported aggression. Significant increases were found for both Verbal and Total hostility measures. Total hostility is a measure intended to reflect four types of aggression, assaultiveness, indirect hostility, negativism, and verbal hostility. High dosages of alcohol (1.0 ml./kg.) seem to inhibit or suppress aggression. This is suggested by the finding of no significant difference in self-reported aggression between placebo (no alcohol) and high dosage groups. It is well known that alcohol acts as a depressant. Perhaps at higher dosage levels this property of alcohol is responsible for the lack of increased aggression.

A high dosage of alcohol was found to increase one behavioral measure of aggression, the occurrences of profanity. Occurrences of profanity is a measure of verbal aggression, and was affected differently by dosage than were the self-report measures of aggression. This finding may reflect the fact that self-report measures rely primarily on cognitive functioning, which may be more prone to alcohol's depressant effects than behavioral measures. It seems possible that the behavioral measure employed was more reflexive in nature, and less dependent on cognitive functioning.

Another factor found to affect aggressive behavior was alcohol

dosage expectancy. Those subjects who expected that they were to receive high dosages of alcohol, regardless of the actual amount they received, exhibited significantly more self-reported aggression than those subjects expecting low dosages of alcohol. This suggests that individuals have different expectancies regarding the effects of low and high dosages of alcohol on aggression. Apparently, these expectations alone are sufficient to affect the amount of aggression following alcohol consumption.

Examination of the results indicated that neither dosage of alcohol nor dosage expectancy had significant effects on assertiveness. Earlier, it was suggested that there was a relationship between aggressiveness and assertiveness. Lack of assertiveness, assertiveness, and aggressiveness could possibly lie along a continuum. Lack of assertiveness implies an inhibition to express feelings, whereas aggressiveness implies a total lack of inhibition in disregarding the feelings of others. Assertiveness requires a lack of inhibition to express feeling, but also requires a certain inhibition in consideration of the feelings of others. In this manner, it was suggested that if alcohol affects inhibition, it would affect assertiveness as well as aggressiveness.

The results of the present study indicate differential effects of alcohol on assertiveness and aggressiveness. Dosage and expectancy factors were found to influence only aggressiveness. Correlational analyses were conducted to help clarify the relationship between aggressiveness and assertiveness. The only significant correlation between assertiveness and aggressiveness was found between the Rathus and the

Buss-Durkee Verbal Hostility score ($r=.23$, $p < .05$). This lack of significant correlational evidence suggests that assertiveness and aggressiveness are different constructs.

In summary, both actual dosage of alcohol and dosage expectancy were found to influence behavioral and self-report measures of aggression. No effects for either of the two factors were found on assertiveness, suggesting the possibility that assertiveness and aggressiveness are independent phenomena.

The results of the present study lend support to findings made by previous alcohol researchers. Shuntich and Taylor (1972) and Taylor and Gammon (1974) found that dosage of alcohol significantly affected a behavioral measure of aggression. Of the two studies, only the latter sought to discriminate between expectancy (psychological) and physiological effects using a placebo. Although the present study indicated psychological effects of alcohol on aggression, Taylor and Gammon found no significant effect. This lack of findings may directly relate to the experimenters' discovery that their placebo was ineffective. Results of the present study indicated that the Metbrew placebo was effective. Subjects in the placebo group estimated that they had consumed as much alcohol as those in the moderate dosage group.

Lang, Goecker, Adesso, and Marlatt (1975) found that expectancy, and not physiological (dosage) effects of alcohol contributed to aggression. There are a number of differences between the Lang et al. study and the present study which may account for the differences in finding dosage effects. Lang et al. used heavy drinkers rather than social

drinkers. In addition, the experimenters used only one dosage of alcohol, 1.3 ml./kg., which is thirty percent more than the highest dosage used in the present study. High dosages produced changes in only one aggressiveness measure in this study. The phenomena may be curvilinear, in that Lang, Goecker, Adesso, and Marlatt's failure to find an effect may be related to measuring aggressive behavior at the extremes of a continuum. Perhaps if Lang et al. had used several dosages in a lower range they might have found results comparable to the present study. In fact, the dosage used by Lang et al. is the highest dosage of alcohol used in any alcohol/aggression study to date.

Doleys, Otto, Osborne, Harris, and Snyder (1967) conducted an alcohol study using the Buss-Durkee and found no significant dosage effects. It had been suggested earlier that the cultural role for the intoxicated female is less aggressive than that for the intoxicated male. For this reason, it is possible that had Doleys et al. used male rather than female subjects, they might have found an increase in Buss-Durkee scores as a result. The present study employed male subjects and found that predicted result.

The two major findings of the present study have implications for the way in which society should deal with criminals who commit their crimes under the influence of alcohol. The finding that dosage of alcohol influences aggressiveness suggests that the criminal is only in part responsible for his behavior. The finding that people act more aggressively when they think they have consumed more alcohol, regardless

of the actual amount consumed, lends confirmation to Bandura's (1973) concept of social learning theory. Apparently, society has taught the individual that aggressiveness is a necessary and acceptable result of intoxication.

If the individual can be taught by society to act aggressively following alcohol consumption, he can also be taught to behave more appropriately. A likely next step might be to design an educational program for individuals prone to act aggressively following alcohol intake. If this program were adequately effective, it might be possible to override the dosage effects of alcohol. Such a program could not only be of benefit to criminals, but to most of society as well.

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APPENDIX A

Dosage Information

(Low Dosage Expectancy)

Specifically, you will be allowed as much as twenty minutes to consume approximately twenty four ounces of beer. As we are now concerned with the effects of low dosages of alcohol, you will be given a laboratory prepared beer mixture which is less than one half as strong as beer sold commercially.

(High Dosage Expectancy)

Specifically, you will be allowed as much as twenty minutes to consume aproximately twenty four ounces of beer. As we are now concerned with the effects of high dosages of alcohol, and because we must ensure rapid absorbtion into the bloodstream by allowing you only a short time to finish your beer, we have added enough ethanol/grain alcohol to our laboratory beer to double the alcohol concentration. This will produce a beer mixture that is twice as potent as commercially available beers. We do not expect that you will have any problems in drinking a beer this strong because the ethanol is nearly tasteless, and most of you are experienced drinkers.

*(The material in parentheses was not included on the Dosage Information card)

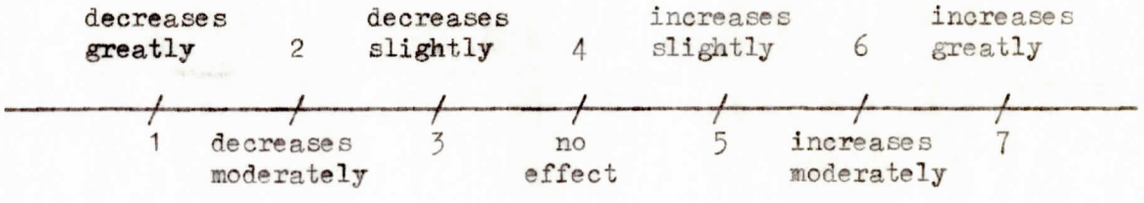
APPENDIX B

ALCOHOL QUESTIONNAIRE

Directions: The following questionnaire is an attempt by researchers in this school to develop an educational program concerning the effects of alcohol use. Please be sure to complete all questions in order and to finish all three pages. Although we request that you do not put your name on this questionnaire, it is very important that you answer these questions as carefully and honestly as possible. Your cooperation will be greatly appreciated. Thank you.

PART I

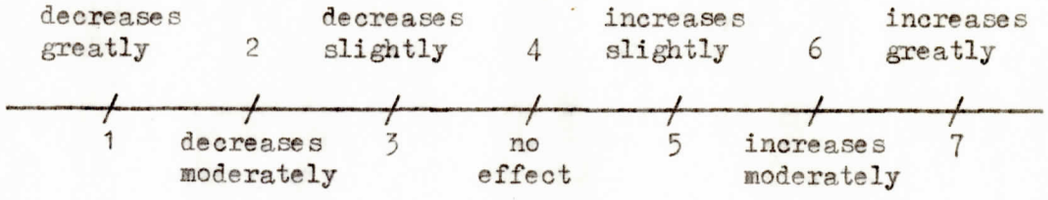
Use the scale below to describe the effects of a moderately high dosage of alcohol on your behavior in particular. Place the number that corresponds to the effect on the scale in the blank to the left of each behavior.



_____ 1. driving ability
_____ 2. fear
_____ 3. talkitiveness
_____ 4. sociability
_____ 5. hostility
_____ 6. intelligence
_____ 7. sexual desire
_____ 8. tension
_____ 9. criminal impulse
_____ 10. honesty
_____ 11. happiness
_____ 12. risk taking
_____ 13. inhibition
_____ 14. depression
_____ 15. willingness to fight
_____ 16. muscular coordination
_____ 17. reasoning ability
_____ 18. balance
_____ 19. manual dexterity
_____ 20. problem solving

PART II

Use the scale below to describe the effects of a moderately high dosage of alcohol on people in general:



_____ 1. driving ability
_____ 2. fear
_____ 3. talkitiveness
_____ 4. sociability
_____ 5. hostility
_____ 6. intelligence
_____ 7. sexual desire
_____ 8. tension
_____ 9. criminal impulse
_____ 10. honesty
_____ 11. happiness
_____ 12. risk taking
_____ 13. inhibition
_____ 14. depression
_____ 15. willingness to fight
_____ 16. muscular coordination
_____ 17. reasoning ability
_____ 18. balance
_____ 19. manual dexterity
_____ 20. problem solving

PART III

1. What religion are you? _____
2. How religious are you? (circle one)
   not at all somewhat moderately very
3. How many years have you been drinking? _____
4. Which do you prefer? (circle one)
   beer wine mixed drinks straight liquor

PART IV

Answer the following questions by placing the appropriate number in the blank:

(0) never
(1) sometimes
(2) usually
(3) always

_____ 1. Do you drink on weekends?
_____ 2. Do you drink on weekdays?
_____ 3. Do your parents drink?
_____ 4. Do you drink alone?
_____ 5. Do your social situations involve drinking?
_____ 6. Do you become ill after drinking?
_____ 7. Do you ever use alcohol to alleviate pain or stress?
_____ 8. Do you ever hallucinate from alcohol?
_____ 9. Does your drinking affect your performance in school?
_____ 10. Do you feel guilty after drinking?
_____ 11. Does drinking make you feel better about yourself?
_____ 12. Does drinking increase your self confidence

IN THE NEXT FEW WEEKS WE WILL BE SELECTING SUBJECTS TO PARTICIPATE IN AN ALCOHOL EXPERIMENT WHICH WILL INVOLVE DRINKING SEVERAL BEERS AND TAKING SOME PAPER AND PENCIL TESTS. MORE DETAILS WILL BE PROVIDED LATER. IF YOU WISH TO PARTICIPATE, PLEASE FILL IN YOUR NAME, TELEPHONE NUMBER, AND LOCAL MAILING ADDRESS BELOW. ALL RESULTS WILL BE KEPT CONFIDENTIAL. THANK YOU.

_____ _____
name(please print) phone #

_____
local address

APPENDIX C

Informed Consent

As you may already know, the Psychology department here has for some time been conducting research concerning the effects of alcohol on human behavior. During this particular phase of our research we are concerned with alcohol's effects on such aspects of mental functioning as decision making, hand-eye coordination, and reasoning ability. We will first ask you to consume a dosage of alcohol to be determined by your weight. Following this, you will be asked to fill out a number of questionaires designed to measure the above mentioned behaviors.

Because you have not yet been weighed, we must ask you to indicate below the maximum number of beers you would be willing to drink. You will be given more specific information about your dosage in a few minutes.

MAXIMUM NUMBER OF BEERS (circle one)

1 2 3 4 5 6

You are free to stop or leave at any point of the experimental procedure. We know that difficulties may arise and would understand any desire to discontinue. Nevertheless, due to problems with experimental variables you will not be asked whether you wish to leave. You may simply indicate at any point that you do not wish to continue.

Following the experimental session, we kindly request that you

remain in our designated research area until your level of intoxication has substantially decreased.

We request that you sign this form to indicate your understanding that:

(1) You are free to leave at any point.

(2) Your participation in this study is completely voluntary.

(3) You are not suffering from heart disease, high blood pressure, diabetes, or any other illnesses or allergies that would cause adverse reactions to alcohol.

(4) You are not presently taking medications or under a physician's care.

We would like to inform you that data and results for each participant will be held in strictest confidence. Because we would like to inform you of the results of this study when it has been completed, we ask you to fill in your current mailing address and phone number.

Thank you for your cooperation.

_____ participant signature

_____ experimenter signature

_____ local address

_____ phone number

_____ date

_____ time

APPENDIX D

Behavioral Assertiveness Test-Transcript

NARRATOR: "Situation one. Your girlfriend proudly presents you with a new shirt she has bought for your birthday. You don't like the color and would like to exchange it for another, but you don't want to hurt her feelings. Your girlfriend says ..."

GIRLFRIEND: "How do you like your birthday present?"

NARRATOR: "Situation two. You have just come home from a rough day at school, dead tired. Your girlfriend informs you that she has accepted an invitation for both of you to visit some friends that evening. You are beginning to get a headache and are definitely not in the mood to go out. Your girlfriend says ..."

GIRLFRIEND: "I just knew you'd like to visit tonight. Let's go right after dinner."

NARRATOR: "Situation three. You arrive late for a date one night after driving through traffic and a heavy rain storm. Your girlfriend demands an explanation of why you are so late. As soon as you begin to explain, she interupts you and starts screaming about how inconsiderate you are. Your girlfriend says ..."

GIRLFRIEND: "I don't care what happened! You are the most inconsiderate person in the world for making me worry about you."

NARRATOR: "Situation four. You're in a crowded grocery store and are in a hurry to get home. You've picked up one small item and get in line to pay for it when a woman with a shopping cart full of groceries cuts

in line right in front of you. The woman says ..."

WOMAN: "You won't mind if I cut in here, will you? I'm late for an appointment."

NARRATOR: "Situation five. You're in a fine restaurant with some friends. You have'nt eaten all day and order your favorite dish, a very rare steak. The waiter keeps you waiting a long time and finally brings you a steak which is so well done it looks burned. The waiter says ..."

WAITER: "I hope you enjoy your dinner sir."

NARRATOR: "Situation six. You have just punished your dog for tearing up the livingroom couch. After scolding the dog and hitting it several times with a folded newspaper your roommate feels sorry for him, pats him on the head, and gives him a milk bone. Your roommate says ..."

ROOMMATE: "You shouldn't punish your dog for something like that, besides he's a good dog."

NARRATOR: Situation seven. You have been invited over your girlfriend's apartment for a nice home cooked meal. When you arrive after a hard day at work, you find that your girlfriend has a frozen T.V. dinner in the oven. Your girlfriend says ..."

GIRLFRIEND: "I just didn't feel like cooking tonight. I hope you don't mind a frozen dinner."

NARRATOR: "Situation eight. You have just come home from a long day at school, and as you settle down to read the newspaper you discover that your roommate has cut out an important article to get a photograph that is on the back of it. He needs the photograph for a paper he is writing, but you would really like to read the whole newspaper. Your roommate says ..."

ROOMMATE: "I just wanted to cut out the picture before I forgot about it. Besides, I'm the one who bought the newspaper in the first place."

NARRATOR: "You have been watching a movie on television and are just beginning to enjoy it. Your roommate, who has been studying all night, walks in and changes the channel. Your roommate says ..."

ROOMMATE: "I hope you don't mind if I watch this documentary on World War II. My history teacher asked us to watch it for homework."

NARRATOR: "Situation ten. You have just finished putting up some bookshelves in your dorm room. You really enjoy carpentry and have spent the whole afternoon putting them together. Your roommate comes in and makes some critical comments to the effect that your not a very good carpenter. Your roommate says ..."

ROOMMATE: "I don't like those shelves at all, and they're not even level. Why don't you take those terrible things down?"

APPENDIX E

Behavioral Assertiveness Test-Scoring Criteria

1. Latency of Response- The time period between when the role model stopped speaking and when the subject began his response. This was recorded to one hundreth of a second.

2. Loudness of Response- A five point scale reflecting the volume of subjects' speech, ranging from 1, very soft, to 5, very loud.

3. Affect- A five point scale reflecting the emotional quality of subjects' speech, ranging from 1, flat and unemotional, to 5, very lively.

4. Occurrences of Profanity- Each seperate occurrence of profanity was recorded. Variations of the following words were scored: "damn","hell", "ass", "bitch", "shit", "screw", "suck", "fuck", "crap", and "piss."

5. Compliance Content- This was rated on a four point scale based upon the following general criteria: Subject complies without protesting/one point; Subject complies but protests role model's behavior/two points; Subject does not comply and does not protest role model's behavior/ three points; Subject does not comply and protests role model's behavior/ four points. Specific scoring criteria for each situation are listed below:

Situation I(girlfriend/shirt)
(1) Subject says that he likes shirt,
(2) and mentions faults of shirt.
(3) Subject says that he doesn't like shirt, and mentions faults of shirt.

Situation II(girlfriend/dinner invitation)
(1) Subject goes to dinner,

(2) but protests girlfriend accepting dinner invitation.
(3) Subject does not consent to go to dinner,
(4) and criticizes girlfriend's accepting invitation.

Situation III(late to girlfriend's)
(1) Subject appologizes,
(2) but protests girlfriend's complaint
(3) Subject does not appologize,
(4) and protests girlfriend's complaint or goes home.

Situation IV(grocery store)
(1) Subject lets woman get ahead,
(2) but criticizes her for doing so.
(3) Subject refuses to let woman ahead,
(4) and criticizes her for doing so.

Situation V(restaurant)
(1) Subject accepts steak,
(2) but complains about it.
(3) Subject does not accept steak,
(4) and criticizes steak, waiter, or chef.

Situation VI(roommate/dog)
(1) Subject accepts roommate's action.
(4) Subject criticizes roomate's action.

Situation VII(girlfriend/t.v. dinner)
(1) Subject eats dinner,
(2) but criticizes girlfriend for making it.
(3) Subject refuses to eat dinner,
(4) and criticizes girlfriend for making it.

Situation VIII(roommate/newspaper photograph)
(1) Subject does not ask roommate for article,
(2) but criticizes him for cutting it out.
(3) Subject asks roommate for article,
(4) and criticizes him for cutting it out.

Situation IX(roommate/television)
(1) Subject allows roommate to change channel,
(2) but criticizes him for doing so.
(3) Subject does not allow roommate to change channel,
(4) and criticizes him for doing so.

Situation X(roommate/bookshelves)
(1) Subject agrees to take bookshelves down,
(2) but criticizes roommate for asking him to do so.
(3) Subject does not agree to take bookshelves down,
(4) and criticizes roommate for asking him to do so.

6. Content Requesting New Behavior- A dichotomous scale was used in which subjects were given one point for requesting a change in the role model's behavior, and zero otherwise. Specific scoring criteria for each situation are listed below(for scored responses only):

Situation I
(1) Subject asks for another shirt.

Situation II
(1) Subject tells girlfriend not to make plans without consulting him first.

Situation III
(1) Subject criticizes girlfriend for criticizing him, or tells her to be quiet.

Situation IV
(1) Subject tells woman to get in line behind him.

Situation V
(1) Subject asks waiter for another steak.

Situation VI
(1) Subject asks roommate not to reward dog.

Situation VII
(1) Subject asks girlfriend for another dinner.

Situation VIII
(1) Subject asks roommate not to cut anything out of the newspaper without consulting him first.

Situation IX
(1) Subject asks roommate not to change channel without consulting him first.

Situation X
(1) Subject asks roommate not to criticize his carpentry.

APPENDIX F

Buss-Durkee Hostility Inventory

Directions: Place a T in the blank if the statement is True about you, or place an F in the blank if the statement is not True. Please be sure to complete all items on both pages.

_____ 1. I seldom strike back, even if someone hits me first. (Assault)

_____ 2. I sometimes spread gossip about people I don't like. (Indirect)

_____ 3. Unless somebody asks me in a nice way, I won't do what they want. (Negativism)

_____ 4. When I disapprove of my friends' behavior, I let them know it. (Verbal)

_____ 5. Once in a while I cannot control my urge to harm others. (Assault)

_____ 6. I never get mad enough to throw things. (Indirect)

_____ 7. When someone makes a rule I don't like I am tempted to break it. (Negativism)

_____ 8. I often find myself disagreeing with people. (Verbal)

_____ 9. I can think of no good reason for ever hitting anyone. (Assault)

_____ 10. When I am angry, I sometimes sulk. (Indirect)

_____ 11. When someone is bossy, I do the opposite of what he asks. (Negativism)

_____ 12. I can't help getting into arguments when people disagree with me. (Verbal)

_____ 13. If somebody hits me first, I let them have it. (Assault)

_____ 14. When I am mad, I sometimes slam doors. (Indirect)

_____ 15. Occasionally when I am mad at someone I will give him the silent treatment. (Negativism)

_____ 16. I demand that people respect my rights. (Verbal)

_____ 17. Whoever insults me or my family is asking for a fight. (Assault)

_____ 18. I never play practical jokes. (Indirect)

_____ 19. When people are bossy, I take my time just to show them. (Negativism)

_____ 20. Even when my anger is aroused, I don't use strong language. (Verbal)

_____ 21. People who continually pester you are asking for a punch in the nose. (Assault)

_____ 22. I sometimes pout when I don't get my own way. (Indirect)

_____ 23. If somebody annoys me, I am apt to tell him what I think of him. (Verbal)

_____ 24. When people yell at me, I yell back. (Verbal)

_____ 25. When I really lose my temper, I am capable of slapping someone. (Assault)

_____ 26. Since the age of ten, I have never had a temper tantrum. (Indirect)

_____ 27. When I get mad, I say nasty things. (Verbal)

_____ 28. I could not put someone in his place, even if he needed it. (Verbal)

_____ 29. I get into fights about as often as the next person. (Assault)

_____ 30. I can remember being so angry that I picked up the nearest thing and broke it. (Indirect)

_____ 31. I often make threats I don't mean to carry out. (Verbal)

_____ 32. I generally cover up my poor opinion of others. (Verbal)

_____ 33. If I have to resort to physical violence to defend my rights, I will. (Assault)

_____ 34. When arguing, I tend to raise my voice. (Verbal)

_____ 35. I have known people who pushed me so far that we came to blows. (Assault)

_____ 36. I would rather concede a point than get into an argument about it. (Verbal)

APPENDIX G

Post-Experimental Questionnaire

1. What was the purpose of the study in which you just participated?

2. What might you say were the results according to your participation?

3. Were all the instructions clear? If not, please specify those times they were not.

4. Please rate from 1 to 6 how you feel toward the following by circling the number of your choice:

a. participation in this experiment;

1	2	3	4	5	6
very good					very badly

b. taste of the beverage;

1	2	3	4	5	6
very good					very badly

5. The beer you normally drink is _____.

6. In comparrison to the beer you normally drink, this beer was:

1	2	3	4	5	6
much weaker					much stronger

7. Assuming a regular twelve ounce can of beer contains one ounce of alcohol, how much alcohol (in ounces) would you estimate this beer contains? _____ ozs.

8. Please evaluate the experiment and the experimenter on the following adjective scale by circling the appropriate number of your choice:

a. the experiment

1	2	3	4	5	6
enjoyable					terrible
1	2	3	4	5	6
complicated					simple
1	2	3	4	5	6
lengthy					short
1	2	3	4	5	6
exciting					boring
1	2	3	4	5	6
fair					unfair
1	2	3	4	5	6
hard					easy

b. the experimenter

1	2	3	4	5	6
non-aggressive					aggressive
1	2	3	4	5	6
good					bad
1	2	3	4	5	6
cruel					kind
1	2	3	4	5	6
helpful					hindering
1	2	3	4	5	6
revengeful					nonrevengeful
1	2	3	4	5	6
deceitful					honest

8. b. (cont.)

1	2	3	4	5	6
reasonable					unreasonable

9. Would you be willing to participate in another similar experiment? (circle one)

yes no

APPENDIX H

Table 4

ANOVA Summary Tables and Means and Standard Deviations for BD Assault

a. ANOVA Summary

Source	Df	Mean Square	F
Expectancy	1	15.574	2.488
Dosage	2	10.241	1.636
Expectancy x Dosage	2	2.463	0.393
Within Subjects	48	6.259	
Total	53	6.442	

*$p < .05$

---

b. Means and Standard Deviations

DOSAGE EXPECTANCY	0.0ml/kg	0.5ml/kg	1.0ml/kg
Low Dosage Expectancy	3.9(2.6)	6.1(1.6)	5.0(1.9)
High Dosage Expectancy	5.8(3.0)	6.6(3.4)	5.9(1.9)

*(Standard deviations are presented in parentheses)

Table 5

ANOVA Summary Tables and Means and Standard Deviations for BD Negativism

a. ANOVA Summary

Source	Df	Mean Square	F
Expectancy	1	0.019	0.014
Dosage	2	3.500	2.700
Expectancy x Dosage	2	1.130	0.871
Within Subjects	48	1.296	
Total	53	1.349	

*p < .05

---

b. Means and Standard Deviations

DOSAGE EXPECTANCY	0.0ml/kg	0.5ml/kg	1.0ml/kg
Low Dosage Expectancy	2.3(1.2)	2.8(1.6)	2.4(1.0)
High Dosage Expectancy	2.3(0.7)	3.2(1.1)	1.9(0.9)

*(Standard deviations are presented in parentheses)

Table 6

ANOVA Summary Tables and Means and Standard Deviations for Indirect Hostility

a. ANOVA Summary

Source	Df	Mean Square	F
Expectancy	1	9.786	3.359
Dosage	2	2.907	0.997
Expectancy x Dosage	2	0.463	0.159
Within Subjects	48	2.917	
Total	53	2.954	

*$p < .05$

---

b. Means and Standard Deviations

DOSAGE EXPECTANCY	0.0ml/kg	0.5ml/kg	1.0ml/kg
Low Dosage Expectancy	4.2(1.6)	5.2(1.2)	4.6(2.4)
High Dosage Expectancy	5.4(1.8)	5.9(1.1)	5.2(1.9)

*(Standard deviations are presented in parentheses)

Table 7

ANOVA Summary Tables and Means and Standard Deviations for Rathus Scores

a. ANOVA Summary

Source	Df	Mean Square	F
Expectancy	1	450.667	1.801
Dosage	2	576.222	2.303
Expectancy x Dosage	2	62.889	0.251
Within Subjects	48	250.174	
Total	53	259.194	

*p < .05

---

b. Means and Standard Deviations

DOSAGE EXPECTANCY	0.0ml/kg	0.5ml/kg	1.0ml/kg
Low Dosage Expectancy	10.1(14.4)	2.8(18.2)	10.1(13.3)
High Dosage Expectancy	14.6(11.7)	5.7(17.8)	20.1(18.2)

*(Standard deviations are presented in parentheses)

Table 8

ANOVA Summary Tables and Means and Standard Deviations for Response Latency

a. ANOVA Summary

Source	Df	Mean Square	F
Expectancy	1	433.500	0.050
Dosage	2	1910.906	0.221
Expectancy x Dosage	2	3118.379	0.361
Within Subjects	48	8643.367	
Total	53	8025.922	

*$p < .05$

---

b. Means and Standard Deviations

DOSAGE EXPECTANCY	0.0ml/kg	0.5ml/kg	1.0ml/kg
Low Dosage Expectancy	2.22(1.53)	2.35(0.67)	2.32(0.65)
High Dosage Expectancy	2.40(1.05)	2.33(0.67)	1.98(0.64)

*(Standard deviations are presented in parentheses)

Table 9

ANOVA Summary Tables and Means and Standard Deviations for Loudness

a. ANOVA Summary

Source	Df	Mean Square	F
Expectancy	1	0.907	0.087
Dosage	2	16.463	1.576
Expectancy x Dosage	2	6.463	0.619
Within Subjects	48	10.449	
Total	53	10.345	

*$p < .05$

---

b. Means and Standard Deviations

DOSAGE EXPECTANCY	0.0ml/kg	0.5ml/kg	1.0ml/kg
Low Dosage Expectancy	30.7(2.2)	30.1(2.4)	30.8(1.8)
High Dosage Expectancy	31.4(3.3)	29.0(3.6)	31.9(5.0)

*(Standard deviations are presented in parentheses)

Table 10

ANOVA Summary Tables and Means and Standard Deviations for Compliance Content

a. ANOVA Summary

Source	Df	Mean Square	F
Expectancy	1	3.130	0.252
Dosage	2	12.074	0.971
Expectancy x Dosage	2	1.185	0.095
Within Subjects	48	12.430	
Total	53	11.817	

*$p < .05$

---

b. Means and Standard Deviations

DOSAGE EXPECTANCY	0.0ml/kg	0.5ml/kg	1.0ml/kg
Low Dosage Expectancy	28.6(4.0)	27.8(3.3)	28.9(5.0)
High Dosage Expectancy	29.3(3.0)	27.7(3.0)	29.7(2.3)

*(Standard deviations are presented in parentheses)

Table 11

ANOVA Summary Tables and Means and Standard Deviations for Content Requesting New Behavior

a. ANOVA Summary

Source	Df	Mean Square	F
Expectancy	1	2.241	0.910
Dosage	2	2.241	0.910
Expectancy x Dosage	2	6.463	2.624
Within Subjects	48	2.463	
Total	53	2.601	

*$p < .05$

b. Means and Standard Deviations

DOSAGE EXPECTANCY	0.0ml/kg	0.5ml/kg	1.0ml/kg
Low Dosage Expectancy	3.3(1.4)	4.4(1.7)	4.1(1.3)
High Dosage Expectancy	3.8(1.5)	2.7(1.9)	4.2(1.6)

*(Standard deviations are presented in parentheses)

Table 12

ANOVA Summary Tables and Means and Standard Deviations for Affect Scores

a. ANOVA Summary

Source	Df	Mean Square	F
Expectancy	1	8.963	0.438
Dosage	2	22.056	1.077
Expectancy x Dosage	2	11.796	0.576
Within Subjects	48	20.486	
Total	53	20.000	

*$p < .05$

---

b. Means and Standard Deviations

DOSAGE EXPECTANCY	0.0ml/kg	0.5ml/kg	1.0ml/kg
Low Dosage Expectancy	33.0(2.8)	32.2(2.6)	32.6(2.8)
High Dosage Expectancy	34.3(5.1)	31.2(5.8)	34.7(6.4)

*(Standard deviations are presented in parentheses)

Table 13

Correlation Coeffecients For Assertiveness and Aggressiveness Measures

		R	RL	BATL	CC	CRNB	BATA	BATP	BDAS	BDI	BDN	BDV	BDT
BEHAVIORAL BUSS/DURKEE	Rathus (R)	—	.01	.32**	.05	.32**	.32**	.37***	.07	-.01	-.04	.23**	.07
	Resp. Lat. (RL)		—	-.34**	-.17	.00	-.32**	.10	.03	.02	-.01	-.14	-.07
	Loudness (L)			—	.20	.28	.82***	.36**	.04	-.04	-.14	.16	.05
	Comp. Cont. (CC)				—	.45***	.23*	.04	.02	.05	.05	.08	.09
	Cont. R. N. Beh. (CRNB)					—	.23*	.14	-.06	.02	.07	.22	.09
	Affect (A)						—	.39***	.05	.17	-.17	.13	.09
	Profanity (P)							—	.11	.17**	.15	.19	.22*
	Assault (AS)								—	.40***	.30*	.42***	.80***
	Indirect (I)									—	.21	.40**	.69***
	Negativism (N)										—	.17	.47***
	Verbal (V)											—	.78***
	Total (T)												—

*p < .05 **p < .01 ***p < .001

Table 14

ANOVA Summary Tables and Means and Standard Deviations for Digit Symbol

a. ANOVA Summary

Source	Df	Mean Square	F
Expectancy	1	22.685	0.171
Dosage	2	112.389	0.845
Expectancy x Dosage	2	122.574	0.922
Within Subjects	48	133.004	
Total	53	129.751	

*$p < .05$

---

b. Means and Standard Deviations

DOSAGE EXPECTANCY	0.0ml/kg	0.5ml/kg	1.0ml/kg
Low Dosage Expectancy	65.0(12.8)	60.8(7.7)	58.0(7.4)
High Dosage Expectancy	60.0(12.9)	64.2(13.1)	57.6(13.5)

*(Standard deviations are presented in parentheses)

Table 15

ANOVA Summary Tables and Means and Standard Deviations for Shipley Total Scores

a. ANOVA Summary

Source	Df	Mean Square	F
Expectancy	1	0.907	0.018
Dosage	2	18.667	0.369
Expectancy x Dosage	2	22.741	0.449
Within Subjects	48	50.606	
Total	53	47.412	

*$p < .05$

---

b. Means and Standard Deviations

DOSAGE EXPECTANCY	0.0ml/kg	0.5ml/kg	1.0ml/kg
Low Dosage Expectancy	62.6(7.7)	58.7(5.5)	61.3(3.8)
High Dosage Expectancy	61.1(7.2)	61.0(8.7)	59.7(8.5)

*(Standard deviations are presented in parentheses)

Table 16

ANOVA Summary Tables and Means and Standard Deviations for Perceived Dosage

a. ANOVA Summary

Source	Df	Mean Square	F
Expectancy	1	5953.496	56.584***
Dosage	2	818.575	7.780**
Expectancy x Dosage	2	24.501	0.233
Within Subjects	48	105.216	
Total	53	239.434	

**p < .01 ***p < .001

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b. Means and Standard Deviations

DOSAGE EXPECTANCY	0.0ml/kg	0.5ml/kg	1.0ml/kg
Low Dosage Expectancy	1.4(1.1)	1.5(0.7)	2.7(1.1)
High Dosage Expectancy	3.3(1.4)	3.9(3.3)	4.7(1.1)

*(Standard deviations are presented in parentheses)