

UNCOPE: Evaluation of a Brief Screen for Detecting Substance  
Dependence Among Juvenile Justice Populations

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### Abstract

School counselors need a quick and effective means for determining substance use risk levels among their student population. The current study investigates sensitivity and specificity of a six-item screen, the UNCOPE, with a sample of adjudicated adolescents. Analysis reveals that the UNCOPE screen possesses suitable sensitivity and specificity to make it acceptable for routine screening applications. While caution must be exercised in applying the UNCOPE to general school populations, the results show a promising potential for it to serve as a tool for school counselors. Further research should examine the sensitivity and specificity of the UNCOPE screen with diverse student populations.

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Prevalence of alcohol and other drug use and substance use disorders are sufficiently established in both high risk and general populations so that efficient screening tools and methods for detecting substance related conditions are essential. While all use does not necessarily translate into diagnosable disorders, use among adolescents poses unique potentials for harmful consequences due to developmental processes active during adolescence. Drug use is associated with a number of developmental problems in adolescence, including poor academic performance, sexual precocity, aggression and violence, gang involvement, and mental distress and disorder (Office of Juvenile Justice and Delinquency Prevention Bulletin, June 2004).

Among adolescents involved in the juvenile justice system as many as 60% have clear indications of substance dependence (Abrantes, Hoffmann, & Anton, 2005) Among general populations, the expected prevalence for alcohol and other drug abuse or dependence are considerably lower, but not insignificant. In the most recent Monitoring the Future study (Johnston, O'Malley, Bachman, & Schulenberg, 2005), 21% of eighth graders, 38% of tenth graders, and 50% of twelfth graders reported having tried an illicit drug in their lifetime. Dennis, Dawud-Noursi, Muck, & McDermeit estimated that 3 to 9% of adolescent drug use results in drug abuse, and that 5 to 8% of adolescent alcohol use results in alcohol abuse/dependency (as cited in Physician Leadership on National Drug Policy, 2002).

While some have cautioned about the application of adult diagnostic criteria to adolescents (Martin, Kaczynski, Maisto, Bukstein, & Moss, 1995), it is clear that some

adolescents develop clear dependence syndromes in accordance with current diagnostic criteria (APA, 2000; Abrantes, Hoffman, Anton, & Estroff, 2004; Hoffmann, Bride, MacMasters, Abrantes, & Estroff, 2004). However, practitioners working with adolescents should exercise caution in applying these criteria, taking into account the developmental role and context of adolescent substance abuse and remaining alert to the presence of co-existing problems (Bukstein, 1995). Simply relying on indicators such as moodiness, narcissism, and social and interpersonal problems as key indicators of potential substance abuse problems may confound substance abuse symptomatology with other issues occurring in the adolescent's life (Lambie & Rokutani, 2002).

Without adequate training in the Alcohol and Other Drugs (AOD) field, it may be difficult to differentiate between problematic and non-problematic use (Fisher & Harrison, 2005). Due to the fact that many adolescents are exposed to alcohol, and may use alcohol and/or other drugs on occasion, assessment must go beyond just quantity and frequency information to include exploration of levels of associated consequences, dysfunction, and/or distress.

While the nature of their work may uniquely position school counselors to do effective primary and secondary prevention work in the area of substance use and abuse, challenges for the school counselor exist. Fox, Forbing, and Anderson (as cited in McLaughlin & Vacha, 1993) indicate that schools may not have many of the resources and capabilities necessary for successful substance abuse prevention and school personnel may not be familiar with community-based prevention and treatment programs. Despite these limitations, McLaughlin and Vacha (1993) asserted that school

counselors are well situated to serve as a liaison between school, family, and community. School counselors have an obligation to work to address the issues with which the students in their care are encountering and/or struggling during their school years.

High-risk populations provide an opportunity to explore the ability of tools and methods that might prove helpful in the identification of substance use disorders and potentially harmful substance use. One six-item set of questions identified by the acronym UNCOPE has been found to identify individuals with substance use disorders in various adult high-risk populations with an overall accuracy of about 85% (Hoffmann, Hunt, Rhodes, & Riley, 2003; Campbell, Hoffmann, Hoffmann, & Gillaspay, 2005). The UNCOPE seems particularly useful in identifying dependence for alcohol and other drugs among corrections related populations, such as recent arrestees and state prison inmates. The present study explores whether the same screening tool will be effective in identifying adolescents with possible substance use disorders in the juvenile justice system. To the extent that the UNCOPE is able to detect adolescents with probable substance use disorders in this population, the next step would be to explore its utility in more general populations.

## Method

### *Procedures*

The PADDI (Practical Adolescent Dual Diagnostic Interview) is a structured interview designed to identify prevalent mental health conditions and substance use disorders in adolescent populations. It is part of the standard assessment of adjudicated juveniles residing in the two detention centers in Maine. Anonymous data from

consecutive admissions to the detention centers was extracted for determining the prevalence of an array of conditions.

The portion of the PADDI interview dealing with substance use disorders begins with the UNCOPE (see Figure 1), a six question screen, found to be effective in the identification of substance dependence in adult arrestees (Hoffmann, Hunt, Rhodes, & Riley, 2003) and state prison inmates (Campbell, Hoffmann, Hoffmann, & Gillaspay, 2005). The interview then collects information on ages of onset for intoxication, problems, and concern by others in addition to collecting information about behaviors and experiences consistent with the criteria for substance dependence and abuse in accordance with the Diagnostic and Statistical Manual of Mental Disorders IV-TR (American Psychiatric Association, 2000). This study explores the sensitivity and specificity of the UNCOPE items in identifying adolescents meeting criteria for substance dependence as opposed to those with no diagnosis or a diagnosis of abuse only. Sensitivity is the proportion of dependent individuals (true positives) correctly identified as being dependent (positives). Specificity is the proportion of nondependent individuals (true negatives) correctly identified as not being dependent (negatives). The rationale for investigating the sensitivity and specificity of the UNCOPE is that school counselors need a quick and efficient screen to determine risk levels for substance abuse. Such a screen should be capable of detecting the vast majority of adolescents with a substance use disorder without an excessive number of false positive indications. Such a screen is particularly helpful for school counselors who may not have the time or expertise for making more comprehensive assessments.

Figure 1

*UNCOPE Items*

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- U** – Have you ever spent more time drinking or **using** drugs than you intended?
- N** – Have you ever **neglected** some of your usual responsibilities because of using alcohol or drugs?
- C** – Have you ever wanted to **cut down** on your drinking or drug use?
- O** – Has anyone ever **objected** to your drinking or drug use?
- P** – Have you ever been **preoccupied** with drinking or using drugs? That is, have you ever found yourself thinking a lot about drinking or using?
- E** – Have you ever used alcohol or drugs to relieve **emotional discomfort**, such as sadness, anger, or boredom?
- 

*Sample*

PADDI data from 479 adolescents (420 males and 59 females) in the juvenile detention centers were available for analysis. The average age of the sample was 16.4 (S.D. = 1.04), ranging from 13 to 18 years. Approximately 65% of the adolescents were between the ages of 16 and 17. The vast majority of the adolescents were Caucasian (88%) with Native Americans (4%) constituting the only minority ethnic group with more than 10 adolescents. The remainder of the sample consisted of adolescents from varied ethnic and multi-ethnic groups.

Official records on specific offenses are not available on these juveniles due to the anonymous nature of the PADDI data. However, since these are consecutive admissions, they are likely to reflect the nature of the population. Incarcerations result from violations of probation to conviction for violent crimes including murder.

### *Analysis*

Scoring algorithms, using SPSS (Statistical Package for the Social Sciences), were employed for making a classification for generic substance abuse and dependence. That is, the classification for abuse or dependence did not specify a specific substance, but rather the maximum classification for any substance or combination of substances. Adolescents commonly use multiple substances confounding the ability to stipulate which problems are related to which specific substance(s). One set of algorithms included the two items from the UNCOPE that addressed dependence criteria and the two that pertain to two abuse criteria. The other algorithms excluded those items from the diagnostic indications. Excluding the four items affected the dependence diagnosis for only eight cases (2.5% of the dependent cases) in the sample. Unless otherwise noted, the diagnostic indications used exclude the use of UNCOPE items in the determination of the diagnostic classification.

Cross tabulations were utilized to consider simple rules for identifying youths at risk for substance dependence and in evaluating the relative sensitivity and specificity given specific cut-scores defined as having a specific number of positive responses to the screen. Multivariate analyses with differential weighting of the items and ROC (Receiver Operator Curve) analyses were also explored to consider the accuracy of the UNCOPE items in adolescent substance abuse and dependence detection.



## Results

When the UNCOPE items are ignored in the determination of the substance use disorder diagnosis, 61.8% of the incarcerated adolescents met DSM-IV-TR diagnostic criteria (APA, 2000) for current substance dependence; 19.4% met criteria for substance abuse; and 18.8% had no current diagnosable substance use disorder. If the UNCOPE items are included in determining the diagnosis, the dependence prevalence increases to 63.2% and the prevalence of abuse drops to 17.9%. The differences in diagnostic classification are due to seven cases that move from dependence to abuse when the UNCOPE items are ignored. No other diagnostic changes were seen. In short, elimination of the UNCOPE items from the classification algorithm has a minimal impact on prevalence estimates.

The questions in the UNCOPE are face valid in that they address the types of behaviors involved in substance abuse and dependence. Sweet and Saules (2003), in an investigation of the validity of the Substance Abuse Subtle Screening Inventory – Adolescent version (SASSI-A), found that the face valid scales had moderate utility for identifying substance dependence and the subtle scales did not. The common addiction screens (e.g., CAGE, AUDIT, DAST) all use face valid items. As indicated, the issue with a screen is whether it is effective in determining risk level (and concurrently eliminating a potential contributing problem from consideration when a problem is present). The issue is which screen works best with which population. The UNCOPE has been shown to be effective with adults. This article argues that the UNCOPE is an effective screen for use with adolescents.

Table 1

*Sensitivity and Specificity of the UNCOPE*

Cut-Score	Females N = 59		Males N = 420		Total N = 479	
	Sensitivity	Specificity	Sensitivity	Specificity	Sensitivity	Specificity
0-1 vs. 2-6	100% (44/44)	73% (11/15)	97% (255/264)	70% (110/156)	97% (299/963)	71% (121/174)
0-2 vs. 3-6	96% (42/44)	80% (12/15)	88% (234/264)	88% (137/156)	90% (276/963)	87% (149/174)
0-3 vs. 4-6	89% (39/44)	93% (14/15)	75% (199/264)	95% (148/156)	77% (238/963)	95% (162/174)
0-4 vs. 5-6	70% (31/44)	100% (15/15)	60% (157/264)	99% (154/156)	61% (188/963)	99% (169/174)

Table 1 presents the results from the various cut-scores for the UNCOPE as seen for males and females in the juvenile justice detention centers. Overall, the cut-score using three or more positive responses as indicating risk and two or fewer indicating low risk produces the most balanced results for sensitivity and specificity. For the total sample, 90% of those classified as at risk are found to be positive for substance dependence and 87% of those below the threshold for risk are correctly identified as not having a current or past diagnosis of substance dependence.

If one lowers the cut-score threshold, almost all cases classified as dependent are detected, but an increasing proportion of false-positives (negative cases are incorrectly identified as being at risk) are encountered. If one raises the cut-score threshold for risk, fewer false positives are noted as specificity increases, but the cost of this decision is to lower sensitivity (the ability to detect positive cases). In other words,

there are more false-negatives as the threshold is raised and more false-positives as the threshold is lowered.

There appear to be some gender differences in the accuracy in using the various thresholds of the UNCOPE, in that the screens seems to have greater sensitivity in identifying females. This may be related to the greater level of severity of dependence observed among females in the juvenile justice system (Abrantes, Hoffmann, & Anton, 2005). However, caution must be exercised in interpreting the findings for the females due to the relatively small number of cases.

Figure 2

*Receiver Operator Curve Analysis*

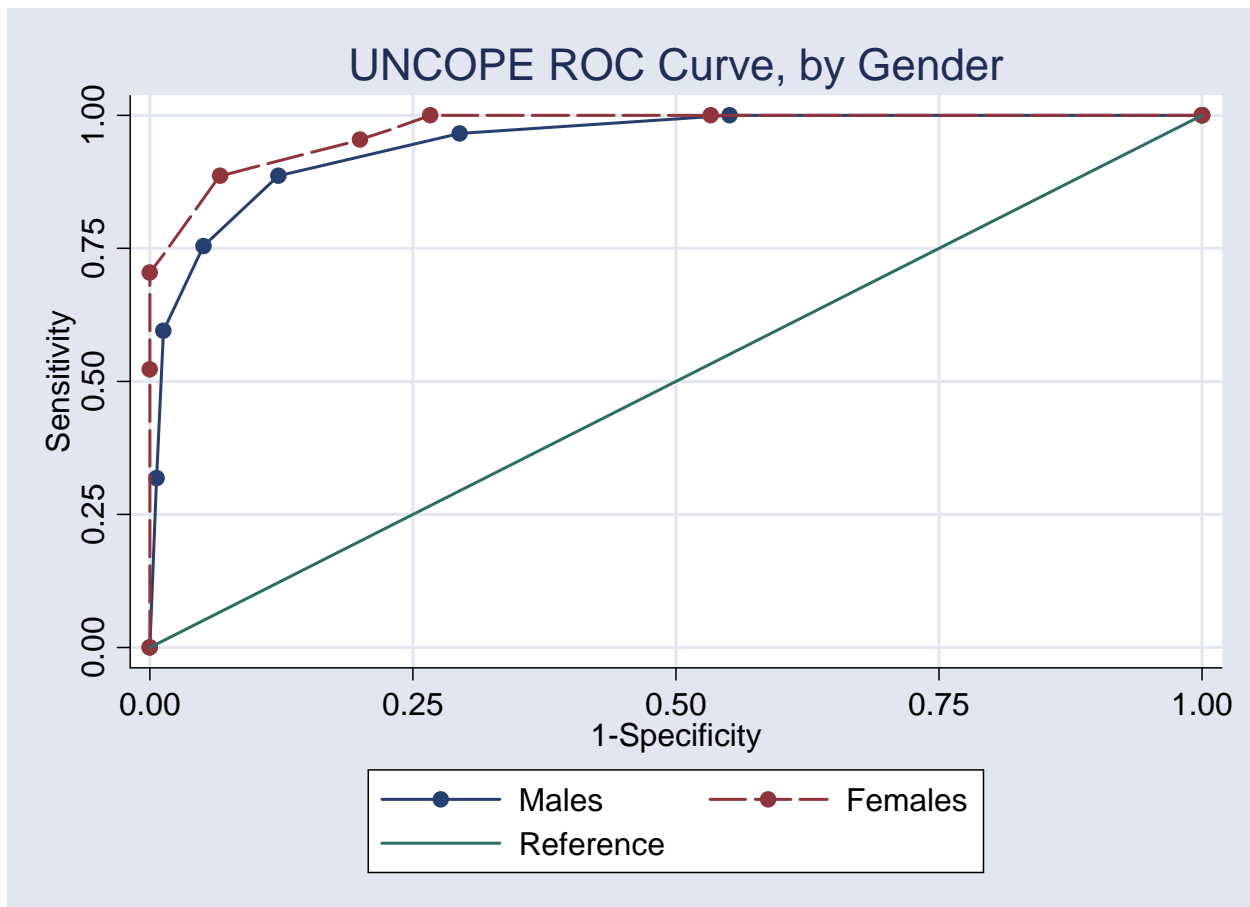


Figure 2 presents the findings of the Receiver Operator Curve (ROC) analysis. ROC curves can be used to describe the accuracy of a diagnostic test by displaying graphically the diagnostic's trade-off between sensitivity and specificity. In Figure 2, the y-axis represents the proportion of positive cases classified correctly (the sensitivity of the diagnostic), and the x-axis represents the proportion of negative cases classified correctly (the specificity of the diagnostic). A diagnostic with no predictive value or completely random assignment produces the 45 degree ROC reference curve in the Figure.

The area under each of the Male and Female ROC curves represents the proportion of positive cases correctly identified by the UNCOPE items. A perfectly performing instrument would produce an area under the curve of 1.0. For these juvenile justice populations, areas under the ROC curves for the UNCOPE equal 0.95 for males and 0.97 for females. A Chi-squared statistic testing of the equivalence of the two areas cannot reject the null hypothesis that the UNCOPE items predict equally well for the male and female juvenile justice populations.

Logistic regressions tested the predictive power of the UNCOPE items when combined with demographic characteristics (results not shown). In these regressions, demographics contributed little to the predictive value of the UNCOPE, with neither gender nor age proving significant at either the  $p=0.05$  or  $p=0.10$  confidence levels.

### Discussion

The accuracy of the six-item screen in terms of its sensitivity and specificity using simple cut-scores to identify level of risk seems adequate for screening applications among high risk populations. Complex scoring or use of multivariate methods does not

appear necessary. This would seem to make the UNCOPE acceptable for routine screening applications. For a simple dichotomous determination of high or low risk for dependence, or serious problems, three or more positive responses would appear to provide the best balance between sensitivity and specificity. A more detailed determination of risk could be considered as follows. Those with four or more positive responses can be considered at very high risk, since this cut-score has an overall false-positive rate for dependence of only 5%. Those with fewer than 2 positive responses can be considered at low risk, and those with scores in the two to three range would be considered at moderate risk.

Substance abuse frequently begins during the school-age years. Adolescents in the high school age range can develop dependence syndromes suggesting serious and persistent problems. Schools increasingly are called upon to provide primary and secondary alcohol and drug prevention programming (Coll, 1995). Palmer and Paisley (1991) stressed the need for individuals in schools to be “proactive in identifying and providing assistance to students with substance abuse problems,” through structured school-based programs involving early identification of problem behaviors, counselor assessment, and appropriate referral and follow-up (¶3). The value of an accurate screen lies not only in its ability to identify risk levels but also in its ability to help rule out issues from consideration when a problem is present. The results of this study show promise for the utility of the UNCOPE screen in assisting school counselors in the early identification of students developing serious substance abuse disorders. It is recognized that many school counselors may not possess the requisite skills, knowledge base, or training necessary to engage in extensive diagnostic assessment of substance use

disorders. But school counselors do need an effective means for differentiating problematic behaviors from non-problematic behaviors and do possess the necessary knowledge and skills to administer a basic screen to assist in decision-making.

Faced with large caseloads, and responsibilities for comprehensive work addressing academic, career, personal, and social development in the school setting, school counselors need quick and effective means for determining risk levels among their student populations. Utilizing the cutoff scores identified in this study, school counselors potentially may be able to make determinations as to which students may be considered low or elevated risk regarding substance use disorders, and make appropriate referrals to community resources for those students at greatest risk. Further, school counselors may potentially be able to identify students at moderate risk who might benefit from prevention programs.

The use of the terms possibly and potentially is representative of limitations associated with this study. The sample for this study consisted of adolescents in the juvenile justice system in Maine. The participants in this study may not be representative of adolescents entering juvenile justice systems in other states. More importantly, the participants in this study came from a high-risk population with higher incidences of substance dependence than would be expected in adolescents in school settings. Further, there were few minority students included in the sample. Thus, comparisons between these two populations must be tentative. Therefore, caution must be exercised in applying the UNCOPE to general school populations.

However, despite these limitations, the results of this study show promising potential for the utility of the UNCOPE in being an effective tool to assist school

counselors in their work. The sensitivity and specificity levels indicate the potential of this six-item screen in effectively differentiating risk levels for substance dependence. Further research should examine the sensitivity and specificity of the UNCOPE screen with student populations. A more diverse population with a broader ethnic mix and a larger sample of females will afford an opportunity for a more thorough examination of the screen's sensitivity and specificity in relation to gender and ethnicity.

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