

BACKGROUND

- Adolescent alcohol use is common and associated with long-term risk for alcohol use disorder (AUD).¹
- Principles of behavioral economics suggest that hazardous alcohol use is, in part, a result of the overvaluation of alcohol.²
- The Alcohol Purchase Task (APT) captures motivation for alcohol via demand as the participants indicate the number of drinks they would consume at a range of prices.^{3,4}
- APT indices have been associated with negative consequences in adults⁴; however, this has not been extensively explored among adolescents.
- Understanding motivation for alcohol and alcohol consequences may help identify adolescents who are more likely to experience these issues.

OBJECTIVE

The aim of this study was to examine the association between five APT demand indices and alcohol consequences within heavy drinking adolescents.

METHOD

- Data from an on-going clinical trial and its substudy were used for analysis (K23AA025399).
- Participants ($N=45$; ages 17-19) met criteria for heavy drinking (4-8 drinking occasions per month and ≥ 3 standard drinks per occasion).

Participant Measures

- Demographic questionnaire
- 17-item APT (\$0.00 - \$20.00 per standard drink)
- MacArthur Scale of Subjective Social Status for socioeconomic status (SES)
- Timeline Follow Back (TLFB) for frequency of drinking days in past 90-days

Measures for AUD and alcohol-related consequences

- Diagnostic and Statistical Manual of Mental Disorders (DSM-5): AUD Module
- AUD Identification Test (AUDIT)
- Rutgers Alcohol Problem Index (RAPI)

STATISTICAL METHOD

Univariable and multivariable linear regression were used.

➤ Five demand indices from APT

1. Intensity: standard drinks at \$0
2. Maximum alcohol expenditure (O_{max}): total standard drinks \times cost
3. Price maximum (P_{max}): cost per a drink at O_{max}
4. Breakpoint: 1st price point where consumption decreases to zero
5. Elasticity: rate at which consumption decreases as price increases

- **Alcohol-related consequences:** AUD symptoms (DSM-5), AUDIT score, RAPI score
- **Potential covariates included:** sex, age, SES, and frequency of drinking days (TLFB)
- Sensitivity analyses were completed removing outliers, which produced comparable results.

RESULTS

Table 1. Sample Characteristics ($N=45$)

	Mean (SD)	Range
Age (years)	18.8 (0.62)	17 – 19
Females % (N)	62.2% (28)	–
Race		
White % (N)	95.6% (43)	–
Asian % (N)	4.4% (2)	–
SES	5.82 (1.40)	2 – 8
Drinking Days	22.47 (10.91)	9 – 52

SES: possible score ranges 1 – 10

Drinking Days = number of drinking days in past 90 days (TLFB)

Table 2. Descriptive of Demand Indices and Alcohol-Related Consequences

	Mean (SD)	Range
Intensity	7.20 (3.15)	3 – 20
O_{max}	\$16.08 (6.90)	\$5.00 – \$30.00
P_{max}	\$4.70 (3.23)	\$1.50 – \$20.00
Breakpoint	\$12.69 (5.88)	\$3.00 – \$20.00
Elasticity	0.05 (0.04)	0.02 – 0.19
AUD symptoms	2.31 (1.76)	0 – 8
AUDIT score	10.84 (4.37)	5 – 24
RAPI score	7.16 (5.94)	0 – 24

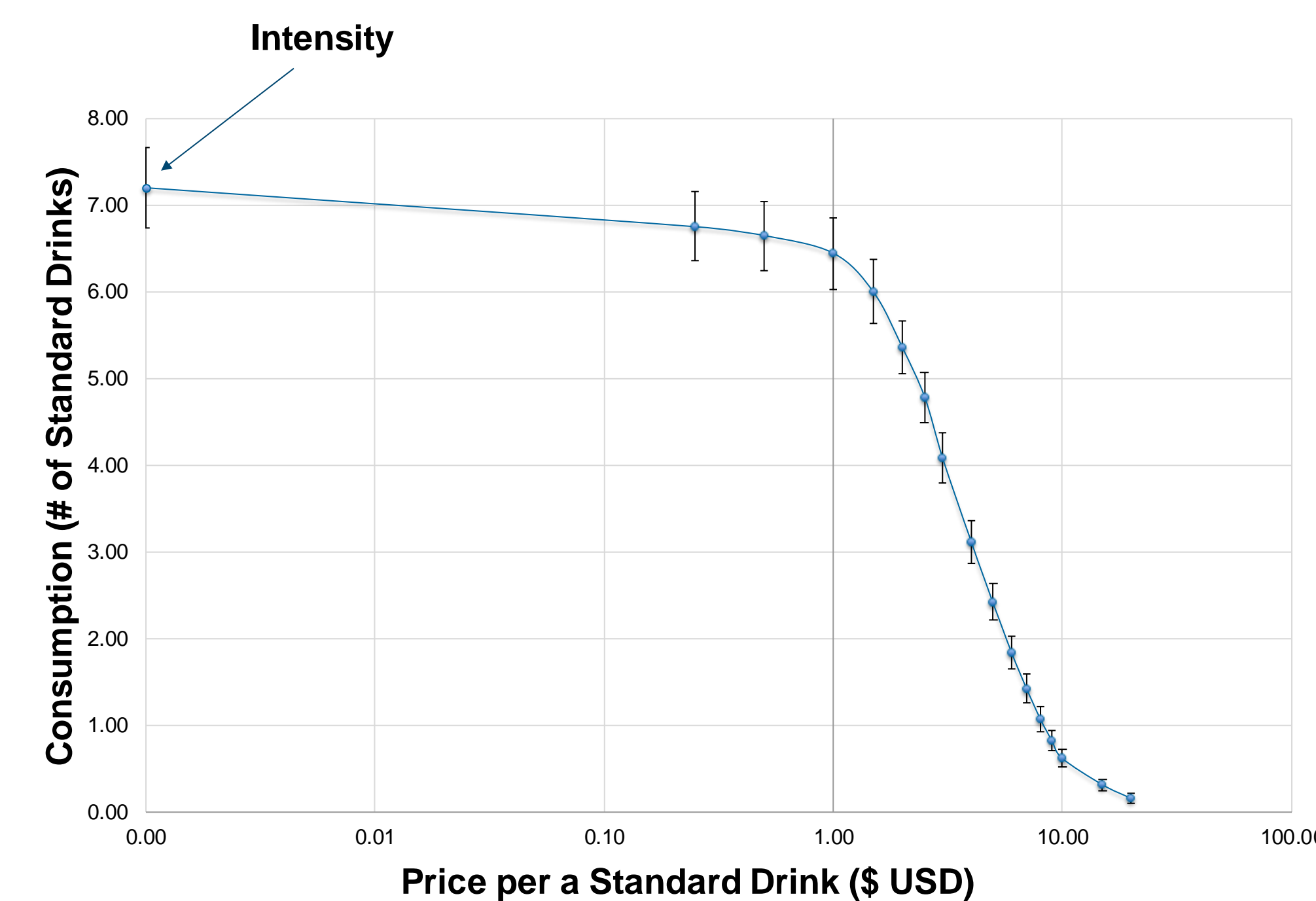
AUD symptoms: Mild (2 - 3), Moderate (4 - 5), and Severe AUD (6+)

AUDIT: Low Risk (0 - 3), Risky (4 - 9), Harmful (10 - 13), Severe (14+)

RAPI: possible score ranges 0 - 54

RESULTS CONTINUED

Figure 1. Alcohol Demand Curve



Average consumption (number of standard drinks) reported from APT at each price point, which was log transformed for proportionality. The price point of \$0.00 for intensity was represented as a value of \$0.001 due to log x-axis.

Figure 2. Size of a Standard Drink⁵

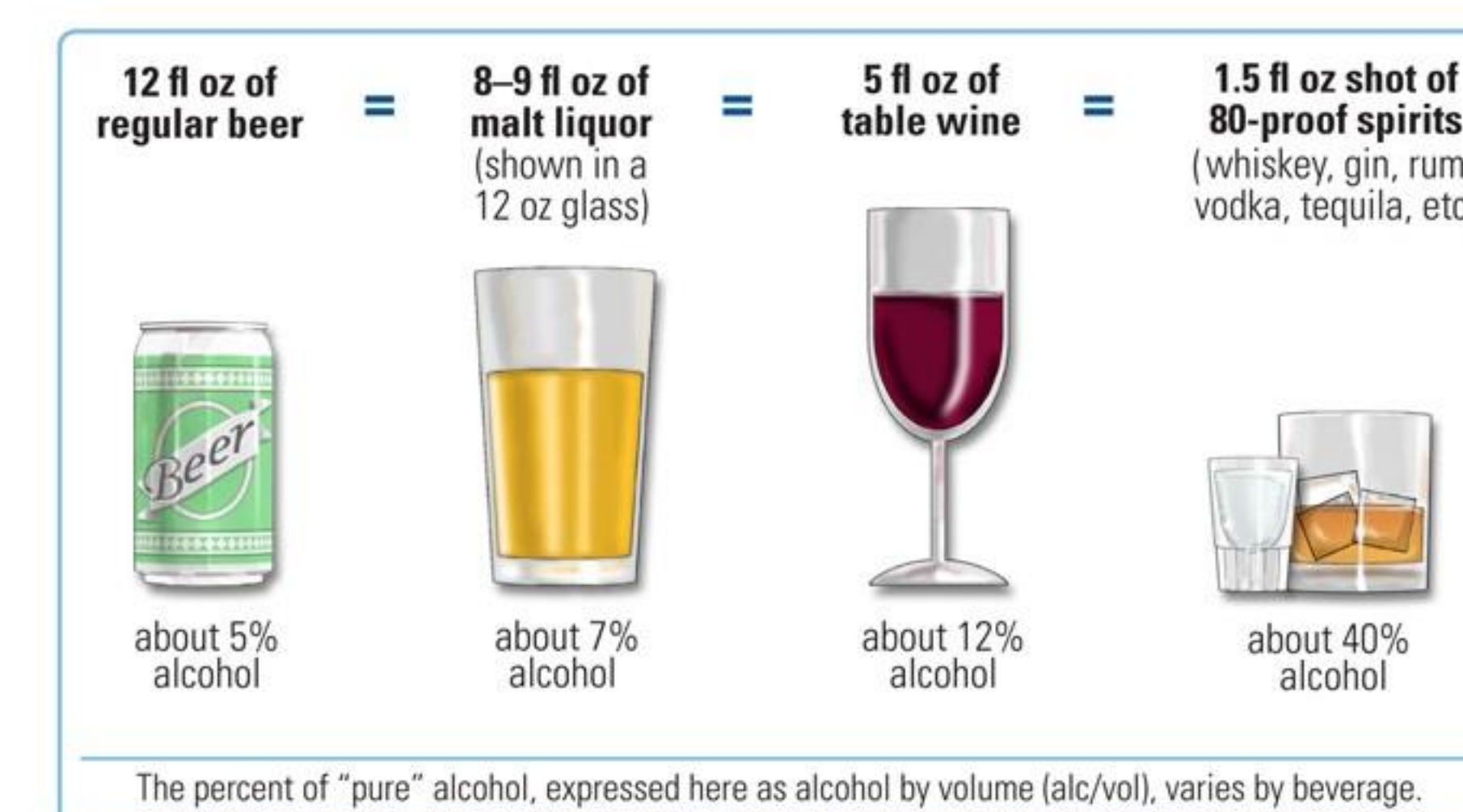


Table 3. Regression Model for AUD Symptoms and AUDIT

Independent Variable	Beta	Standard Error	P-value
Outcome: AUD Symptoms			
Intensity	0.21	0.08	0.016*
Age [#]	0.87	0.48	0.077
Drinking Days [#]	0.04	0.03	0.171
Outcome: AUDIT			
Intensity	0.64	0.19	0.002*
Age [#]	2.87	0.98	0.006*
SES [#]	1.02	0.40	0.015*

- Unstandardized Beta were reported.
- Adjusted R² for AUD symptoms (0.202) and AUDIT (0.269).
- Only displaying significant multivariable models.
- *P-value < 0.05 is significant.
- [#] represents covariates.

DISCUSSION

- Consistent with previous findings in adults, intensity was positively associated with alcohol consequences (AUD symptoms and AUDIT).
 - Intensity reflects the number of drinks adolescents would consume when it is free, which may be more representative of the typical scenario under which they would consume alcohol.
- None of the five demand indices were related to RAPI ($ps \geq 0.25$), which could be assessing for more problematic use than what is relevant for this sample population.
- The three demand indices based on monetary prices (O_{max} , P_{max} , and breakpoint) were not significant, which may be attributed to adolescents having less experience with finances and purchasing alcohol.
- Limitations
 - 1) Small, homogenous sample
 - 2) Possible floor effect with RAPI
 - 3) Did not examine association between alcohol demand and alcohol use
 - 4) Underestimated breakpoint because some participants ($N=7$) continued to report that they would drink even at the highest price point (\$20)

CONCLUSIONS

Greater unrestricted alcohol consumption was positively related to the severity of AUD, which suggests that the APT may be a valid marker of problematic alcohol use in adolescents.

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