Drink or not to drink: Decision making process in alcohol use among college students

Anna Stiles Hanlon, MS, Jie Wu Weiss, PhD, Angela Lin, BA, Melissa C. DeHate, BA, Jose Quiroz and Chia-Hsin Emily Cheng, MA

California State University, Fullerton

CALIFORNIA STATE UNIVERSITY FULLERTON

APHA

BACKGROUND

Background:
Alcohol use by college students has been well-documented by previous research. Risky drinking behaviors are related to traffic fatalities (National Highway Traffic Safety Administration, n.d.), increased mortality (Perkins, 2002) and sexual assault (Porter & Pryor, 2007; Powell, Williams, & Wechsler, 2004). It is estimated that each year approximately 1700 college students between the ages of 18 and 24 were killed in alcohol related motor vehicle crashes and other unintentional accidents such as falls, drowning, fires related to alcohol use (Hingson, Heeren, Winter, & Wechsler, 2005). Alcoholic blackouts correlate negatively to academic performance (White, Jamieson-Drake & Swartzwelder, 2002). Alcohol use and abuse on college campuses has been the focus of research and policy change in recent years, yet the rate of frequent heavy drinking for college student has not changed much over the past three decades (Johnston, O'Malley, Bachman, & Schulenberg, 2005)

However, the persistence of alcohol use at a time when the harmful effects of these habits is well known remains a puzzle for researchers. It has been established that differential knowledge regarding the connections between usage and adverse health outcomes is not the critical determinant of whether youth chooses to use alcohol (Slovic, 2000). In this study, we propose to evaluate a Multi-Attribute Utility model based on Edwards' (1954) classic presentation of subjective expected utility (SEU), with the goal being to predict alcohol use among college students. One of our innovations is the consistent elicitation of three distinct components of utility: subjective value, subjective probability, and importance (Weiss, Weiss, & Edwards, 2009). Each component will be judged by each respondent for each consequence, allowing us to compute personalized utility estimates at the individual level. The purpose of this project is to enhance our understanding of college students' decision making process for choosing to drink alcohol and the interaction between in alcohol use and the psychological parameters of personality, anxiety, affect and stress.

Objectives:
1) Explore association between the Multi-Attribute Utility (MAU) and alcohol use.
2) Examine the relationship between alcohol consumption and personality, anxiety, affect and stress.
3) Explore the interactions between MAU and psychological factors on alcohol use.

METHODS

Sample
Data was collected from 427 participants during the Spring 2009 semester.. Participants were recruited from classes through class visitation allowed by their professors. Females made up 66% of the sample (n = 281), the mean age was 23.15 (SD=5.13) years, and the majority were upper classmen; 41.2% reported as juniors (n = 176) and 46.4% as seniors (n = 198). Among the total sample, 30.2% were White/non-Hispanic (n = 129), 26.7% were Hispanic/Latino (n = 114), 27.4% were Asian/Pacific Islander (n = 117) 4.0% were Black (n = 17) and 11.7% were Multi-race/ethnicity or other (n = 50).
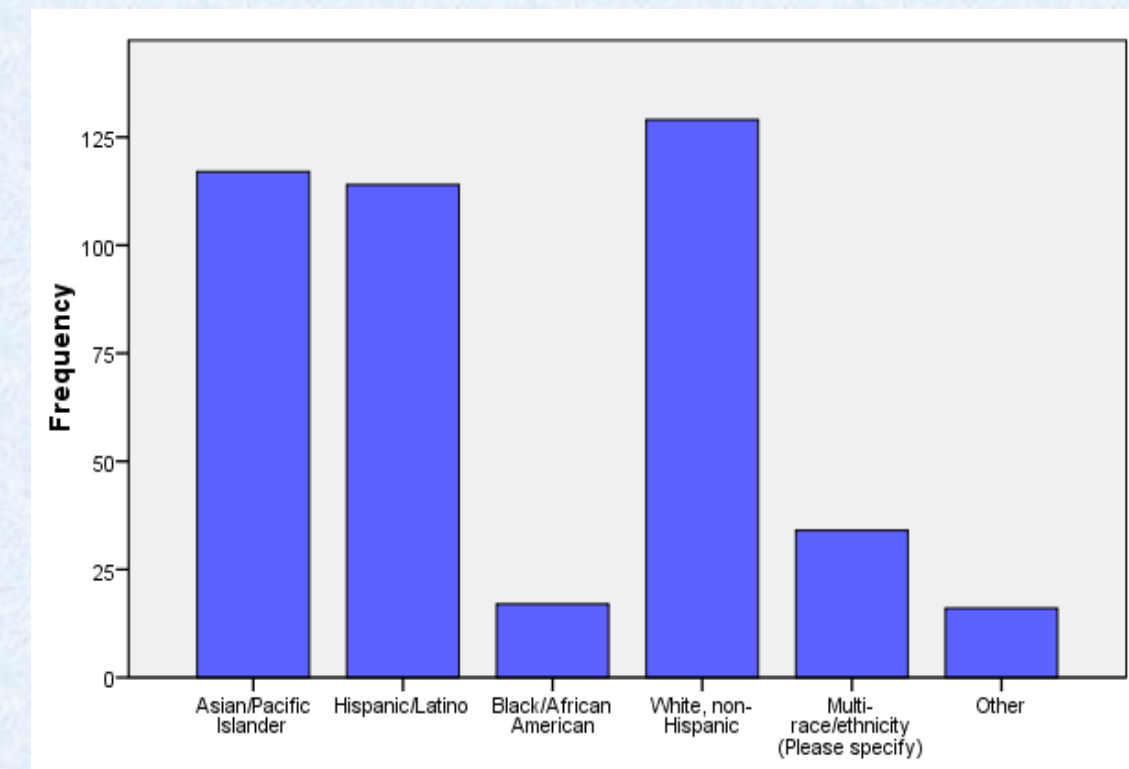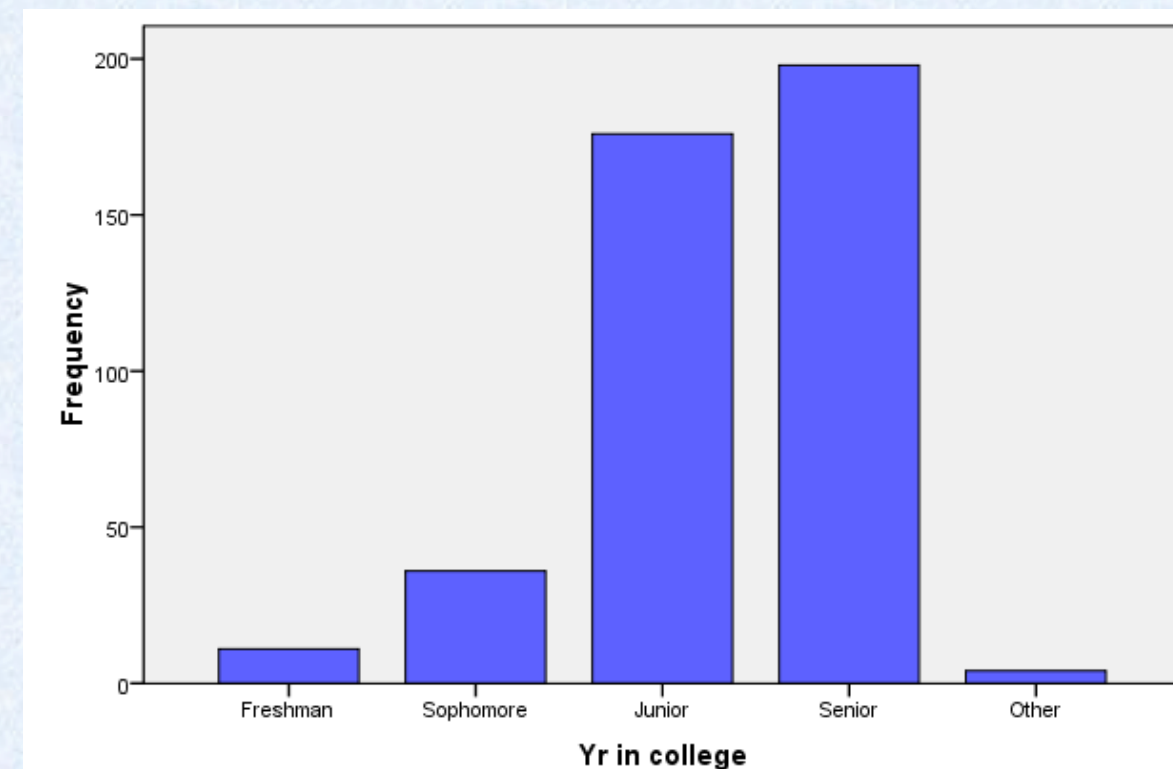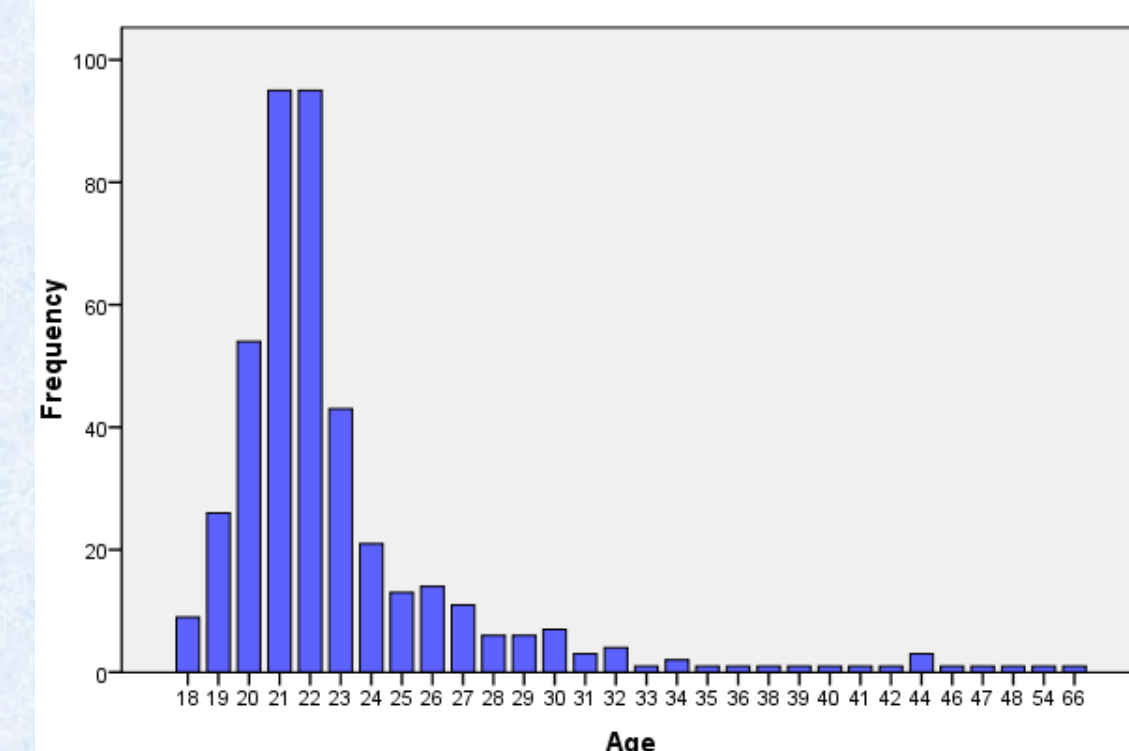
Procedure
Students were informed of the study protocol and asked to sign an informed consent form if they agreed to participate. Data collection was done 1) by paper pencil surveys and 2) online food log. A Student Health Survey was constructed to test the Multi-Attribute Utility Model and to assess Psychological parameters using a range of existing Psychological scales: Big Five Trait Taxonomy (Goldberg, 1993); Beck Anxiety Inventory (Beck, Epstein, Brown & Steer, 1985); Affect Balance Scale (Bradburn, 1969); Perceived Stress Scale (Cohen, Kamarck, & Mernelstein, 1983). Food intake, including alcohol consumption was recorded for a week using Survey Monkey.
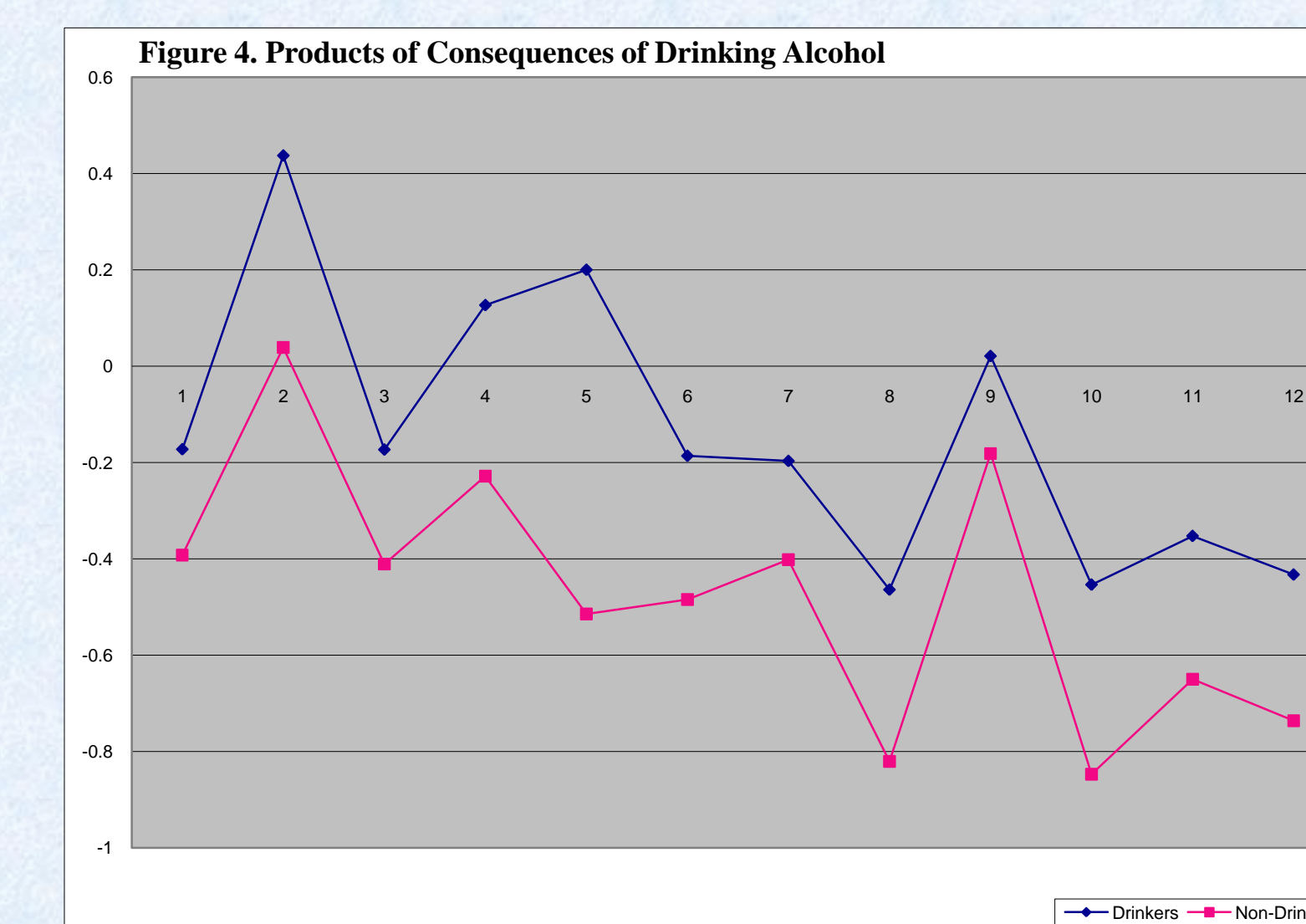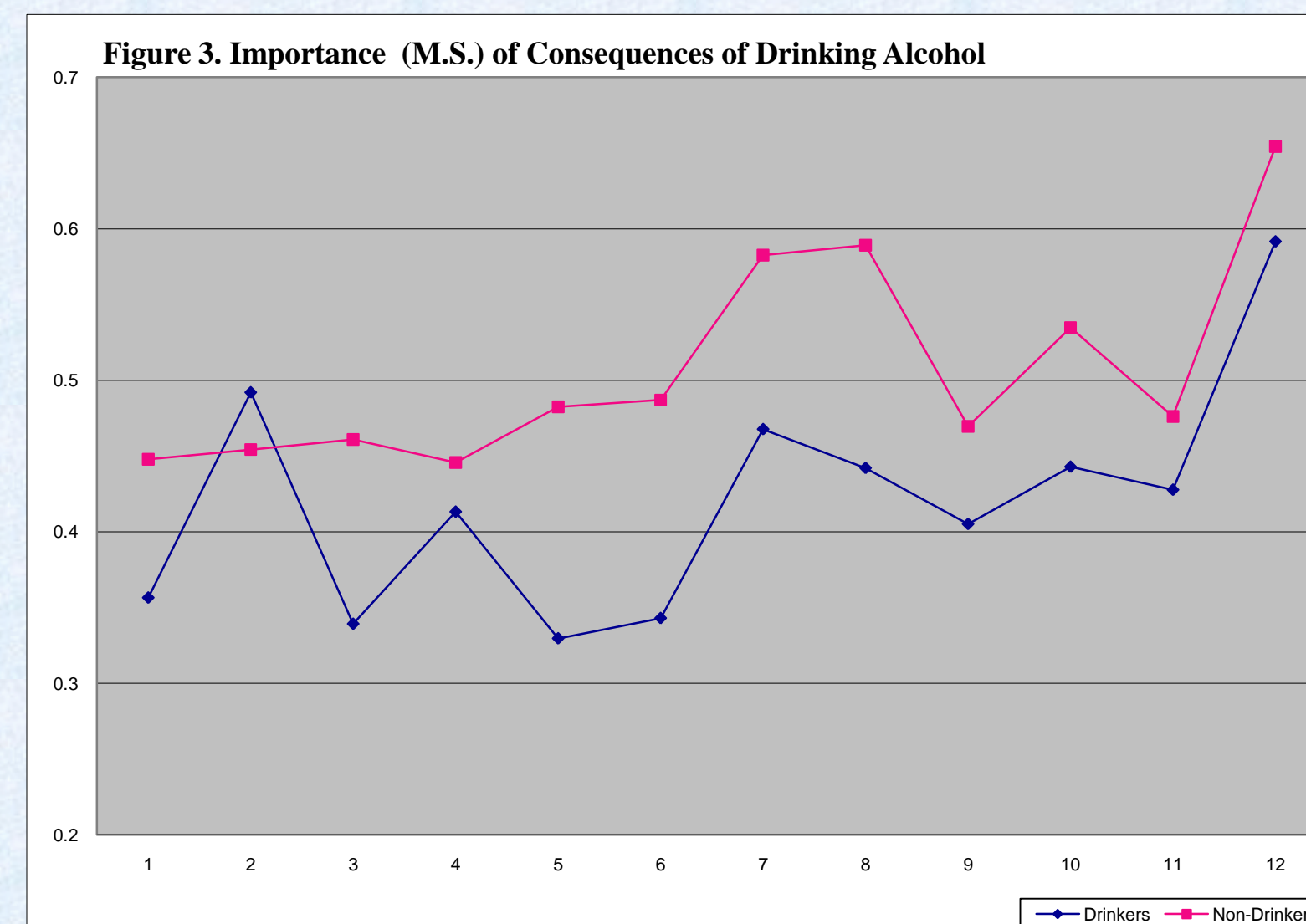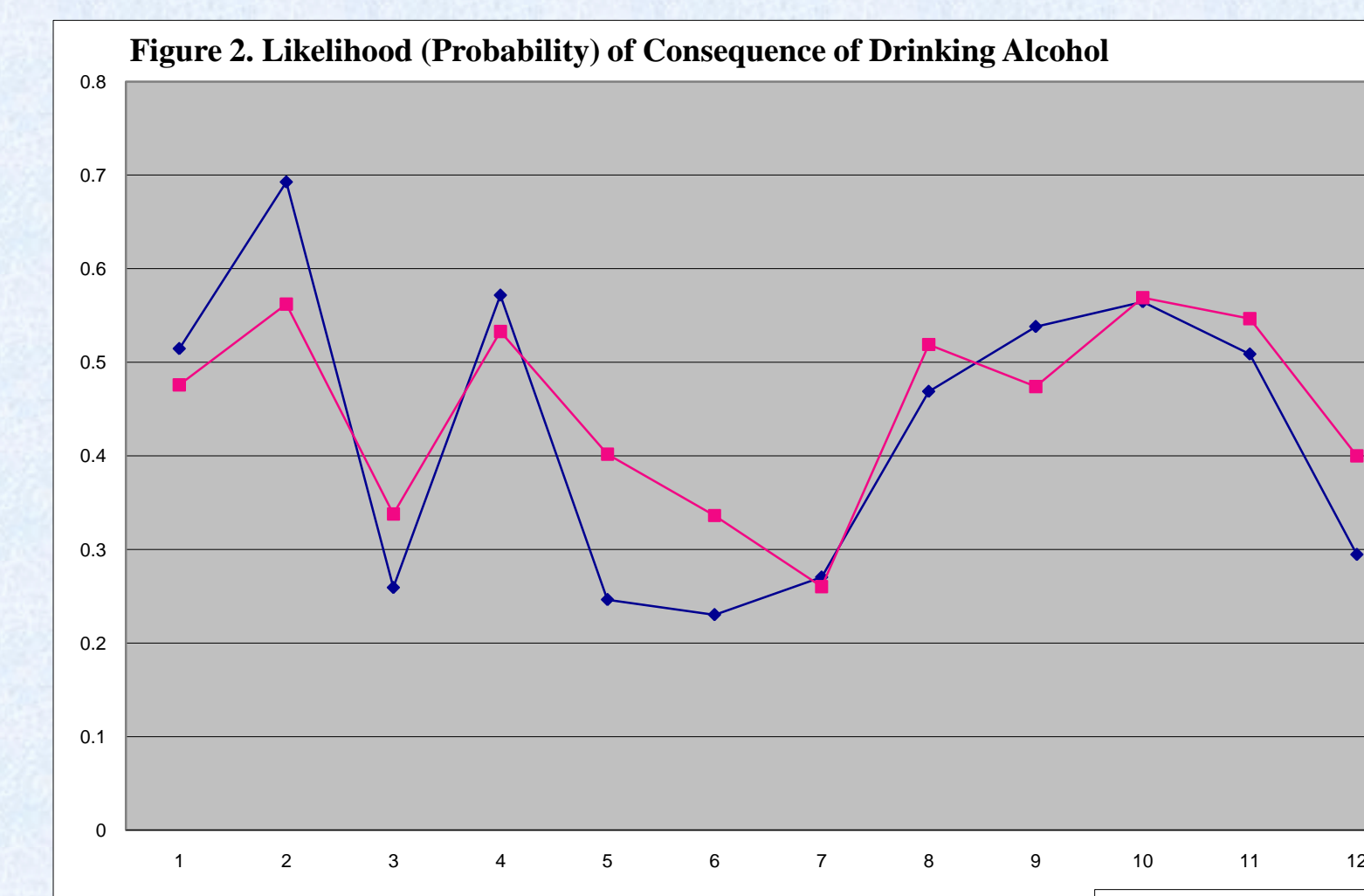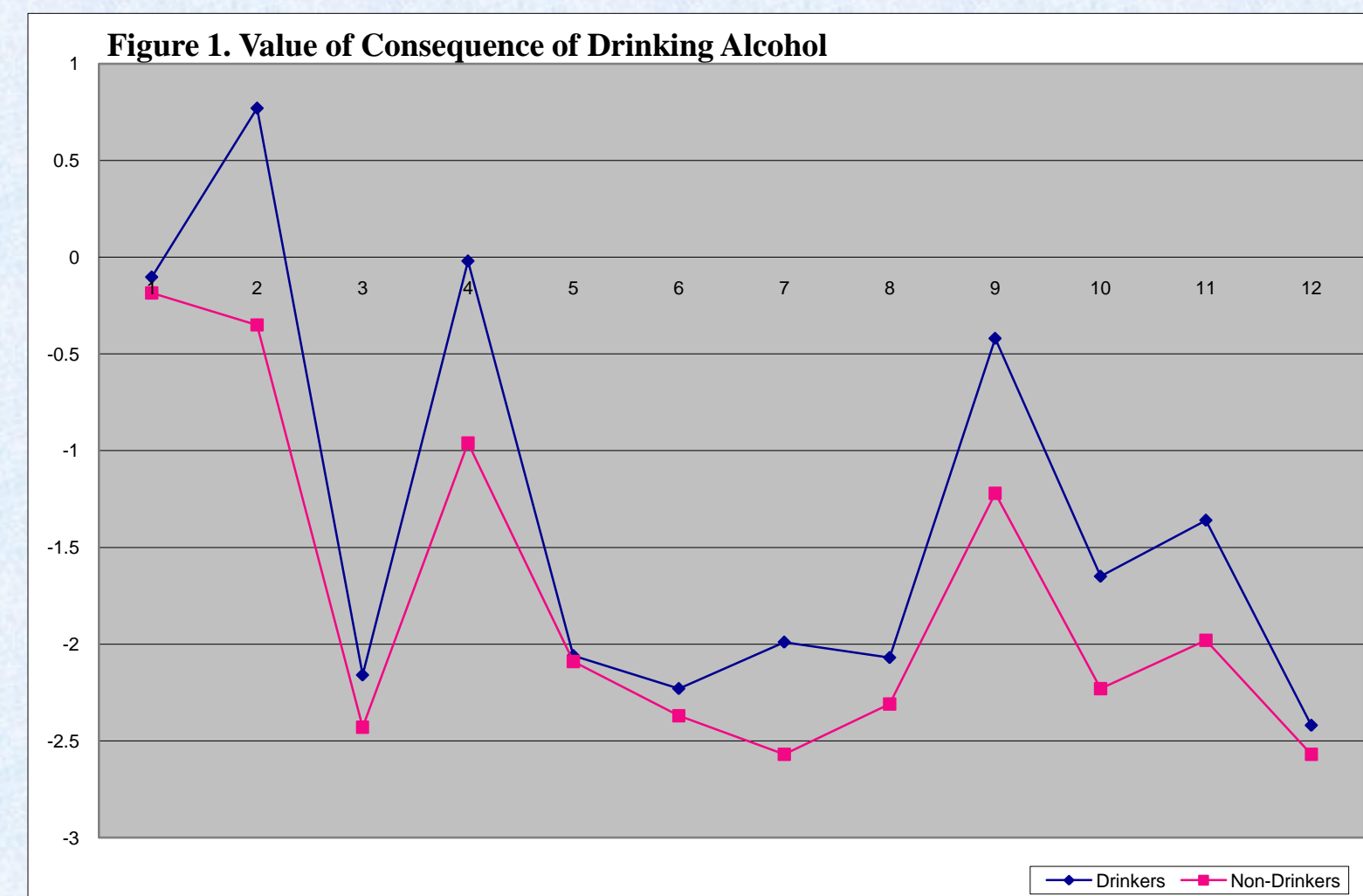
THEORETICAL FRAMEWORK

The Multi-Attribute Utility (MAU) model maintains the two main constructs of Subjective Expected Utility (SEU) theory. subjective value and subjective probability (likelihood), with the addition of a more temporal, flexible and dynamic construct, *momentary salience*. Momentary salience is the importance of the outcomes of a behavior at the moment a decision is made. Whereas the value and likelihood of an outcome might not change much over time, momentary salience is impressionable and will reflect current priority of interpersonal, intrapersonal and environmental factors (Weiss, et al., 2009).

MAU predicts that decisions are made based on the sum of the factors subjective value (SV), subjective probability (SP), and momentary salience (MS) as they apply to all possible outcomes for a decision. Mathematically, it is expressed as:

$$MAU = \Sigma j\ SV_j * SP_j * MS_j$$

where SV is subjective value of the outcome j, SP is subjective probability of the outcome j, and MS is how important the outcome j is at the moment of the decision (Weiss, Weiss & Edwards, 2009). High MAU will be associated to specific behaviors.

FINDINGS

Differences in Means of Psychological Scales and MAU by Drinking Status

Multivariate Logistic Regression Model Testing Associations between Multi-Attribute Utility Model and Drinking.

	Past-30-Day Drinking	
	Adj OR	96% CI
Main Effect		
MAU	1.807**	1.219, 2.680
Covariates		
Age	0.948**	0.911, 0.988
Gender	0.667	0.411, 1.081
Race/Ethnicity	1.162*	1.000, 1.349
Interactions		
Affect X MAU	1.001	0.990, 1.012
Anxiety X MAU	0.998	0.993, 1.003
Extroversion X MAU	0.989**	0.982, 0.997
Neuroticism X MAU	0.990*	0.980, 0.999
Stress X MAU	1.004	0.997, 1.012
MAU	1.835***	1.311, 2.569

*p< .05., **p< .01., ***p< .0001.

FINDINGS

Figure 1. Value of Consequence of Drinking Alcohol

Figure 2. Likelihood (Probability) of Consequence of Drinking Alcohol

Figure 3. Importance (M.S.) of Consequences of Drinking Alcohol

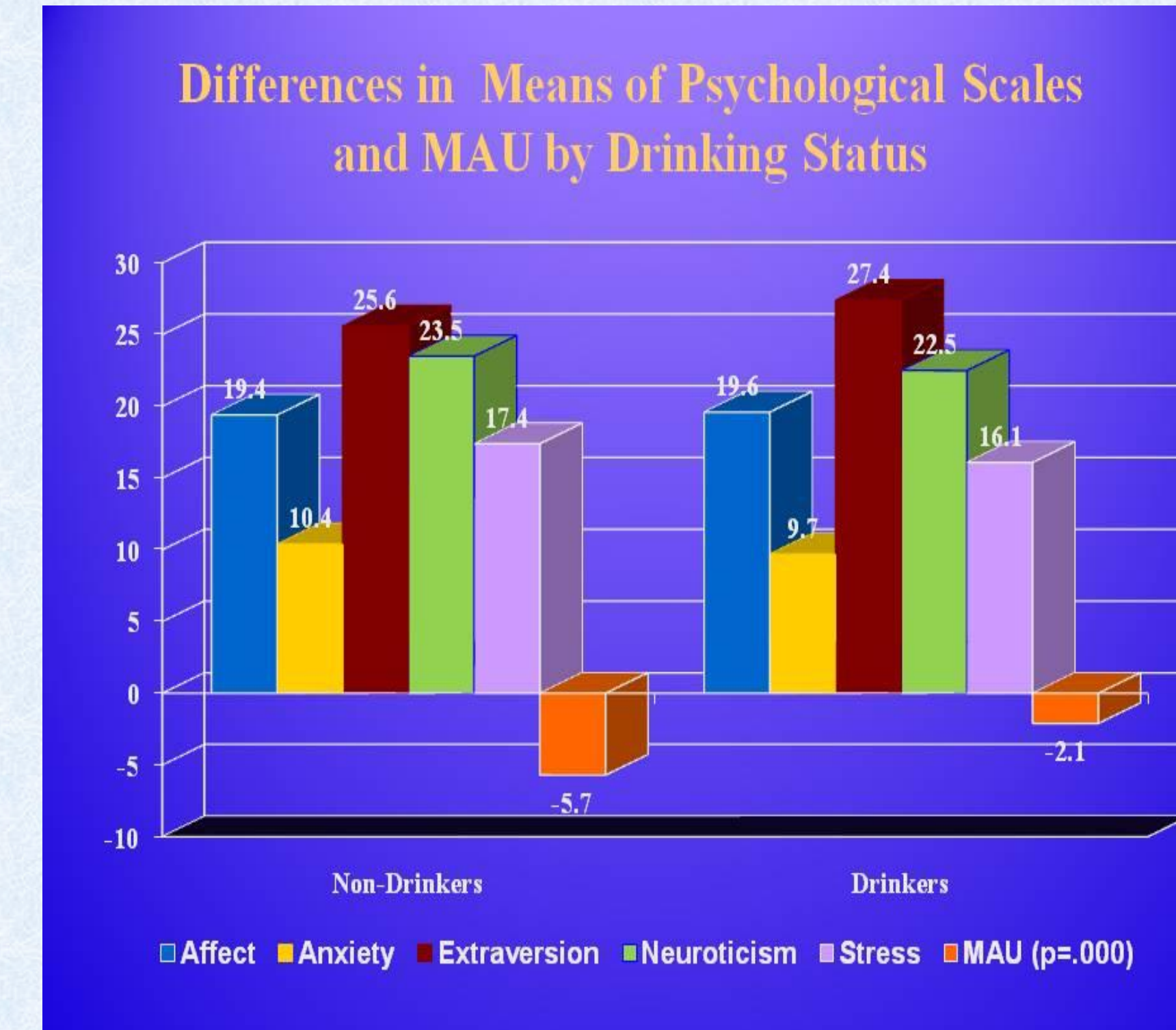Figure 4. Products of Consequences of Drinking Alcohol

Consequences by number
1. Becoming loud and noisy (p <.01, fig. 1,3,4)
2. Feeling like it is easier to socialize (p < .01, fig 1,2,4)
3. Becoming aggressive (p< .01, fig 1,2,3,4)
4. Elevating my moods (p < .01 , fig 1,4)
5. Feeling ashamed of myself (p < .01 , fig 2,3,4)
6. Feeling sad and depressed (p < .01 , fig 2,3,4)
7. Engaging in unplanned sexual behavior (p < .01 , fig 1,3,4)
8. Feeling sick or having a hangover (p< .01 , fig 3,4; p < .05, fig 1)
9. Taking my mind off of problems (p < .01 , fig 1,4; p < .05 , fig 2,3)
10. Being less alert (p < .01, fig 1,4; p < .05 , fig 3)
11. Doing or saying something embarrassing (p < .01 , fig 1,4)
12. Getting behind in school/missing a class (p < .01 , fig 2,4)

Figures 1 – 4 Comparison of means for Value, Likelihood, Importance and Product for consequences, drinkers versus non-drinkers (past 30-day drining)

CONCLUSIONS

1. College student's MAU scores were significantly different between drinkers and non-drinkers. MAU scores were more positively related to drinking status with psychological measures. Further, MAU scores predicted actual drinking behavior with a positive correlation between MAU scores and alcohol consumption.

2. When adjusted for all demographic and psychological interactions, MAU had the strongest association with drinking status, and that those with high MAU for drinking outcomes were 1.84 times more likely to drink. This provides support for using the MAU framework in developing health promotion programs related to college student alcohol consumption.

3. The findings of this project support the MAU theoretical framework and its ability to predict drinking behavior. Future studies investigating other health behaviors may help provide additional support for the use of MAU as a theoretical framework for health promotional program planning and evaluation.

REFERENCES

Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. Journal of Consulting and Clinical Psychology, 56, 893-897.
Bradburn, N. M. (1969). Two dimensions of Psychological well-being: Positive and negative affect, In Bradburn, N.M. The Structure of Psychological Well-being. Oxford, England: Aldine.
Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. Journal of Health and Social Behavior, 24, 385-396.
Edward, W. (1954). Behavior decision theory. Annual Review of Psychology, 12, 473 – 498.
Goldberg, L. R. (1993). The structure of phenotypic personality traits. American Psychologist, 48, 26-34.
Hingson, R., Heeren, T., Winter, M., & Wechsler, H. (2005). Magnitude of alcohol-related mortality and morbidity among U.S. college students ages 18–24: Changes from 1998 to 2001. Annual Review of Public Health 26, 259–279.
Johnston, L.D., O'Malley, P. M., & Bachman, J. G, & Schulenberg, J. E. (2005). Monitoring the Future National survey results on drug use, 1975 – 2004. Bethesda, MD: National Institue on Drub Abuse.
National Highway Traffic Safety Administration (n.d.). Fatality Analyst Reporting Systems Encyclopedia. Retrieved on October 29, 2009, from http://www.fars.nhtsa.dot.gov/Main/index .aspx
Perkins, H. W. (2002). Surveying damage: a review of research on consequences of alcohol misuse in college populations. Journal of Studies on Alcohol, 14, 91-100.
Porter, S. R., & Pryor, J. (2007). The effects of heavy episodic alcohol use on student engagement, academic performance, and time use. Journal of College Student Development, (484.
Powell, L. M., Williams, J., & Wechsler, H. (2004). Study habits and the level of alcohol use among college students. Education Economics, 12(2), 135-149.
Schulenberg, J. E. & Maggs, J. L. (2002). A developmental perspective on alcohol use and heavy drinking during adolescence and the transition to young adulthood. Journal of Studies on Alcohol, Supp No. 14, 54 – 70.
Slovic, P. (2000). The Perception of Risk. London: Earthscan.
White, A., Jamieson-Drake, D., & Swartzwelder, H.S. (2002). Prevalence and correlates of alcohol-induced blackouts among college students: Results of an email survey. Journal of American College Student Health, 51, 117-131.
Weiss, J.W., Weiss & Edwards, G. (2009). A Science of Decision Making: The Legacy of Ward Edwards (pp. 451 – 459). New York: Oxford University Press.
Yi, H., Chen, C. M., & Williams, G. D. (2006). Surveillance Report #76 Trends in alcohol-related fatal traffic crashes: Unites States, 1982 - 2004. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism.

ACKNOWLEDGEMENTS