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The Student Alcoholism Screening Test (SAST): Proposal and Exploration

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Abstract
Problematic alcohol use among undergraduate university and college students is of international concern. Currently, there is no screening test specifically designed to indentify problematic alcohol use among undergraduate student populations. The proposed Student Alcoholism Screening Test (SAST) consists of 22 vignettes, each corresponding to an item on the Michigan Alcoholism Screening Test (MAST). SAST items specifically depict university student drinking behaviour (e.g., celebrating after examinations). In completing the SAST, students classify each vignette as reflecting either *alcohol use* or *alcohol abuse*. Choosing *alcohol use* indicates that the student is normalizing problematic alcohol consumption; choosing *alcohol abuse* indicates that the student recognizes the aversive nature of the drinking behaviour. Items classified as *alcohol use* receive a score of one while items classified as *alcohol abuse* receive a score of zero. The higher the SAST score, the more the student normalizes his/her drinking behaviour and, by inference, the more likely the student is to engage in problematic alcohol consumption. Three hundred seventy-one introductory psychology students, attending a Canadian university completed the MAST and the SAST via a controlled website. The vignette approach of the SAST may constitute an initial step toward a valid screening test for problematic alcohol use among university students.

Key Words
Michigan Alcoholism Screening Test, MAST, Student Alcoholism Screening Test, SAST, alcohol abuse, alcohol dependence, alcoholism, university students, college students

Problematic alcohol use among undergraduate university and college students is of international concern (Derby & Smith, 2008; Mota, Alvarez-Gil, Corral, et al., 2010). University students drink more frequently and more hazardously than their non-student peers (Balodis, Potenza & Olmstead, 2009; Kypri, Cronin, & Wright, 2005; Slutske, 2005). In the USA 1,825 college students between the ages of 18 and 24 die from alcohol-related unintentional injuries, including motor vehicle accidents, 696,000 students are assaulted by another student who has been drinking and 97,000 students are victims of alcohol-related sexual assault or date rape (Hingson, Edwards, Heeren, & Rosenbloom, 2009). There is an inverse relationship between the amount of alcohol consumed by students and their grades in university and college (Miley & Frank, 2006; Wechsler & Nelson, 2008). The second-hand effects of undergraduate student drinking are common among non-drinking students and extend into surrounding neighbourhoods (Langley, Kypri, & Stephenson, 2003; Wechsler, Lee, Hall et al., 2002). Alcohol abuse and dependency greatly diminish students' emotional, psychological and social well-being and have an abundance of negative life-altering consequences (Karam, Kypri, & Salamoun, 2007).

The student tendency to drink large amounts per occasion increases the likelihood of experiencing acute harm such as being physically or sexually assaulted (Cousins, Connor, & Kypri, 2010; Slutske, Hunt-Carter, Nabors-Oberg, et al., 2004). A recent study showed that 37% of undergraduates in New Zealand binge drank at least once in the past week (Kypri, Paschall, Langley, Baxter, Cashell-Smith, & Bourdeau, 2009). Recently, the Australian government earmarked $53 million to combat youth binge drinking which is reportedly at *epidemic levels*

(Australian Broadcasting Corporation, 2008). Compared to moderate drinkers, binge drinkers are four times more likely to fall behind in school work, five times more likely to have sex without protection and ten times more likely to damage property (Gose, 2000). Derby and Smith (2008) suggested that the immediate consequences of binge drinking include premature death, suicide, increased risk of sexually transmitted disease, increased antisocial behaviours and school related difficulties.

Alcohol Abuse and Dependence

Historically, alcoholism was identified as an all-or-none condition; a person was either an alcoholic or a non-alcoholic (Mayer, 1983). More recently, the psychological and medical diagnoses of alcohol problems are completed using either a dimensional or categorical model. The World Health Organization (2007) proposed a two dimensional model of alcoholism, -- Alcohol Related Disabilities and Alcohol Dependence Syndrome. Alternatively, the Diagnostic and Statistical Manual of Mental Disorders (DSM) proposed a dichotomous categorical model of alcoholism where an individual is classified as having either alcohol abuse or alcohol dependence (American Psychiatric Association, 2000). According to the DSM, *alcohol abuse* is characterized by role impairment, hazardous use and legal/interpersonal problems and *alcohol dependence* is characterized by withdrawal symptoms, tolerance, unsuccessful attempts to reduce consumption and impaired social and employment activities (Hasin, Stinson, Kogburn, & Grant, 2007).

Currently, diagnoses of alcohol abuse or dependence occur in the absence of the other (Helzer, Brink, & Guth, 2006). Alcohol abuse is normally viewed as a milder form or a precursor to the more severe alcohol dependence. However, alcohol abuse does not necessarily develop into dependence and individuals who show prior signs of dependence do not necessarily manifest abuse symptoms (Hasin, 2007). Additionally, some alcohol abuse criteria may indicate dependence (e.g. failure to fulfil obligations due to alcohol intake) while some dependence criteria may represent relatively minor severity (e.g. drinking more and longer than intended; Hasin et al., 2007). Consequently, symptoms of problematic alcohol use should not be modelled as a single latent variable expressed on a continuum of severity (Kahler & Strong, 2006).

Screening for Alcohol Abuse and Dependence

Due to the high prevalence of alcohol use and abuse, it is likely that university-based professionals will encounter students with alcohol-related problems. Accurate identification requires a valid and reliable screening instrument. Screening tools are advantageous in that they are quick to administer, have simple scoring procedures and are easily interpreted (Myerholtz & Rosenberg, 1997). The aim of screening is to detect every possible case and also to avoid false-positives which may result in inappropriate identiication and treatment (Bruel, Aertgeerts, Hoppenbrouwers, Roelants, & Buntinx, 2004).

Presented in Appendix A, the Michigan Alcoholism Screening Test (MAST; Selzer, 1971) is widely used in screening for alcohol abuse and dependence. The measure is a 22-item questionnaire designed to provide a rapid and effective screening for lifetime alcohol-related problems using a yes/no response format. MAST items include drinking habits and the medical, occupational and social consequences of drinking behaviour (Myerholtz & Rosenberg, 1997). The test can be administered by professionals as well as non-professionals and self-administered online. The MAST has been used in many settings and with varied populations and can usually be completed in approximately 10 minutes. Scoring is straightforward with every response related to problematic alcohol consumption receiving a score of one. Total scores of 0 - 2 indicate no apparent drinking problem; scores of 3 - 5 indicate a moderate drinking problem; and a score of 6 or greater indicates a serious drinking problem (i.e., showing symptoms of alcohol dependency).

Myerholtz and Rosenberg (1997) reported that college students were able to manipulate their MAST responses to *fake good* and thus mask their alcohol problems. Laux, Newman, Isadore, Brown and Russ (2004) suggested that "the MAST does not meet the needs of those interested in administering a comprehensive substance abuse screening instrument that is sensitive to the impact of dissimulation or denial" (p. 42). Since education may be linked to the awareness of and ability to deny the symptoms of alcohol dependence, the MAST may be inappropriate for use with university and college students. According to Bruel and colleagues (2004), the MAST is particularly useful in detecting advanced problems with alcohol use "but this may limit its usefulness within a college population" (p. 444). Nystrom, Perasalo and
Salaspuro (1993) reported that the MAST was only appropriate for detection of extreme alcohol problems in college student. Further, given that most undergraduate university students are young, some MAST items appear to lack face validity (e.g., Have you ever been told you have liver trouble such as cirrhosis). Due to both context-specific and typically short-term alcohol use, the MAST may be inappropriate as an alcoholism screening measure for university and college students. A student alcoholism screening test is required.

Research Issue: Screening for Alcohol Abuse in University Student Populations

Presented in Appendix B, the proposed Student Alcoholism Screening Test (SAST) consists of 22 vignettes, each corresponding to an item on the MAST. SAST items specifically depict university and college student drinking behaviour (e.g., celebrating after examinations). In completing the SAST, students classify each vignette as reflecting either *alcohol use* or *alcohol abuse*. Choosing *alcohol use* indicates that the student is normalizing problematic alcohol consumption; choosing *alcohol abuse* indicates that the student recognizes the aversive nature of the drinking behaviour. Items classified as *alcohol use* receive a score of one while items classified as *alcohol abuse* receive a score of zero. The higher the SAST score, the more the student normalizes his/her drinking behaviour and, by inference, the more likely the student is to engage in

problematic alcohol consumption. Since completing the SAST focuses on hypothetical drinking behaviour rather than on self-description of alcohol use, *faking good* may be minimized; the student is interpreting the behaviour of others rather than rating his/her own behaviour. If valid, MAST and SAST scores should correlate but not too strongly since the MAST over-estimates undergraduate university student problematic alcohol consumption. For example, Myerholtz and Rosenberg (1998) reported that when the MAST was given to a sample of undergraduate introductory psychology students, 52% were identified as alcoholics. Compared to the MAST, the SAST should identify fewer university students as problem drinkers. The proportion of undergraduate university students identified by the SAST as having moderate or serious alcohol use problems should approximate the rate reported by other reliable sources.

Method

Three hundred seventy-one introductory psychology students, at least 18 years of age, attending a Canadian university participated in the study. To ensure confidentiality, anonymity and voluntary participation, students completed the 22-item MAST and the 22-item SAST via a controlled website managed by Sona Software. MAST scores could range from 0 to 22 with the lower the score, the less indication of alcohol abuse and dependence. SAST scores could range from 0 to 22 with the higher the score, the less indication of normalizing alcohol abuse and dependence and, by inference, the less indication of alcohol abuse and dependence. Data analysis was directed toward determining the psychometric properties of the SAST, particularly reliability and validity.

Results and Discussion

As expected, MAST and SAST scores were mildly correlated (r = .30, p < .01). As MAST problematic alcohol consumption scores increased, SAST normalizing problematic alcohol consumption scores tended to increase. This supports, in a preliminary sense, the validity of the SAST as a screening test for problematic alcohol use in undergraduate university and college populations. A mild correlation is expected. It seems unlikely that two instruments measuring the same construct would not have some degree of overlap. However, because the utility of the MAST for university students is in question, a strong correlation would suggest the CAST is reflecting the same lack of validity.

Table 1 presents the percentage of students selecting responses indicating alcohol abuse and dependence on the MAST items and selecting *alcohol use* (indicating normalizing alcohol abuse and dependence) on the SAST items. In some cases, the proportion of students selecting MAST responses indicating alcohol abuse and dependence was extremely high. For example, more than 60% of respondents indicated that they had awaken in the morning after drinking the night before and were unable to remember part of the previous evening. Almost one-quarter of

respondents indicated that they had gotten into physical fights when drinking. Correspondingly, the sample of participating undergraduate university students responded to SAST items, in some cases, by normalizing problematic drinking behaviour. For example, almost two-thirds of respondents did not consider four drinks while others had one or two as alcohol abuse (Item 1). Approximately one-third of participating students did not consider memory lapse associated with alcohol consumption to be alcohol abuse (Item 2). Close to half of respondents considered missing class due to alcohol consumption to be acceptable (item 5). Being arrested for drunk and disorderly behaviour (Item 22) was normalized by 41% of respondents.

According to MAST criteria and as summarized in Figure 1, the majority of participants (i.e., 67.1%) had *no apparent drinking problem* (scores 0 - 2). Approximately 22% of the sample of participating first-year university students was identified as having a *moderate problem drinking* (scores 3 - 5). Slightly more than 10% of respondents were characterized as *problem drinkers* (i.e., alcohol dependent, scores > 5).

Figure 1
Proportion of Students Classified as Problem Drinkers by the Michigan Alcoholism Screening Test (MAST)
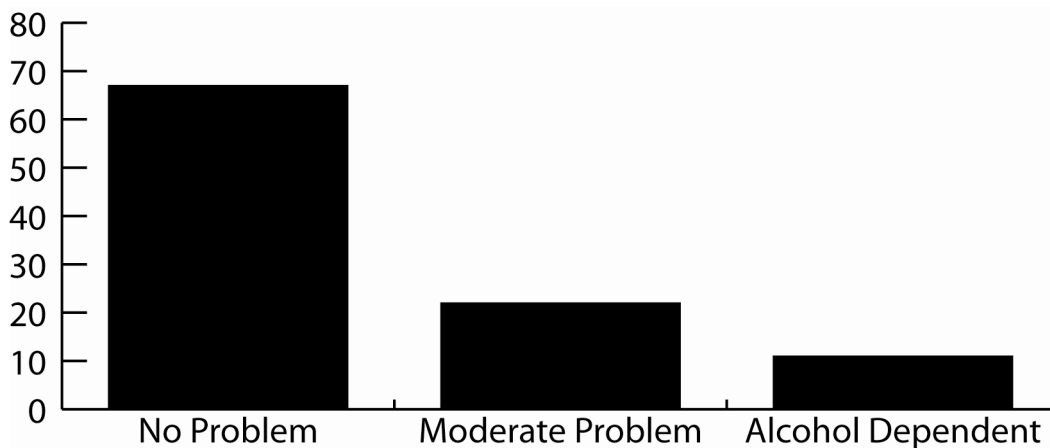

Table 1
Percentage of Students Responding to MAST and SAST Items indicating Alcohol Abuse and Dependence

Abbreviated MAST Item	MAST	SAST
1. Do you feel you are a normal drinker ...	18.8%	64.7%
2. Have you ever awakened the morning after some drinking ...	60.3%	32.8%
3. Does any near relative or close friend ever worry or complain ...	14.1%	18.1%
4. Can you stop drinking without difficulty after one or two ...	10.0%	23.9%
5. Do you ever feel guilty about your drinking?	22.7%	47.5%
6. Have you ever attended a meeting of Alcoholics Anonymous?	4.1%	20.6%
7. Have you ever gotten into physical fights when drinking?	22.7%	31.5%
8. Has drinking ever created problems between you and a near ...	26.4%	33.2%
9. Has any family member or close friend gone to anyone ...	4.1%	9.7%
10. Have you ever lost friends because of your drinking?	8.6%	13.9%
11. Have you ever gotten into trouble at work ...	8.7%	43.7%
12. Have you ever lost a job because of drinking?	1.8%	21.0%
13. Have you ever neglected your obligations, your family ...	6.4%	24.4%
14. Do you drink before noon fairly often?	2.7%	22.3%

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15. Have you ever been told you have liver trouble ...	1.4%	8.0%
16. After heavy drinking have you ever had delirium tremens ...	6.4%	11.3%
17. Have you ever gone to anyone for help about ...	3.2%	29.0%
18. Have you ever been hospitalized because of drinking?	4.6%	23.9%
19. Has your drinking ever resulted in your being hospitalized ...	1.8%	19.7%
20. Have you ever gone to any doctor, social worker, clergyman ...	5.0%	16.4%
21. Have you ever been arrested more than once for driving ...	1.8%	12.6%
22. Have you ever been arrested, even for a few hours ...	7.7%	41.2%

Note. See Appendices A and B for unabbreviated MAST and corresponding SAST items.

For the sample of participating first-year university students, the mean score on the SAST was 5.7 (Standard Deviation 4.4). That is, of the 22 vignettes depicting problematic alcohol consumption, students, on average, normalized six of the scenarios. Thus, in 16/22 cases, on average, problematic alcohol consumption was not normalized and was accurately described as *alcohol abuse*. University students, apparently, are more tolerant of problematic alcohol consumption than is the general population. Among participating students, nonetheless, considerable variable in SAST scores was apparent. As SAST scores increased, problematic alcohol consumption was normalized (i.e., conceptualized as *use* rather than *abuse*). Figure 2 provides the proportion of SAST scores to fall one or more standard deviations above the mean. From a psychometric perceptive and as is the case, for example, with intelligence testing (Kaplan & Saccuzzo, 2005), student less than one standard deviation above the mean (scores 0 - 9) were conceptualized as not normalizing problematic alcohol consumption and thus presenting no indication of alcohol abuse or dependency. The SAST identified 80.7% of the sample of participating university students as having no apparent problem with alcohol consumption. SAST scores that were between one and two standard deviations above the mean (10 - 14) were interpreted as indicative of a moderate problem with alcohol consumption. The SAST identified 16.4% of the sample as having a moderate problem with alcohol. Scores two and more standard deviations above the mean (15 - 22) were interpreted as indicative of a serious problem with alcohol consumption. The CAST identified 2.9% of the sample having a serious problem (i.e., alcohol dependent).

Given scare health and counselling university resources and the number of students in need of support, accurate diagnosis or true-positive prediction of problematic alcohol use is critical. Results of the current investigation suggest that the SAST may provide a valid indication of problematic alcohol consumption in undergraduate university and college student populations. As expected, MAST and SAST scores correlated suggesting the validity of both measures. According to the MAST, 22% of the sample of participating university students evidenced moderate drinking problems while 10% evidences alcohol dependence. According to the SAST, 16% of the sample of participating university students evidenced moderate drinking problems while 3% evidences alcohol dependence. Comby and Lange (2008) reported that approximately 6% of undergraduate university and college students qualify for a clinical diagnosis of alcohol dependence as defined by

the DSM. Johnsson, Leifman and Berglund (2008) reported that 16% of their undergraduate student sample was characterized by stable risky alcohol consumption during all four years of university, 13% showed an increasing pattern from initially low to high risk consumption and 11% had a decreasing pattern from initially high to low risk consumption. For the current sample of university students, the MAST identified twice as many alcohol dependent students as might be expected while SAST classification appeared more reasonable and consistent with recently reported prevalence rates of problematic alcohol consumption among undergraduate university students.

Figure 2
Proportion of Students Classified as Problem Drinkers by the Student Alcoholism Screening Test (SAST)
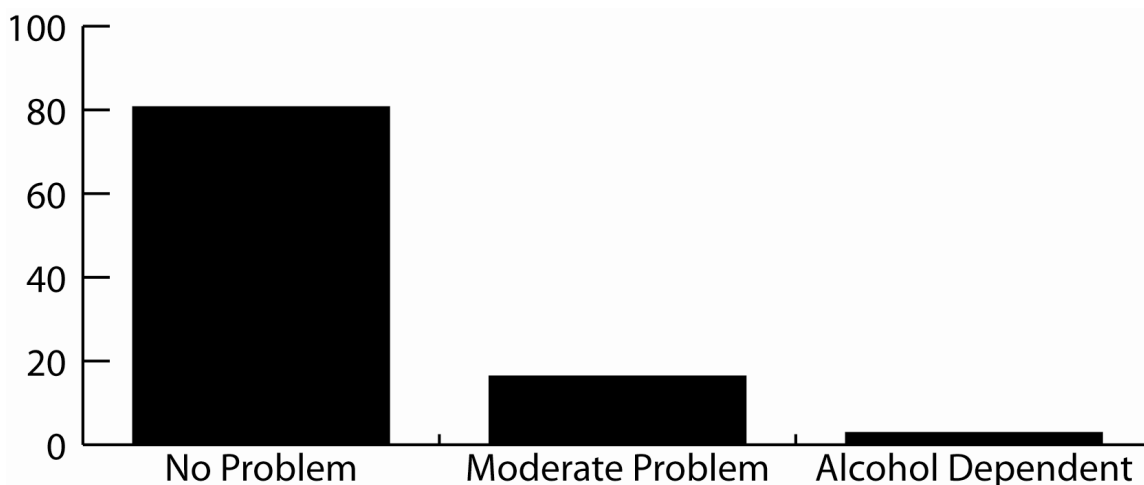
Implications for Practice

The SAST is based upon the assumption that undergraduate university and college students normalize problematic drinking and this may be the essence of the issue and an important target for intervention. Cimini, Martens, Larimer, Kilmer, Neighbors and Monserrat (2009) reported that decreases in perceived norms were associated with reductions in alcohol use and alcohol-related problems among undergraduate students referred for alcohol policy violations. Perhaps because university student problematic alcohol use is situational-specific, brief interventions delivered by primary care providers in a student health centre to high-risk-drinking students has resulted in significantly decreased alcohol consumption, high-risk drinking and alcohol-related harms (Schaus, Sole, McCoy, Mullett, & O'Brien, 2009). In a meta-analytic review of interventions to reduce problem drinking among college students, Carey, Scott-Sheldon, Carey and DeMartini (2007) concluded that "individual, face-to-face interventions using motivational interviewing and personalized normative feedback predict greater reductions in alcohol-related problems" (p. 2469).

SAST vignettes reflect the culture of undergraduate university students and, as such, may be appropriate for large scale screening of problematic alcohol consumption. First-year university and

college students commonly engage in orientation activities which might include optional completion of the SAST with corresponding explanation of scores (i.e., normalizing unhealthy alcohol-related behaviours) and direction, as may be appropriate, to campus-based intervention programs. Hallett, Maycock, Kypri, Howat and McManus (2009) tested the viability of a web-based intervention for university students with problematic drinking consumption. Key design elements include ease of access (e.g. via email), length (< 10 min), clear, non-judgmental language, personalized normative feedback and links to appropriate services. In a meta-analysis of the efficacy of computer-delivered interventions (CDIs) to reduce alcohol use among college students, Carey, Scott-Sheldon, Elliott, Bolles and Carey (2009) concluded CDIs reduce the quantity and frequency of drinking among college students and are generally equivalent to alternative alcohol-related comparison interventions. The SAST could be implemented in an online environment to detect problematic alcohol consumption among first-year university and college students. Students scoring one to two standard deviations above the mean (i.e., 10 - 14) could be digitally directed to supportive online interventions. Students scoring more than two standard deviations above the mean (i.e., 15 - 22) could be directed to more intense health centre supportive interventions.

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Appendix A: Michigan Alcohol Screening Test (MAST)

1. Do you feel you are a normal drinker? ("normal"- drink as much or less than most other people)
2. Have you ever awakened the morning after some drinking the night before and found that you could not remember a part of the evening?
3. Does any near relative or close friend ever worry or complain about your drinking?
4. Can you stop drinking without difficulty after one or two drinks?
5. Do you ever feel guilty about your drinking?
6. Have you ever attended a meeting of Alcoholics Anonymous (AA)?
7. Have you ever gotten into physical fights when drinking?
8. Has drinking ever created problems between you and a near relative or close friend?
9. Has any family member or close friend gone to anyone for help about your drinking?
10. Have you ever lost friends because of your drinking?
11. Have you ever gotten into trouble at work because of your drinking?
12. Have you ever lost a job because of drinking?
13. Have you ever neglected your obligations, your family, or your work for two or more days in a row because you were drinking?
14. Do you drink before noon fairly often?
15. Have you ever been told you have liver trouble such as cirrhosis?
16. After heavy drinking have you ever had delirium tremens (DTs), severe shaking, visual or auditory (hearing) hallucinations?
17. Have you ever gone to anyone for help about your drinking?
18. Have you ever been hospitalized because of drinking?
19. Has your drinking ever resulted in your being hospitalized in a psychiatric ward?
20. Have you ever gone to any doctor, social worker, clergyman or mental health clinic for help with any emotional problem in which drinking was part of the problem?
21. Have you ever been arrested more than once for driving under the influence of alcohol?
22. Have you ever been arrested, even for a few hours because of other behaviour while drinking?