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ABSTRACT

Female (N=21) and male (N=21) college students were asked to estimate their amount of daily alcohol consumption via a modified version of the Drinking Practices Questionnaire. Males reported drinking significantly more alcohol than females. However, when subjects' body weights were used to compare estimated blood alcohol levels (BAC) rather than absolute amount of alcohol consumed, females and males did not differ. This highlights the importance of researchers considering the body weight of their subjects when investigating possible alcohol-related gender biases. When asked to estimate the number of beers needed by a typical young man and a typical young woman to induce moderate and high levels of intoxication, subjects of both genders believed males would require significantly more beer than females to produce both moderate and high levels of intoxication. This pattern remained even when average body weight figures were used to estimate the BAC of the target subjects. This suggests that body weight differences between females and males are unlikely by themselves to account for the gender bias of the subjects. (Author/NB)

# Gender Effects in College Students' Drinking Habits and Their Perceptions of Intoxication of Others

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Running Head: GENDER EFFECTS IN DRINKING HABITS

## Abstract

Female and male college students were asked to estimate their amount of daily alcohol consumption via a modified version of the Drinking Practices Questionnaire. Males reported drinking significantly more alcohol than females. However, when subjects' body weights were used to compare estimated blood alcohol levels (BAC) rather than absolute amount of alcohol consumed, females and males did not differ. This highlights the importance of researchers considering the body weight of their subjects when investigating possible alcohol-related gender biases. When asked to estimate the number of beers needed by a typical young man and a typical young woman to induce moderate and high levels of intoxication, subjects of both genders believed males would require significantly more beer than females to produce both moderate and high levels of intoxication. This pattern remained even when average body weight figures were used to estimate the BAC of the target subjects. This suggests that body weight differences between females and males are unlikely by themselves to account for the gender bias of our subjects.

# Gender Effects in College Students' Drinking Habits and Their Perceptions of Intoxication of Others

Alcohol is thought to be used by about 90 million people in the United States (Miller, 1987), and is the drug of choice on college campuses (Spees, 1987). For many students, use of alcoholic beverages may be seen as an integral part of the college environment and perhaps even as a "rite of passage" into adulthood (Deakin & Cohen, 1986). In fact, regular drinking appears to be the norm for college students (Samson, Maxwell, & Doyle, 1989) and beer is the most preferred alcoholic beverage (Sherry & Stolberg, 1987). A number of recent investigations classify a substantial proportion (19% or more) of college students as heavy drinkers (George, Gournic, & McAfee, 1988; Leigh, 1987; Sherry & Stolberg, 1987; Wiggins & Wiggins, 1987). When examined by gender, however, male college students drink about twice as much alcohol per month as do college females (Chomak & Collins, 1987). Thus male students are apparently more likely than female students to drink heavily.

It appears that gender plays a significant role in people's perceptions of heavy drinkers. For instance,

although female heavy drinkers are more likely to be described by others as having a drinking problem than males drinking an equivalent amount of alcohol, male drinkers are regarded as being more likely to engage in negative behaviors as a result of their alcohol consumption. This contributed to Leavy and Dunlosky's (1989) conclusion that females who drink as much as males are regarded as more deviant even though drunken men are feared more than drunken women. Also, female heavy drinkers are generally viewed, by both female and male adults, as less sociable than male heavy drinkers (Dzialdowski, Heather & Crawford, 1988). Pinhas (1989) claims that drunkenness is more acceptable in men than women; Marsh, Colten, and Tucker (1982) state that women who use alcohol and drugs are seen as more deviant than men who use the same substances, and Sandmaier (1980) argues that attitudes toward female and male alcohol abuse may be more "divergent and more passionately held than dual standards for many other aspects of behavior" (p. 10).

Although it would seem that there are fewer female heavy drinkers than male heavy drinkers, that the latter generally cause society more trouble, and that the former are more severely stigmatized, these

conclusions may be affected by how "heavy drinking" is defined. Intoxication is normally determined by the concentration of alcohol in the blood -- not merely by the volume of alcohol consumed. In other words, individuals who weigh less (and consequently have a lower amount of blood in their bodies) require less alcohol to produce intoxication than do heavier individuals. Thus, if a 100-pound person and a 300-pound person both regularly consume an identical quantity of alcohol, both might be classified as heavy drinkers even though the lighter individual habitually becomes much more intoxicated than the heavier one. The vast majority of studies that evaluate drinking habits measure the quantity of alcohol consumed but fail to consider subjects' body weight. Ratliff and Burkhart (1984) note that such studies confound body weight with gender since females weigh less, on average, than males. These investigators therefore adjusted their alcohol intake measure according to subjects' body weight and found that this substantially reduced gender differences. This finding suggests several intriguing research questions. Are women who consume an equal and large number of drinks (i.e., heavy drinkers) as men stigmatized more by others

because observers adjust their estimates of what constitutes "heavy drinking" or "moderate drinking" according to an individual's weight (operating under the assumption that women generally weigh less than men)? If this is the case, it may be that the "gender bias" demonstrated by studies examining the cognitive expectancies or perceptions of subjects evaluating the likely effects of heavy alcohol consumption by male and female target subjects does not represent bona fide gender bias but an accurate perception that a given amount of alcohol intake will differentially affect a smaller individual as compared to a larger individual. Alternatively, it may be that even when body size is considered, gender bias is evident by subjects viewing a female heavy drinker as being more deviant than a male heavy drinker.

The purpose of the present investigation is twofold: 1) to provide an empirical means of quantifying college student subjects' perceptions of how much beer constitutes a "moderate amount" and "too much" for a typical young woman and typical young man to drink, and 2) to provide an opportunity to corroborate the evidence of Ratliff and Burkhart (1984) by evaluating the necessity of accounting for an

individual's body weight when measuring her or his drinking habits instead of merely using the amount of alcohol consumed on a daily basis.

## Method

### Subjects

Twenty-one men and 21 women undergraduates enrolled in an introductory psychology course at a large midwestern university served as subjects. These subjects ranged in age from 17-23 years (M=19.33, SD=1.16) and in academic class from Freshman to Junior (M=1.52, SD=0.71, indicating that the average participant fell half-way between Freshman and Sophomore). Each received research participation credit for her or his involvement in the study. Subjects were run in two groups of approximately equal size over a two-day period.

### Materials

A modified version of the Drinking Practices Questionnaire (DPQ) (Cahalan, Cisin, & Crossley, 1969) was employed to assess subjects' drinking habits. This instrument can be used to produce a numerical value known as the Average Daily Volume (ADV) which is an estimate of the average amount of alcohol consumed each day by the subject. Since the DPQ accounts for the

number of drinks consumed but does not consider a subject's body weight, and because males tend to weigh more than females, subjects were requested to report their body weight so that an ADV:weight ratio (AWT) could be utilized. This ratio should correlate more highly than ADV with blood alcohol content (BAC) levels and therefore provide a more accurate means of comparing the drinking habits of female and male drinkers.

Procedure

Having been provided both written and verbal informed consent, subjects completed a demographic information sheet that asked about their gender, age, academic class, and weight. Subjects were asked, in written form, to estimate the number of beers that constitute "a moderate amount (enough to produce a noticeable feeling of intoxication, but without drunkenness)" and "too much (enough to produce a definite feeling of drunkenness -- more than he/she is accustomed to)" for a "typical young woman" and "typical young man" to consume over the course of one evening. For each of their responses, subjects were told to provide a single number estimate instead of a range. Half of the male subjects and half of the

female subjects rated the female target before rating the male target, and the other half of each group rated the male target first. All materials were coded in order to protect subjects' anonymity.

## Predictions

Given the possible alcohol-related gender biases discussed earlier and the fact that on average, males tend to weigh more than females, it was predicted that subjects would give higher estimates of the number of beers required to produce mild and severe intoxication for male targets than for female targets. Also, in light of Ratliff and Burkhart's (1984) observations concerning the importance of accounting for an individual's body weight when measuring drinking habits, it was predicted that converting subjects' ADV scores into AWT scores would substantially reduce gender differences.

## Results and Discussion

### Analyses of Subjects' Perceptions of Moderate and Too Much Alcohol Consumption By Others

Mean subject estimates for how many beers constitute a "moderate amount (enough to produce a noticeable feeling of intoxication, but without drunkenness)" were 5.31 (SD=2.00) and 3.26 (SD=1.21)

for a "typical young man" and "typical young woman," respectively. On average, subjects also estimated that 9.45 (SD=3.30) beers for young men and 6.57 (SD=1.94) beers for young women would constitute "too much (enough to produce a definite feeling of drunkenness -- more than he/she is accustomed to)."

A 2 X 2 (Subject Gender X Target Gender) mixed analysis of variance, with subject gender serving as the between-subjects factor and target gender as the within-subjects factor, was conducted on subject estimates of how much beer constitutes a moderate amount for a target individual to drink. As depicted in Figure 1, this analysis revealed a significant main effect for target gender, $F(1,40) = 142.23$, $p < .001$. Both female and male subjects endorsed the belief that it takes more beer to produce "a noticeable feeling of intoxication" in the typical young man than it does to achieve the same effect in the typical young woman.

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Insert Figure 1 about here

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As Figure 2 shows, a 2 X 2 (Subject Gender X Target Gender) analysis of variance conducted upon subject estimates of what constitutes "too much" beer for a typical young man and typical young woman to

consume also revealed a main effect for target gender, $F(1,40) = 105.79$, $p < .001$. Both female and male subjects once again described male targets as requiring more alcohol than female targets -- this time to produce "a definite feeling of drunkenness."

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Insert Figure 2 about here

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From the preceding analyses, it would seem that both male and female college student subjects believe that it takes more beer to intoxicate the typical young man than the typical young woman.

Analyses of the Actual Reported Drinking Habits of Subjects

The data of the present study also confirm the importance of considering an individual's body weight when evaluating drinking habits. Two sets of independent T-tests were conducted on the data to compare the drinking habits of the female versus male subjects. First, replicating Ratliff and Burkhart's (1984) initial finding, the difference in consumption between the two gender groups was significant, $t_{pooled}(40)=2.12$, $p=.04$, when our male and female subjects' consumption levels were compared without adjusting for each participant's weight. In this case, each subject's

Average Daily Volume (ADV) was computed from her or his responses on the DPQ, yielding mean values of 1.58 (SD=1.34) and 0.85 (SD=.83) for male and female subjects, respectively, and serving as the dependent variable for the comparison.

This apparent gender difference on the level of alcohol consumption of young college students is affected by the definition of consumption. Gender differences are obtained when absolute number of drinks is used to define consumption. However, when estimated BAC defines consumption level, no gender differences emerge. In this case, an analysis of AWT reveals mean values of .009 (SD=.007) for male subjects and .007 (SD=.007) for female subjects, $t_{pooled}(40)=0.95$, $p=.35$. Although it is customary to select an alpha level of .05 or .01 instead of reporting actual probability values, this convention was not employed in the present case merely to illustrate the point that without accounting for a person's body weight, estimates of alcohol consumption can be very misleading and can artifactually produce apparent differences in the drinking habits of females and males. The fact that gender differences in subjects' own drinking habits effectively disappear when adjusted for subjects' body

weight suggests that while male college students appear to drink more than females, they do not exceed the female students in terms of typical intoxication level achieved.

Analyses of Subjects' Perceptions of Moderate and Too Much Alcohol Consumption by Others when Body Weight is Considered by the Researcher

The finding that female and male students appear equal in terms of their typical intoxication or BAC levels in spite of being unequal in the number of drinks consumed provides information about the actual drinking habits of our subjects, but does not provide information about whether subjects' alcohol expectancies or perceptions of others is also affected by male-female weight differences. In other words, will target gender differences in subjects' alcohol expectancies disappear when average male-female weight differences are taken into account? In an attempt to assess this latter issue, 2 X 2 (Subject Gender X Target Gender) ANOVAs were conducted once again using the same subject estimates of the amount of beer required to produce moderate and severe intoxication in male and female targets -- but this time, subject estimates were adjusted for weight (based on the means of the self-

reported weights of male and female subjects) and re-calculated. In other words, estimates concerning female targets were all divided by 125.71 (the mean weight of female subjects) and estimates concerning male targets were all divided by 167.86 (the mean weight of male subjects) so that the 2 X 2 ANOVAs could be conducted once again.

If subjects describe males as needing more alcohol than females to achieve moderate and high levels of intoxication because they are adjusting for average weight differences between the two genders, then our weight-adjusted analyses should not produce the main effects for gender obtained in our nonweight-adjusted analyses. Should such a gender effect occur in our weight-adjusted analyses, it would appear likely that gender bias is present. Application of 2 X 2 ANOVAs for the moderate (see Figure 3) and high (see Figure 4) consumption conditions revealed target gender main effects ($F(1,40) = 38.29$, $p < .001$ and $F(1,40) = 8.02$, $p < .01$, respectively). Thus, unlike gender differences in subject drinking habits, target gender differences in subjects' alcohol expectancies failed to disappear when male-female weight differences were taken into account. It is therefore quite possible that gender

biases, actual pharmacological differences in alcohol's effects on females versus males, or both account for these persisting target gender differences, which do not appear to be due to the weight confound alone.

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Insert Figures 3 and 4 about here

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## Summary and Conclusions

Male and female college students believe that it takes less alcohol to produce both moderate and severe intoxication in the "typical young woman" than the "typical young man." The data suggest however, that this discrepancy is in some sense grounded in the reality that on average, females weigh less than males and therefore reach higher BAC levels per quantity of alcohol consumed. While gender differences in subjects' own reported drinking habits disappear when their weights are taken into account, weight differences between females and males is not solely responsible for subjects believing that less alcohol is needed by females than males to achieve moderate and high levels of intoxication. It appears that both male and female college students evidence gender bias in their perceptions of alcohol's effect on others. However, it remains unknown as to how much our subjects

perceived the target people to weigh. Thus, perhaps subjects did not expect the typical young man and typical young woman to weigh the same as they do. If this is the case, subjects must either view the typical male as heavier than the obtained mean weight of male subjects, the typical female as lighter than the obtained mean weight of female subjects, or both. Any of these would suggest the presence of a gender bias consistent with society's obsession that women must have slender bodies. These issues could be clarified in future studies by requiring subjects to provide physical descriptions (including estimates of body weight) of the typical young woman and man in addition to subjects' self-reported body weights when evaluating alcohol-related cognitive expectancies.

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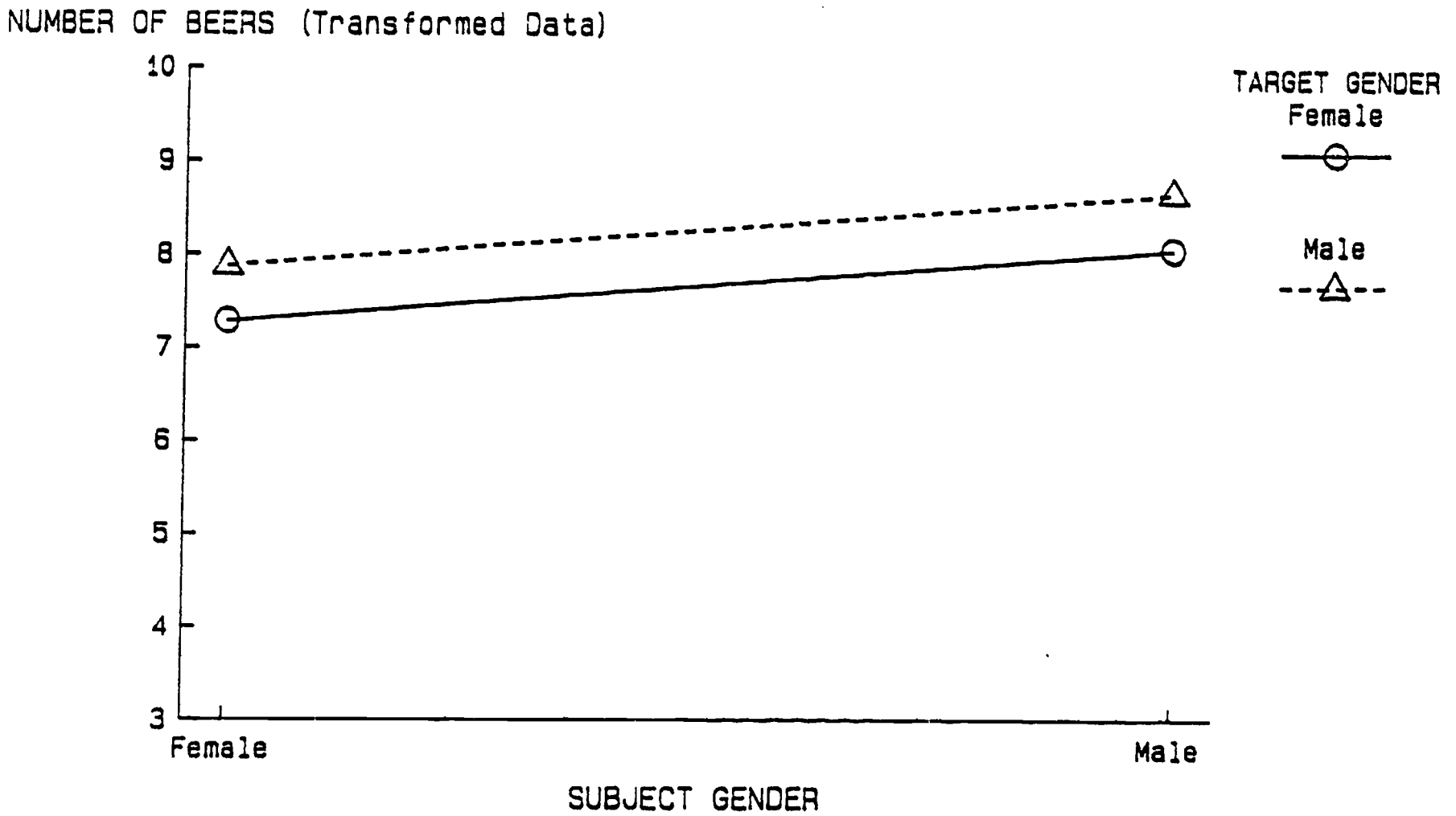
## Figure Captions

Figure 1. Male and female subjects' estimates of how many beers constitute "a moderate amount" for a "typical young woman" and "typical young man" to drink over the course of an evening.

Figure 2. Male and female subjects' estimates of how many beers constitute "too much" for a "typical young woman" and "typical young man" to drink over the course of an evening.

Figure 3. Male and female subjects' weight-adjusted estimates of how many beers constitute "a moderate amount" for a "typical young woman" and "typical young man" to drink over the course of an evening.

Figure 4. Male and female subjects' weight-adjusted estimates of how many beers constitute "too much" for a "typical young woman" and "typical young man" to drink over the course of an evening.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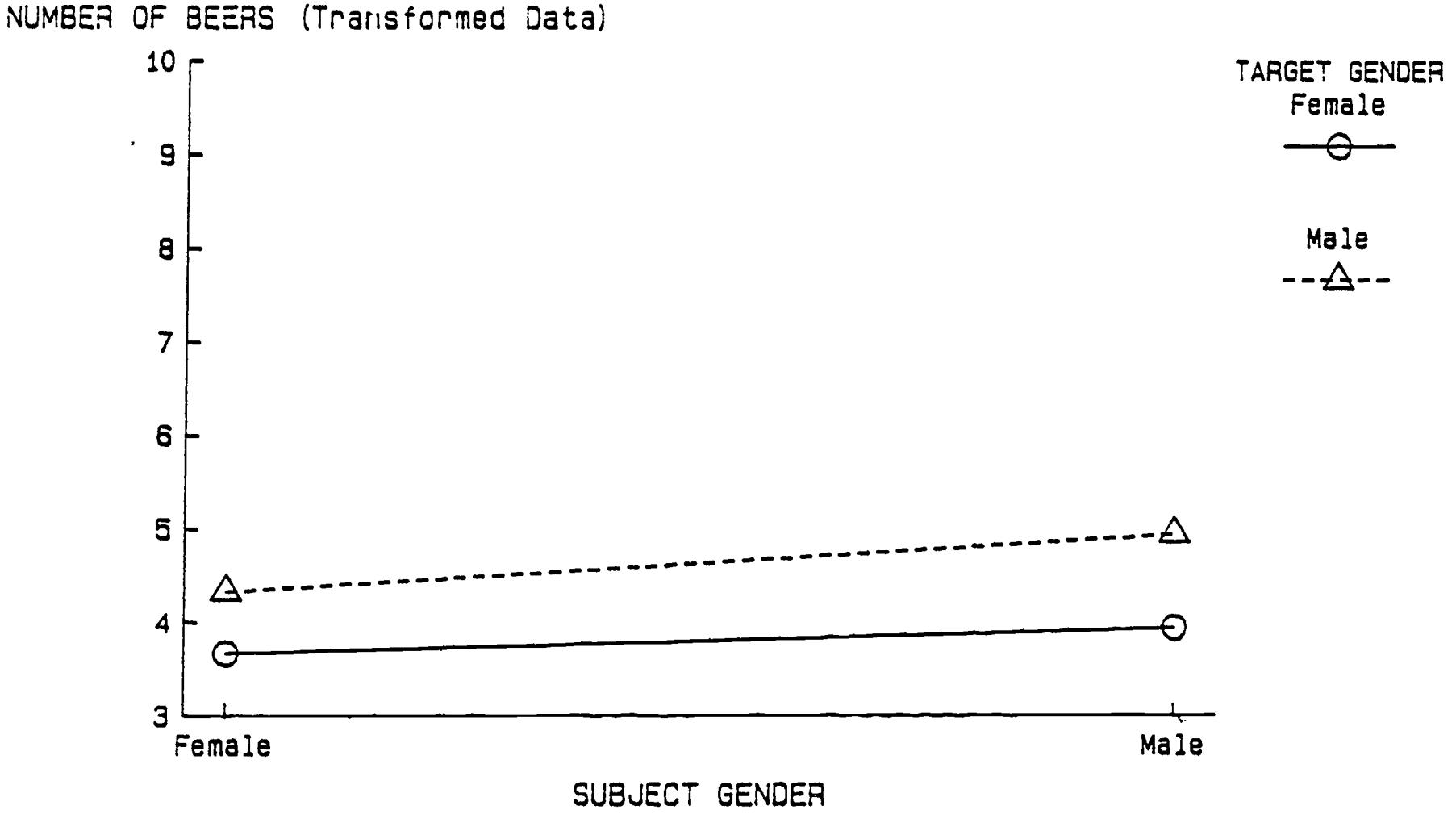
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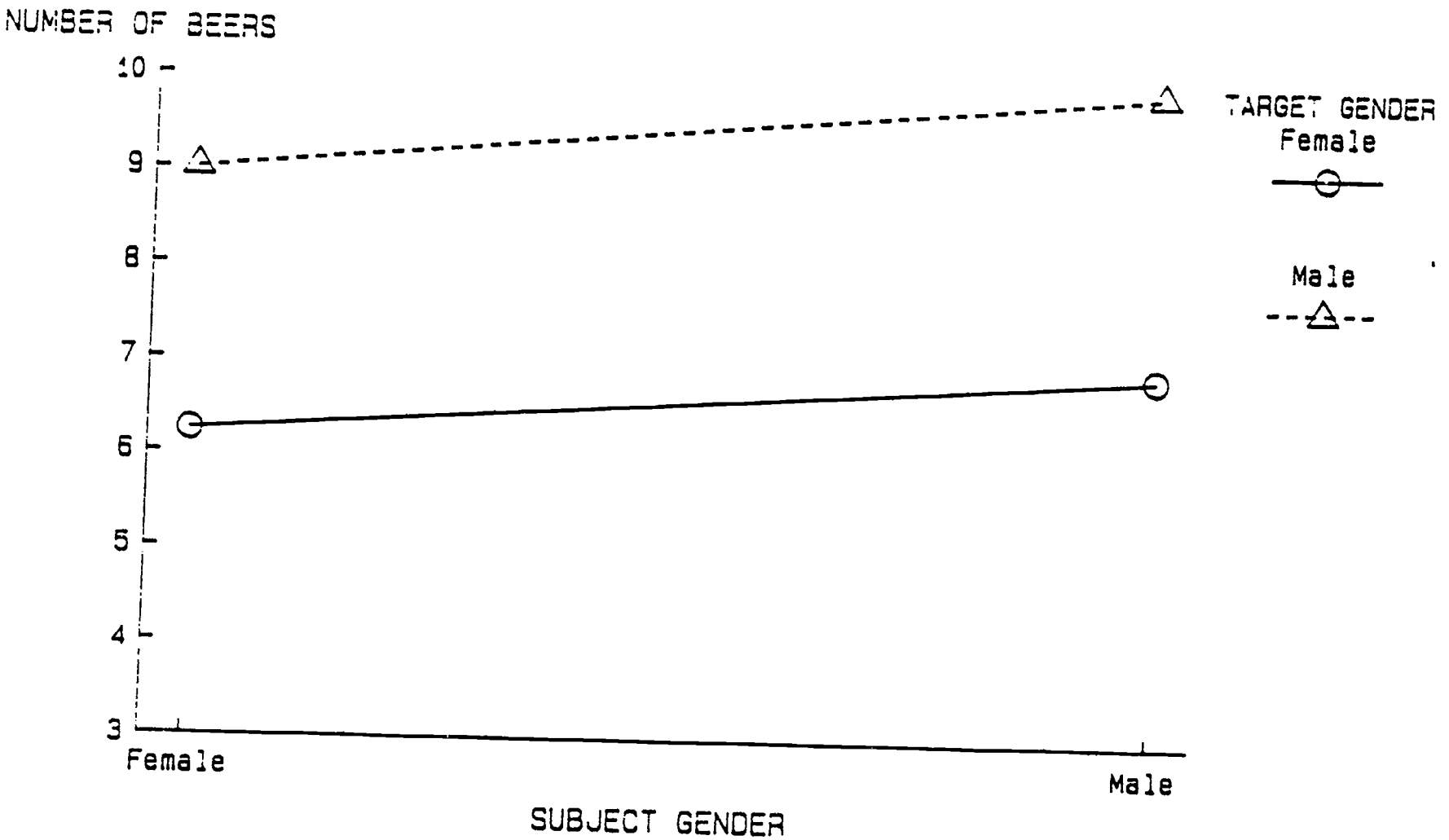
NUMBER OF BEERS
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