THE DEVELOPMENT OF THAI ALCOHOL OUTCOME EXPECTANCIES SCALE

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ABSTRACT: This study was designed to construct and validate the Thai Alcohol Outcome Expectancies Scales (TAOES). The initial scale consists of items translated from Alcohol Outcomes Expectancies Scales and non-redundant expectancies derived from the focus group interview with 35 Thai participants. Another 1,056 participants (56% female) completed the questionnaire which included the TAOES and questions regarding their drinking behaviors and intentions. Exploratory factor analysis (EFA) was conducted on the responses of 516 cases randomly selected from the overall sample. To test the stability of the factor structure, a confirmatory factor analysis (CFA) was performed on the hold-out sample of 540 cases. The 11-factor model that emerged from EFA was also tested against the 12-factor model proposed by the researcher. The final solution has 55 items loading onto 12 factors: Confidence, Popularity, Positive Affects, Gaining New Experiences, Easing Worries, Sociability, Sexual Arousal, Getting into Trouble, Poor Performance, Negative Physical Effects, Financial Insecurity, and Guilt. The model fits adequately with the data (x^2= 3,350, df = 1,364, p < .001, x^2/df = 2.46, CFI = .89, RMSEA = .052, CI90 = .050 - .054). Each of these 12 factors significantly predicts drinking behaviors and intentions.

Keywords: Drinking, Alcohol, Expectancies, Measurement

INTRODUCTION

Alcohol not only inflicts harm on users but also causes extensive damage to society as a whole. The United Kingdom's Independent Scientific Committee on Drugs (ISCD) recently assessed the harms of 20 drugs and found that alcohol scored highest on the overall harm score. Alcohol is believed to be especially harmful to others and the society. It is more likely than any other drug to cause injuries to others, family adversity, and economic cost such as health care, policing, productivity loss, and absenteeism [1].

Thailand is also facing these disturbing problems from alcohol use. Thavorncharoensap and colleagues [2] estimated that, in 2006, the economic cost of alcohol use in Thailand is worth about 2% of GDP whereas the excise tax generated from alcohol beverage accounted for less than 1% of GDP. Thai families with a drinking husband and wife were 8.5 times more likely to experience domestic violence than non-drinking families [3]. Deaths and injuries from road accidents surge during holidays and other special occasions, during which a large number of Thai people usually celebrate by drinking [4]. These

problems are getting worse as the proportion of Thai people who drink regularly (at least once or twice a month) has increased continuously across all age groups. The most worrisome trend is observed in youth age 15-19 and 20-24. Survey data from the National Statistical Office of Thailand revealed that from 1996 to 2007 the percentage of youth age 15-19 and 20-24 who drank regularly increased 70% and 44% respectively. In 1996, 4.7% of the first group and 15% of the second drank regularly. In 2007, the percentage of regular drinkers rose to 8% and 21.6% in the first and the second groups respectively [4, 5].

In addition to rules and restrictions imposed on the supply side (i.e., manufacturers, sellers, advertisers), interventions to curb consumers' demand for alcohol is also crucial to sustainably slow down and reverse this trend. To design successful interventions to reduce demand for alcohol, we need to understand psychological factors that drive individuals' drinking behaviors. Generally, if we can change individuals' beliefs or attitudes towards a particular behavior, we can be more successful in predicting and changing that behavior [6]. More importantly, behavioral changes due to acceptance and incorporation of new information into one's own belief or value system will last longer than the changes due to mere compliance to external forces

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such as laws and regulations [7].

Alcohol expectancy is one of alcohol-related beliefs found to influence drinking behaviors. It refers to individuals' beliefs about alcohol's effects on their behaviors [8, 9]. These beliefs come not only from direct experience with pharmacological effects of alcohol, but also from social learning processes [10-12]. Therefore, even people who never drink can hold beliefs about the outcomes of drinking [13]. These expectations in turn determine drinking intentions and behaviors [14-16]. Specifically, individuals drink to seek positive effects of alcohol, such as reducing anxiety and having fun. On the other hand, they refrain from drinking to avoid its negative effects such as hangovers and accidents. Interventions that refuted positive alcohol expectancies were found to successfully reduce participants' drinking intention and behaviors [17-20]. Therefore, if we can identify people's alcohol expectancies and develop interventions that address these specific beliefs, we should have a better chance of changing their drinking behaviors.

To precisely identify individuals' alcohol expectancies, a reliable and valid measure is necessary. Many versions of alcohol expectancies scales have been developed for use with English-speaking populations, for example, the Alcohol Expectancies Questionnaires (AEQ) [21], measures of alcohol-related expectancies [22], and the Alcohol Outcome Expectancies Scale (AOES) [23]. In Thailand, alcohol outcome expectancies have not been widely studied because there is no validated scale that can be used with a wide range of Thai respondents. Newman, Shell, Innadda, and Li [24] constructed a Thai Alcohol Expectancies Questionnaire for use with Thai high school students only. They translated items from Alcohol Expectancies Questionnaires for Adolescents (AEQ-A) by Christiansen, Goldman, and Inn [13] and added more expectancies derived from focus group interviews of Thai high school students. The exploratory factor analysis of the responses from Thai high school students revealed four factors which they named 1) positive expectancies, 2) negative expectancies, 3) power and sex, and 4) religion. Because the scale by Newman and colleagues was created specifically for high school students; it may not be applicable to Thai population of other age ranges or occupations.

Leigh [8] pointed out that, from a focus group interviews she did with participants of different ages, occupations, and drinking status, she found that each group had different salient alcohol expectancies. For example, most college students worried about the cost of drinking and having a hangover. Drunken drivers worried about being fired or losing their spouse or family. Leigh thus suggested that items in an alcohol expectancies scale should come from interviews of samples drawn from a wide range of ages, occupations, and drinking status. This process will result in a scale that can be used with samples from a wide range of the population and allow for comparison across different samples

The present study was designed to construct and validate a Thai Alcohol Outcome Expectancies Scale (TAOES). This scale is intended to be used with Thai population in general. We followed Leigh's advice [8] and used Leigh and Stacy's paper on their Alcohol Outcome Expectancies Scales [23] as a guideline to construct our scale.

METHODS

This study was done in two stages. In the preliminary study, the beliefs of Thai samples about potential outcomes of alcohol were elicited through focus group interviews of people from multiple age groups and drinking status. The items derived from the first stage were combined with the Thai translation of items from Alcohol Outcome Expectancies Scales [23]. In the main study, we asked another group of participants to estimate the likelihood that each of the potential outcomes would happen to them if they drank. The data were analyzed using exploratory factor analysis to identify potential factors that summarize and explain the relationships among the questions in the scale. Then we tested the reliability and stability of the factor structure using confirmatory factor analysis. Finally, the relationships between dimensions of alcohol expectancies and drinking intentions and behaviors were estimated to provide evidence for concurrent validity.

The procedure of this study was reviewed and approved by the Institutional Review Board of Claremont Graduate University, USA. The data from the focus group interview in the preliminary study were kept confidential and the data from the survey in the main study were completely anonymous.

PRELIMINARY STUDY

Participants

Participants were purposively sampled from different age ranges and drinking strata. Of the 35 participants who were recruited, 19 were male and 16 were female. Participants ranged in age from 16 to 46 years. They could be categorized into three age groups. There were 13 participants in the 15- to 25-year-old group, 14 in the 26- to 35-year-old

group, and 8 in the 36-or-older group. Among these, 11 were non-drinkers, 15 were current drinkers, and 9 were past drinkers.

Procedure

We conducted the interviews in small groups of three to five participants to allow each participant more opportunities to speak without having to wait for too long for their turn. To avoid potential conflict that could arise if participants who had different opinion about drinking were brought together, the researchers arranged the group such that each group was composed of participants who were of the same age range and drinking status. Therefore, there were a total of 9 groups. One researcher moderated the discussion in each group. The researcher fully informed participants about the objective of the focus group interview, asked for permission to tape record the discussion, and ensured that the data would be confidential. Participants then read and signed the consent form. The scope of the discussion included questions designed to elicit expected outcomes of alcohol use. Sample questions included their reasons for not drinking, starting drinking, continuing drinking, or quitting drinking.

Results and discussion

Two coders independently analyzed the content of the discussion to identify the expectancies that were mentioned explicitly or implicitly during the discussion. The lists of expectancies from the two coders were compared. Redundant items were deleted to form a single list of expectancies. To ensure that the list of expectancies was as comprehensive as possible, items from Alcohol Outcome Expectancies Scales by Leigh and Stacy [23] were translated into Thai and compared with the list of expectancies obtained in the focus group interviews. Again, redundant items were deleted. The first draft of the scale thus consisted of 34 items from Leigh and Stacy's scale and 37 items from the focus group interview. Duplicates of four items in the scale were added as a tool to evaluate response consistency. Therefore, the initial version of the scale was composed of 75 items.

MAIN STUDY

Participants

The sample in the main study was a convenience sample of high school and college students aged 15 to 26 years old. Of the 1,090 participants who completed the questionnaire, 34 (3%) were excluded from further analysis because their responses contained either 1) missing values of more than 5%

of the total number of the items in the Thai Alcohol Outcome Expectancies scales; 2) response sets, such as rating of 3 on all of the items; or 3) inconsistencies in the responses as suggested by more than three units difference between the responses to any pair of the four pairs of duplicate items. This last method is used to screen out participants who did not read the questions carefully before answering. The final sample size was 1,056, composed of 456 (43%) male, 595 (56%) female, and 5 (1%) respondents who did not identify their gender. The age range of the final sample was 15-26 with a mean of 18 years. High school students comprised 47% of the sample (492 cases). The other 53% were college students.

Procedure

The researchers contacted the instructors as well as the administrators of three high schools and four universities in Bangkok and nearby provinces, and asked them for permission to collect data from their students. The researchers met potential participants in their classrooms and explained the objectives of the study. Potential participants who were 18 or older read and signed the consent form, then completed the questionnaire. Potential participants who were less than 18 years old received a consent form for their parent or guardian and an assent form for themselves. The investigator met the potential participants again within one week. The questionnaires were administered only to the participants who had both forms signed.

Measures

The questionnaire was in paper-and-pencil format and took about 20 to 30 minutes to complete. It included the following scales and questions.

Thai Alcohol Outcome Expectancies Scale

This scale contained 75 statements about the outcomes of alcohol use derived from the Preliminary Study. Participants were asked to rate the probability that each outcome would occur to them if they drank. The response scale ranged from 0 (no chance) to 5 (certain to happen).

Perceived drinking norms

Participants estimated the percentage of their close friends who drink regularly. They also estimated the number of times their close friends drink in an average month (Frequency) and how many units of alcoholic beverages their close friends consume in an average drinking event (Quantity). Then they reported whether they thought their close friends would approve or disapprove if they drank (Approval), on a scale ranging from -3 (Strongly Disapprove) to 3 (Strongly Approve).

Past drinking behaviors

Participants were asked to report whether or not they had ever consumed alcohol. If they had, they were further asked: how many times they drank in the past 30 days (Frequency); how many units of alcohol they consumed in an average drinking event (Quantity); and how often they consumed five or more drinks within the past 30 days (Frequency of Binge).

Intentions to drink

All participants indicated their intention to drink within the next 30 days on a scale of 0 (definitely not going to drink) to 5 (definitely going to drink)

Basic demographic data

Participants also provided information about their age, sex, and education level.

Results and discussion

We used holdout method in which data from all participants were randomly split into two approximately equal halves. Data from the first half of the sample was used in the Exploratory Factor Analysis to identify factors in the Thai Alcohol Outcome Expectancies Scale. Data of the remaining participants or the "holdout" sample was then used to test the generalizability of this constructed model through the Confirmatory Factor Analysis. We used the function "Select Cases" and the option "Random sample of cases" in SPSS to randomly selected and split the data from 1,056 into two halves (First half $N = 516$, Second half (holdout) $N = 540$)

Exploratory factor analysis

The Exploratory Factor Analysis (EFA) command in SPSS was used to analyze the first half of the data (N = 516). Correlations among items[i] ranged from |.00| to |.88|. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) was .94, which is excellent according to Kaiser [25], suggesting that items have adequate relationships and suitable for factor analysis.

Principal Axis Factoring (PAF) was used to extract factors underlying the relationship among participants' responses to the items in the scale. Direct oblimin rotation was performed to improve the simplicity or interpretability of factor structure. After the first analysis, four items used to check the consistency of the response were dropped. Then the same method of factor extraction and rotation were repeated. Items that did not have a factor loading of greater than .3 on any factor and had the lowest

communality at each step were eliminated. Using these criteria, 10 items were deleted. The final solution consists of 61 items with loading greater than .30 on at least one factor. The 11-factor solution accounts for 58.88% of variance of all 61 items. Only 1% of the reproduced correlations among variables deviated greater than ± .05 from their corresponding observed correlations, suggesting that the model explains the relationship among items very well. Factor loadings after rotation and the proposed factor names are shown in Table 1.

Confirmatory factor analysis

To verify that the solution derived from the Exploratory Factor Analysis is stable and generalizable to other samples, we ran a Confirmatory Factor Analysis (CFA) in AMOS 17 on the data from the second half of participants (N = 540), the hold-out sample. The 11-factor solution was modeled exactly after the results from the exploratory factor analysis. Each of the 61 items was specified as loading onto one of the 11 factors (see Table 1). All latent factors were allowed to correlate with one another.

In addition, we also tested an alternative model with 12 factors because we noticed that items in the factor "Getting into trouble" seem to reflect two distinct ideas. Half of the items did reflect the risk of getting into trouble where physical injury may be involved but the other half of the items was related to poorer cognitive and behavioral performance. Splitting this factor into two factors may add complexity to the factor solution, but it may help practitioners develop interventions that are more specific to each individual and thus can be more effective. We also believed that the 12-factor model would fit the data better because it had clearer and simpler within-factor structure.

Therefore, we tested the two models against each other. The 12-factor model had similar structure as the 11-factor model except that the "Getting into trouble" factor was split into "Getting into trouble" and "Poor performance".

Multiple indices were used to determine which model explained the data better. A non-significant Chi-Squared test is preferred because it suggests that the relationship hypothesized in the model did not differ from the observed relationship in the data. However, the Chi-squared test is very sensitive to sample size. With large sample size, Chi-squared is almost always statistically significant. Chi-squared to degree of freedom ratio is an alternative to Chi-squared test. A model with x^2/df smaller than 3 is considered a good model [26, 27]. The Comparative Fit Index (CFI) is another widely used index. A CFI

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[i] Due to space limit, the correlations among 75 items are not shown here. Please contact the corresponding author for the full correlation matrix.

Table 1 Factor loadings of the items in Thai alcohol outcome expectancies scale

EFA (N=516; 61 items)		Items	CFA (N=540; 55 items)	
Factor	**Loading**		**Loading**	**Factor**
Getting	.73	E08 I get into fights.	.80	**Getting**
into trouble	.62	E02 I become aggressive.	.71	**into trouble**
(9.24)	.58	E18 I become mean.	.78	
	.53	E36 I have an accident.	.77	
	.37	E66 I am sexually harassed.	.68	
	.58	E09 I become less efficient at work/school.	.71	**Poor**
	.53	E11 I cannot concentrate.	.77	**performance**
	.52	E19 I have problems with memory and concentration.	.66	
	.52	E06 I become clumsy or uncoordinated.	.62	
	.39	E70 I cannot control my behavior.	.76	
Confidence	.66	E45 I have more self-confidence.	.72	**Confidence**
(6.89)	.65	E54 I am more assertive.	.82	
	.58	E37 I am more comfortable being myself around others.	.77	
	.49	E26 I am able to speak more freely.	.75	
Sexual	.97	E25 I am more sexually responsive.	.93	**Sexual**
arousal	.95	E22 I become more sexually active.	.93	**arousal**
(7.62)	.89	E16 I have more of a desire for sex.	.89	
	.82	E29 I am more sexually assertive.	.83	
Popularity	.77	E39 Others think I am cool.	.74	**Popularity**
(6.31)	.67	E35 Others think I am brave.	.67	
	.58	E63 I look more attractive.	.78	
	.55	E43 Others think I am courageous	.66	
	.54	E49 The opposite sex finds me attractive.	.71	
	.52	E47 Others think I am mature.	.63	
	.34	E01 I am more socially accepted.	--[a]	
Negative	.72	E72 I get a headache.	.78	**Negative**
physical	.63	E42 I feel dizzy.	.77	**physical**
effects	.52	E40 I feel tired.	.65	**effects**
(7.26)	.51	E33 I experience unpleasant physical effects.	.61	
	.48	E15 I get a hangover.	.65	
	.46	E13 I feel sick.	--[b]	
	.35	E38 My health deteriorates.	.73	
Financial	.87	E58 I do not have enough savings for my future.	.88	**Financial**
insecurity	.86	E62 I do not have money for other activities.	.87	**insecurity**
(7.85)	.71	E74 I waste money on alcoholic beverages.	.77	
	.41	E73 Others think I am a worthless person.	--[b]	
Guilt	.77	E12 I feel guilty.	.87	**Guilt**
(7.06)	.71	E52 I feel guity for disappointing my significant others.	.63	
	.69	E04 I feel ashamed of myself.	.77	
	.69	E48 I feel guilty for violating religious teachings.	.63	
	.51	E56 I feel guilty that others have to take care of me when I drink.	--[b]	
	.35	E46 My public image becomes negative.	--[b]	
Positive	.80	E10 I have a good time.	.87	**Positive**
affects	.71	E05 I enjoy the buzz.	.77	**affects**
(8.43)	.70	E14 I have fun.	.86	
	.67	E07 I feel happy.	.81	
	.53	E24 I feel good.	.79	
	.46	E17 I feel pleasant physical effects.	.63	
Gaining new	.55	E69 I can come up with new ideas.	.64	**Gaining new**
experiences	.50	E51 I am more creative.	.62	**experiences**
(4.68)	.43	E61 More friends want to hang out with me.	.70	
	.37	E53 I gain new and interesting experiences.	.62	
	.36	E57 I will meet attractive members of the opposite sex.	--[b]	
	.33	E67 I have more of a sense of humor.	.67	

Table 1 Factor loadings of the items in Thai alcohol outcome expectancies scale (cont.)

EFA (N=516; 61 items)		Items	CFA (N=540; 55 items)	
Factor	**Loading**		**Loading**	**Factor**
Easing	.63	E34 I am able to take my mind off my problems.	.60	**Easing**
worries	.59	E32 I feel less stressed.	.71	**worries**
(4.67)	.47	E59 I can sleep easier.	.55	
Sociability	.60	E23 It is easier for me to socialize.	.77	**Sociability**
(4.71)	.44	E20 I am more outgoing.	.73	
	.42	E30 I feel more social.	.80	
	.37	E28 I am friendlier.	.72	

Note: Numbers in the parenthesis under each factor in the EFA column are sum squared loading of each factor.
  [a] item had nonsignificant factor loading and was dropped from the CFA phase
  [b] items suggested by the modification indices to cross loaded on many other factors were dropped from the CFA phase

value of .90 indicates good fit [28]. The Root Mean Squared Error of Approximation (RMSEA) estimates the residual in the variance/covariance matrix left unexplained by the model. A good fitting model should have an RMSEA value of lower than .08 [29]. In addition to the fit indices of individual models, we also considered the Akaike Information Criteria (AIC), which is a measure of relative fit of two non-nested models. Smaller AIC indicates better fit [30].

The results showed that both models fit the data adequately. The 12-factor model fit the data slightly better than the 11-factor model. For the 11-factor model, $x^2 = 4,843$, df = 1,714, p < .001, x^2/df = 2.83, CFI = .84, RMSEA = .058 with 90% confidence interval ranging from .056 to .060. The 12-factor model has lower Chi-squared and Chi-squared to degree of freedom ratio ($x^2 = 4,699$, df = 1,703, p < .001, x^2/df = 2.759). The Chi-squared values decreased significantly from the 11-factor model to the 12-factor model ($x^2_{difference} = 144$, $df_{difference} = 11$, $p < .001$), indicating that the 12-factor model fit the data significantly better. The CFI for the 12-factor model is .85, suggesting that although this model did not reach the criteria for good fit (CFI = .90), it was still slightly better than the 11-factor model. The RMSEA of the 12-factor model was 057 with 90% confidence interval ranging from .055 to .059. The lower RMSEA suggested that the 12-factor model explain the observed variance/covariance matrix slightly better because it has slightly lower error of approximation. Finally, the AIC of the 12-factor model (AIC = 5,075) was smaller, and thus better than the 11-factor model (AIC = 5,197). Based on the evidence described here, we conclude that the 12-factor model was preferred over the 11-factor model.

We then made modification to further improve the fit of the 12-factor model. The right half of Table 1 shows factor loadings of items on their respective

factors. One item was deleted after the first model estimation because it had a non-significant loading on the intended factor. The modification indices given by AMOS suggested that another five items should be allowed to cross load on multiple factors. Since our goal was to arrive at a relatively simple factor structure, these five items were deleted. We eliminated these problematic items one at a time, starting from the one that had high loading on the highest number of factors. Then the model was re-estimated and the same process was repeated until the fit indices became acceptable. The final model is composed of 55 items loading onto 12 factors ($x^2 = 3,350$, df = 1,364, p < .001, x^2/df = 2.46, CFI = .89, RMSEA = .052, CI90 = .050 - .054).

Table 2 shows reliability coefficient for each of these 12 factors calculated from the first and the second sample. Almost all factors have high reliability. All factors have Cronbach's alpha of .80 or higher, except *Easing Worries* which has Cronbach's alpha lower than .7. This may be due to the fact that this scale contains only three items. Next, we looked at the correlations among factors. The pattern of the inter-factor correlations suggested that there are two clusters of factors, positive expectancies and negative expectancies. The first cluster is composed of six factors, *Confidence, Popularity, Positive Affects, Gaining New Experiences,* and *Easing Worries*. This cluster seems to represent positive expectancies. They generally have moderate positive correlations with one another ($rs = .37$ to .68, $ps < .001$) and low to moderate negative, mostly non-significant relationships with the other five factors ($rs = -.40$ to .15, ps ranged from <.001 to .84). These latter five factors, *Getting into trouble, Poor Performance, Negative Physical Effects, Financial Insecurity,* and *Guilt*, have moderate to high positive correlation with each other ($rs = .32$ to .80, $ps < .001$) and

Table 2 Reliability of TAOES subscales and their correlations with norms, intention, and past drinking behaviors

Factors	Cronbach's α		Norms[a]				Intention to drink	Past behaviors[b]		
	1st half	2nd half	Prevalence	Freq.	Amount	Approval		Freq.	Amount	Freq. Binge
Valid N	516	540	1,042	1,039	1,012	1,049	1,018	674	592	662
Confidence	.84	.85	.26***	.19***	.17***	.27***	.26***	.15***	.28***	.14***
Popularity	.85	.85	.18***	.13***	.11***	.20***	.13***	.10**	.13***	.08*
Positive Affects	.90	.91	.38***	.18***	.28***	.39***	.41***	.25***	.31***	.22***
Gaining New Experiences	.80	.78	.32***	.24***	.27***	.31***	.32***	.26***	.30***	.25***
Easing Worries	.67	.61	.21***	.15***	.21***	.26***	.24***	.18***	.25***	.13**
Sociability	.84	.84	.34***	.20***	.27***	.38***	.35***	.20***	.29***	.18***
Sexual Arousal	.95	.93	.06	.11***	.04	.09**	.04	.20***	.10*	.19***
Getting into Troubles	.87	.85	-.33***	-.13***	-.22***	-.38***	-.37***	-.06	-.18***	-.04
Poor Performance	.85	.82	-.28***	-.13***	-.19***	-.32***	-.32***	-.07	-.15***	-.05
Negative Physical Effects	.85	.85	-.22***	-.05	-.11**	-.24***	-.23***	-.04	-.09*	-.01
Financial Insecurity	.88	.88	-.17***	.01	-.07*	-.21***	-.14***	.05	-.03	.08*
Guilt	.83	.82	-.37***	-.15***	-.22***	-.40***	-.43***	-.15***	-.20***	-.14**

Note: The total N was 1,056. However, when the correlation between each pair of variables was calculated, cases with missing value on either one of the variables in the pair were excluded. This resulted in unequal N for the correlations calculated for different pairs of variables.

[a] The reference group for all measures of norms was close friends

[b] Past behaviors were measured in participants who have consumed alcohol at least once (N = 683)

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

seems to represent negative expectancies. The last factor, *Sexual Arousal*, has moderate positive correlation with both the factors in positive clusters (rs = .19 to .43, ps < .001) and negative clusters (rs = .20 to .50, ps < .001), except for only one factor, *Guilt* (r = .02, p = .66 and r = -.03, p = .56 in the first and the second sample respectively). This result suggests that *Sexual Arousal* may be viewed by participants as having both positive and negative aspects simultaneously.

Concurrent validity: relationship with other variables

Participants were divided by drinking status into those who never drank (N = 373), those who had tried but did not drink during the past 30 days (N = 352), and those who drank regularly or recently within the past 30 days (N = 331). We hypothesized that participants who drank regularly would report the highest positive alcohol expectancies, followed by those who do not drink regularly and those who never drank. The reverse order was predicted for the negative expectancies.

One way ANOVA showed that these three groups were significantly different on every factor of the Thai Alcohol Expectancies Scale (Fs ranged from 6.61 to 131.75, all ps < .01). Post hoc tests[ii] confirmed that there are differences in the predicted direction in almost every factor. There were significant differences in the expected direction in all pairwise comparisons, except for three factors (*Confidence, Popularity,* and *Easing Worries*) where there was no significant difference between those who never drank and those who do not drink regularly, and three factors where there was no difference between those who never drank and those who drank regularly (*Sexual Arousal, Negative Physical Effects,* and *Financial Insecurity*).

Table 2 shows correlations between factors in Thai Alcohol Expectancies Scales and past drinking behaviors, norms that encouraged drinking behaviors, and intention to drink in the next 30 days. We found that participants who reported higher norms favoring drinking generally reported higher expectations of positive outcomes and lower negative outcomes. Among participants who drink, those who scored higher on positive expectancies and lower on negative expectancies reported that on average they consumed more drinks in an average drinking event (Quantity). They also drank and binged more frequently within the last 30 days. Finally, participants with higher positive expectancies and lower negative expectancies report higher intention to drink in the next 30 days. The first three positive expectancies that have the strongest relationship with participants' intention to

[ii] To control familywise error rate in Post Hoc pairwise comparison, the critical value is adjusted using Bonferroni procedure. For some factors where the assumption of homogeneity of variance was violated, correction is made to the degree of freedom using Dunnett T3 procedure. Both Bonferroni and Dunnett T3 are available in SPSS Post Hoc command.

drink are *Positive Affect*, *Sociability*, and *Gaining New Experience*. The first three negative expectancies that have the strongest correlation with intention to drinks are *Guilt*, *Getting into trouble*, and *Poor performance*.

DISCUSSION

In this study, we developed and validated Thai Alcohol Outcome Expectancies Scale (TAOES). As of today, this is the most recent and comprehensive alcohol expectancy scale for the Thai population. The items in the scale were generated from the focus group interviews of samples from different age groups and drinking status. The Thai translation of items from Leigh and Stacy's in 1993, Alcohol Outcome Expectancies Scale (AOES) were also added to the initial pool of items. Our final solution of TAOES has 12 factors, which seem to cluster into positive expectancies and negative expectancies. All factors have acceptable to high internal consistency as suggested by high Cronbach's alpha reliability coefficients. Their concurrent validity is evidenced by their correlations with norms about drinking, intention to drink, and past drinking behaviors. Positive expectancies are positively correlated with norms that encourage drinking and the tendency to drink, whereas the negative expectancies are negatively associated with these variables.

The factors that emerged in TAOES are quite similar to Leigh and Stacy's AOES. However, AOES has only eight factors—four positive and four negative expectancies. Three of four positive factors -- *Fun, Sex,* and *Tension Reduction* in AOES--are similar to the factor *Positive Affect, Sexual Arousal,* and *Easing Worries* in the TAOES. The factor *Social (Positive)* in AOES seems to be equivalent to the factors *Sociability* (desire to socialize), *Confidence* (being comfortable to express oneself), and *Popularity* (being liked or admired by others) in the TAOES. The negative expectancies in the *Social, Emotional, Physical,* and *Cognitive/ Performance* dimensions of AOES are equivalent to the factors *Getting into troubles, Guilt, Negative Physical Effects,* and *Poor Performance* in the TAOES respectively.

The other two factors in TAOES, *Gaining New Experiences* (positive), and *Financial Insecurity* (negative), are new factors that emerged in the Thai sample but were not found in the AOES. The *Gaining New Experiences* factor has a statistically significant moderate relationship with the intention to drink. It suggests that those who think drinking will expose them to new experiences and help them come up with new ideas are more likely to drink.

The *Financial Insecurity* factor has a weak but significant correlation with the intention to drink. Those who think they may have financial problems if they drink report lower intention to do so.

When compared with Newman and colleagues' scale in 2005, the first Thai measure of alcohol expectancies, the TAOES seems to be more useful in two senses. First, the TAOES can be used with a broader spectrum of the population. This is because the items in the TAOES were elicited from a broader range of age. We also made sure that we had sample of people who drink, those who do not drink, as well as those who already quite drinking within each age group. Therefore, the scale contains expectancy beliefs that are relevant for other age groups. In contrast, the items in the Newman et al.'s measure came from the interviews of high school students only. The scale may not contain expectancies that could exist in the population of other age ranges and occupations. Moreover, the fact that the TAOES has more factors makes it a more fine-grained measure. It can reveal with more specificity which outcomes individuals expect from drinking. This will be helpful for the policymakers and practitioners who want to develop effective interventions to curb alcohol use in various populations. They can craft more targeted and specific messages in anti-drinking interventions or media campaigns. If the measure has only a few factors, expectancies with subtle differences may be agglomerated. For example, in Newman and colleagues' scale, there are only four factors. When their result showed that *negative expectancies* predict drinking behavior, it is unclear for practitioners what issues they should communicate with the target audience to effectively discourage drinking behaviors.

Although the present study shows that the TAOES is a reliable and valid measure of alcohol expectancies for Thai population, some limitations should be addressed in future research. First, the data used in this study are correlational. We cannot make a causal conclusion about the relationship between expectancies and other variables. To clarify the direction of the relationship, longitudinal studies where drinking behaviors are measured sometimes after the expectancies and intention are needed. A more rigorous way to test the causal relationship is the use of experimental studies. We may manipulate expectancies using some forms of intervention and then measure drinking intention or behaviors as a function of different expectancies.

Another issue that future studies should examine is the stability of factor structure across populations. Although the initial pool of items was generated

from samples of a wide range of age and drinking status, the results of the factor analyses were based on a sample of Thai students aged 15 to 26. In future research, we plan to recruit samples from other age range, education, occupation, subculture, or region within Thailand, and rerun factor analyses to determine whether the same factor structure holds in other populations.

In conclusion, we have developed the Thai Alcohol Outcomes Expectancies Scale to be used with the Thai population. The scores on the 12 subscales and their correlations with other variables relating to drinking behaviors can help improve future drinking prevention research and interventions. Because different populations may have different expectations about the outcomes of drinking, we should focus our interventions on changing the expectancies that are highly related to drinking intention and behaviors of each population. We hope that this new scale will be able to facilitate such attempts as well as to improve the depth and validity of alcohol research in Thailand.

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