



# Psychometric validation of measures of alcohol expectancies, retrospective subjective response, and positive drinking consequences for use with adolescents



M.E. Morean<sup>a,b,\*</sup>, S. Zellers<sup>a</sup>, M. Tamler<sup>a</sup>, S. Krishnan-Sarin<sup>b</sup>

<sup>a</sup> Oberlin College, Department of Psychology, 120 W. Lorain St., Oberlin, OH 44074, USA

<sup>b</sup> Yale School of Medicine, Department of Psychiatry, CMHC, 34 Park Street, New Haven, CT 06519, USA

## HIGHLIGHTS

- Psychometrically sound measures of teen drinking behavior are lacking.
- We present psychometric analyses of 3 measures for use with teens.
- The Anticipated Effects of Alcohol Scale is reliable and valid for use with teens.
- The Subjective Effects of Alcohol Scale is reliable and valid for use with teens.
- The Positive Drinking Consequences Questionnaire is reliable and valid for use with teens.

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## ABSTRACT

The Anticipated Effects of Alcohol Scale (AEAS), the Subjective Effects of Alcohol Scale, and the Positive Drinking Consequences Questionnaire (PDCQ) are psychometrically sound measures of alcohol expectancies (expectancies), subjective response to alcohol, and positive drinking consequences, respectively, for use with adults. Prior research using these measures suggests that expectancies, subjective response, and positive drinking consequences are related yet distinct determinants of drinking. The current study presents psychometric evaluations of these measures for use with adolescents including confirmatory factor analyses (CFA) of the previously identified latent structures, internal consistency, and test-criterion relationships. Legally, alcohol cannot be administered to adolescents, so we assessed retrospective subjective response (during the first drinking episode ever [SEAS First] and the most recent drinking episode [SEAS Recent]). The sample comprised 248 Connecticut high school students (53.6% male; mean age 16.50 [1.19] years; 71.4% White) who completed an anonymous survey. CFA confirmed the latent factor structures for each measure. The AEAS, SEAS First, SEAS Recent and the PDCQ were internally consistent (mean  $\alpha$  AEAS = 0.83; SEAS First = 0.88; SEAS Recent = 0.89, PDCQ = 0.87). AEAS subscales evidenced moderate overlap with corresponding SEAS First subscales (mean = 0.36) and SEAS Recent subscales (mean = 0.46) and modest overlap with the PDCQ (mean = 0.17). Expectancies, subjective response, and positive drinking consequences also accounted for significant variance in monthly drinking, lifetime maximum number of drinks consumed, and alcohol-related problems. In sum, the AEAS, the retrospective SEAS, and the PDCQ are psychometrically sound measures for use with adolescents.

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## 1. Introduction

Efforts to prevent underage drinking in the United States have been ineffective; the majority of American youth initiate alcohol use prior to the legal drinking age of 21 years (Substance Abuse and Mental Health Services Administration [SAMHSA], 2014). As of 2014, 26.8% of 8th graders, 49.3% of 10th graders, and 66.0% of 12th graders had consumed alcohol at least once (Miech, Johnston, O'Malley, Bachman, & Schulenberg, 2015). While underage drinking is normative it is not consequence-free; youth drinking is associated with a range of negative

\* Corresponding author at: Oberlin College, Department of Psychology, 120 W. Lorain St., Oberlin, OH 44074, USA.

E-mail addresses: [meghan.morean@oberlin.edu](mailto:meghan.morean@oberlin.edu) (M.E. Morean), [stephanie.zellers@oberlin.edu](mailto:stephanie.zellers@oberlin.edu) (S. Zellers), [mccoy.tamler@oberlin.edu](mailto:mccoy.tamler@oberlin.edu) (M. Tamler), [suchitra.krishnan-sarin@yale.edu](mailto:suchitra.krishnan-sarin@yale.edu) (S. Krishnan-Sarin).

outcomes including alcohol-induced brain damage; blackouts; missing school or work; neglecting family/friends or other responsibilities; engaging in risky sexual behavior; driving after drinking; automobile accidents and fatalities; physical/sexual aggression; homicide; suicide; and developing alcohol use disorder (e.g., SAMSHA, 2012). As such, understanding the range of biopsychosocial risk factors for underage drinking is crucial.

While a number of biopsychosocial risk factors for underage drinking have been identified, three constructs are the foci of the current study: alcohol expectancies (expectancies), subjective response to alcohol (subjective response), and positive drinking consequences. These constructs form a temporal ordering of the experience of alcohol effects, with expectancies occurring primarily before a drinking episode, subjective response to acute alcohol effects occurring during a drinking episode, and positive drinking consequences occurring during/after a drinking episode.

According to expectancy theory, alcohol use is driven, in large part, by the belief that pleasurable outcomes will ensue, either via enhancement of positive emotions or relief from negative emotions (e.g., Maisto, Carey, & Bradizza, 1999). Of particular importance to understanding how expectancies function in youth, expectancies develop before alcohol use is initiated through exposure to others' drinking behavior (e.g., parents, peers, television/movie actors) and, subsequently, are influenced by personal experience once drinking begins (e.g., Maisto et al., 1999). While expectancies tend to be negative in younger children, adolescents commonly transition to holding more positive beliefs about drinking preceding alcohol initiation (e.g., Dunn & Goldman, 1998). Research has linked expectancies to an array of alcohol-related outcomes including heavy drinking, the experience of alcohol-related problems (i.e., negative drinking consequences), and the development of alcohol use disorder (e.g., Brown, Goldman, & Christiansen, 1985; Connors, O'Farrell, & Pelcovits, 1988; Cooper, Russell, & George, 1988; Kilbey, Downey, & Breslau, 1998; Lundahl, Davis, Adesso, & Lukas, 1997; Morean, Corbin, & Treat, 2012; Pastor & Evans, 2003; Rather & Goldman, 1994; Schuckit & Smith, 2001).

While expectancies are important cognitive drinking determinants, the experience of acute alcohol effects while drinking also predicts subsequent drinking behavior. Specifically, subjective response reflects a genetically heritable sensitivity to the pharmacological effects of alcohol (Schuckit, 2009) and can be assessed during a drinking episode (e.g., Morean, Corbin, & Treat, 2013) or retrospectively (e.g., Schuckit, Smith, & Tipp, 1997; Schuckit et al., 2007). Similar to expectancies, individual differences in subjective response confer risk for heavy drinking, the experience of alcohol-related problems, and the development of alcohol use disorder (for a review see Morean & Corbin, 2010). Of particular relevance for studying subjective response in youth, individual differences in subjective response that are evident during early drinking episodes have been shown to confer risk for negative alcohol related outcomes experienced later in life (e.g., Schuckit, Smith, Danko, & Isacescu, 2003; Schuckit et al., 1997; Schuckit et al., 2007).

Finally, while research has focused on negative drinking consequences for decades, the role that positive drinking consequences play in drinking behavior has been examined only recently (e.g., Corbin, Meghan, & Benedict, 2008; Morean & Cooney, 2015). Based on the theory of operant conditioning (Skinner, 1953), the disproportionate experience of positive drinking consequences should prompt continued/escalating alcohol use while the experience of negative consequences should temper use. However, the relationship between positive and negative drinking consequences appears to be more complex, as research on college-aged individuals (Corbin et al., 2008) and on veterans seeking treatment for alcohol use disorder (Morean & Cooney, 2015) indicates that experiencing more positive drinking consequences is associated with heavier drinking and experiencing more alcohol-related problems.

While expectancies and subjective response have been established as interrelated determinants of drinking, the most widely used

measures of expectancies and subjective response have not undergone sufficient psychometric evaluation to be considered reliable and valid assessment tools for use with adolescents. Of note, no measure of positive drinking consequences has undergone psychometric evaluation for use with youth. Thus, the current study presents psychometric evaluations of three recently developed measures of expectancies (i.e., the Anticipated Effects of Alcohol Scale; Morean et al., 2012), subjective response (i.e., the Subjective Effects of Alcohol Scale; Morean et al., 2013), and positive drinking consequences (i.e., the Positive Drinking Consequences Questionnaire; Corbin et al., 2008) to determine whether these measures can be used to assess expectancies, subjective response, and positive drinking consequences in youth with a sufficient level of statistical confidence.

We chose to evaluate the psychometrics of the AEAS, SEAS, and PDCQ for several reasons. First, these measures arguably have undergone the most stringent psychometric evaluation of any measures of expectancies, subjective response, and positive drinking consequences in samples of young adults. Second, the AEAS and the SEAS have a number of strengths that may improve our understanding of these constructs in adolescents. The AEAS assesses a comprehensive range of alcohol effects that vary in terms of valence (i.e., negative to positive) and arousal (i.e., sedative to stimulant), specifies the number of drinks that a participant should imagine drinking, and specifies the duration of the hypothetical drinking episode. The AEAS also assesses expectancies that correspond to rising and falling blood alcohol levels, respectively. Similar to the AEAS, the SEAS assesses a comprehensive range of alcohol effects and was developed concurrently with the AEAS to permit direct comparisons of expectancies and subjective response across the ascending and descending limbs of the blood alcohol curve. To date, the SEAS only has been validated for use with adults participating in alcohol administration studies. Given that it is illegal and unethical to serve alcohol to underage individuals, validation of retrospective versions of the SEAS that could be used to assess adolescents' subjective response at drinking onset (i.e., the first ever drinking experience; SEAS First) and during a recent drinking episode (i.e., SEAS Recent) would make a meaningful contribution to the literature. The most commonly used extant retrospective measure of subjective response to alcohol (The Self-Rating of the Effects of Alcohol Form; Schuckit et al., 1997) assesses the experience of four alcohol-related outcomes (i.e., feeling intoxicated, slurring speech, stumbling, and unwanted falling asleep [i.e., passing out]), most of which occur only at relatively large doses of alcohol and are likely to be experienced as negative. Thus, validation of the SEAS for use with adolescents would permit a richer understanding of early subjective response and its relation to alcohol outcomes given that it uniquely assesses positive, negative, stimulant, and sedative effects.

In light of the demonstrated psychometrics of the AEAS, SEAS, and PDCQ for use with adults, we anticipated that these measures would be psychometrically sound for use with adolescents. Specifically, we anticipated that 1) the latent factor structure of each measure would be replicated in the adolescent sample, 2) each measure would be internally consistent, 3) the measures would be inter-correlated at magnitudes which suggest that the constructs are related, yet distinct, and 4) the measures would evidence test-criterion relationships with alcohol use outcomes (i.e., total drinks consumed in the past month, maximum drinks consumed on a single occasion, and alcohol-related problems).

## 2. Materials and method

### 2.1. Participants

Connecticut high school students ( $N = 248$ ) completed a brief survey assessing alcohol use behavior (53.6% male; 16.50 [1.19] years; 17.5% 9th grade, 19.5% 10th grade, 38.2% 11th grade, 24.8% 12th grade; 71.4% Caucasian; maximum number of drinks consumed on one occasion 9.40 [6.62]; 78.2% lifetime binge drinkers).

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