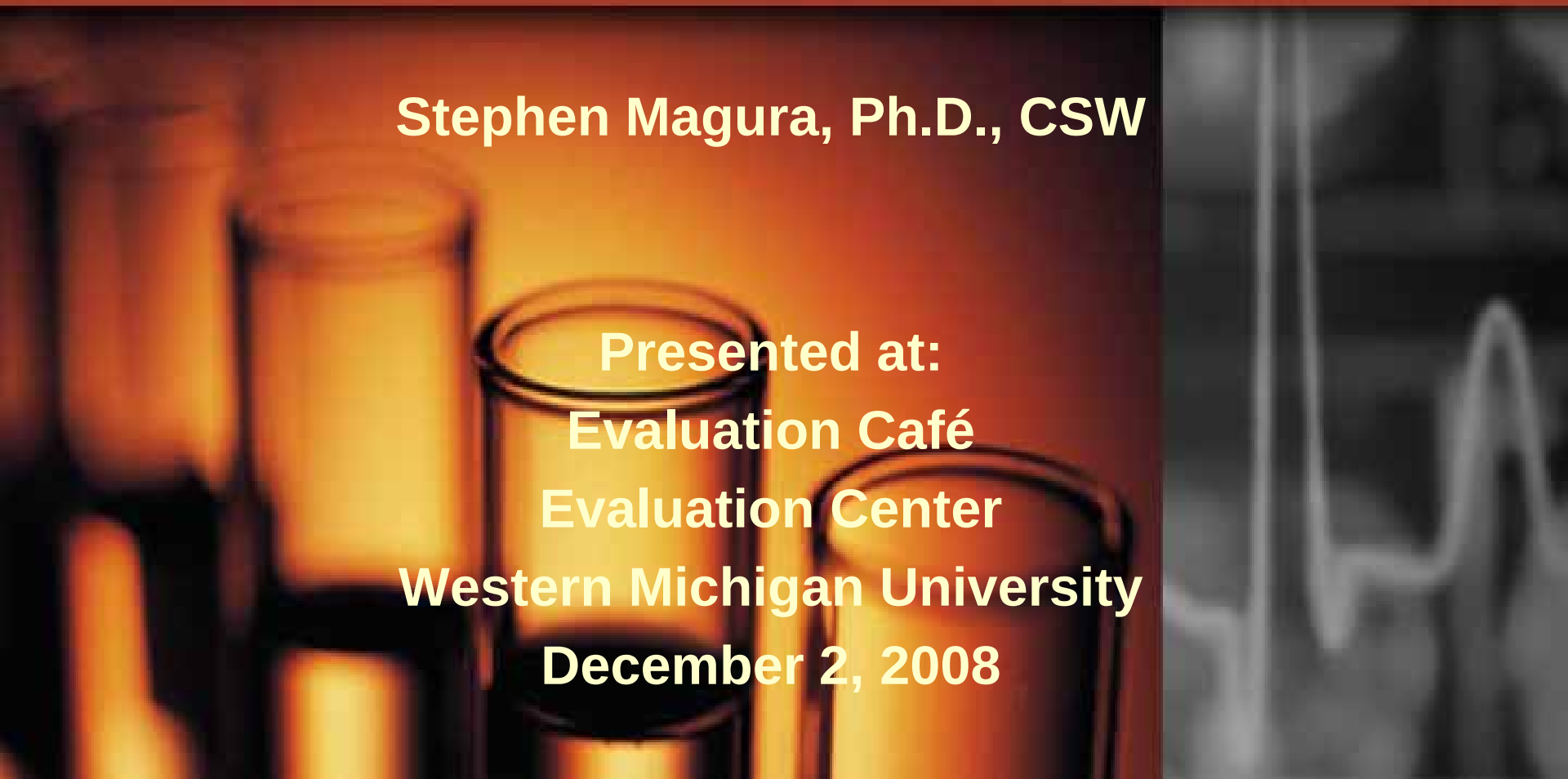
Validating Self-Reports of Illegal Drug Use to Evaluate National Drug Control Policy: Taking the Data for a Spin



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Purpose of this Study

- Illicit drug use remains at high levels in the U.S. The federal Office of National Drug Control Policy evaluates the outcomes of national drug demand reduction policies by attempting to assess changes in the levels of drug use, including measures of change from several federally-sponsored annual national surveys.
- These survey methods, relying exclusively on self-reported drug use (interviews or paper-and-paper), have been criticized by the Congressional General Accountability Office (GAO) as well as by independent experts.
- This paper critiques a major validity study of self-reported illicit drug use commissioned by the federal government (Harrison et al., 2007), showing that the favorable conclusions and summaries offered for public consumption are highly misleading.

Background

Self-reported substance use has been the predominant method of measuring individual and societal changes in substance use for outcome evaluations of programs and policies, both local and national.

The major national repeated surveys are the National Survey of Drug Use and Health (NSDUH), the Youth Risk Behavior Survey (YRBS), and Monitoring the Future (MTF) Survey.

The use made of these surveys is illustrated by this table from the Office of National Drug Control Policy as purported evidence of progress in the War on Drugs, particularly among adolescents and young adults.

	2001	2007	Change as a % of 2001
Any Illicit Drug	**19.4%**	**14.8%**	**-24***
Marijuana	16.6%	12.4%	-25*
MDMA (Ectasy)	2.4%	1.1%	-54*
LSD	1.5%	0.6%	-60*
Amphetamines	4.7%	3.2%	-32*
Inhalants	2.8%	2.6%	-7
Methampetamine	1.4%	0.5%	-64*
Steroids	0.9%	0.6%	-33*
Cocaine	1.5%	1.4%	-7
Heroin	0.4%	0.4%	0
Alcohol	35.5%	30.1%	-15*
Cigarettes	20.2%	13.6%	-33*

* Denotes statistically significant change from 2001.

Note: Past month use, 8th, 10th, and 12th grades combined; percent change calculated from figures having more precision than shown.

Source: *2007 Monitoring the Future* (MTF) study, special tabulations for combined 8th, 10th, and 12th graders (December 2007).

Background (Continued)

However, a large body of empirical evidence indicates that illicit drug use is substantially under-reported in many contexts (e.g., Magura and Kang, 1996; Fendrich et al., 1999).

Further, changes in the stigma associated with illicit drug use, partly due to national campaigns demonizing drug use, can alter willingness to report drug use over time (GAO, 2006).

To respond to criticism of surveys of drug use, the federal govt. commissioned a validity study as part of the National Survey of Drug Use and Health (NSDUH) in 2000-2001. The validity study was limited to the 12-25 year old age group (Harrison et al., 2007).

The method was to compare the results of urine and hair tests with self-reported drug use. Tests were conducted for five drugs or drug classes: tobacco, marijuana, cocaine, opiates (includes heroin), and amphetamines.

Only urinalysis and illegal drug use will be examined.

The Spin

The federal Substance Abuse and Mental Health Services Administration "highlights" the results of the validity study on a web page as follows:

- "For marijuana, there was 89.8% agreement between self-report in the past 30 days and urine test results. About 4.4% reported no use and tested positive and 5.8% reported use…and did not test positive."
- "Comparison of 7 day self-reports for cocaine use with urine test results showed 98.5% agreement (98.2%reported no use and tested negative and 0.3% reported use and tested positive)."
- "This validity study concluded that biological drug tests can be used as objective markers of drug use to verify self-reports among youth and young adults…"

Join Together, a prominent organization that disseminates news about the substance abuse field through a well-accessed web site, reported this partly as follows:

Headline: “Study Shows Self-Reports of Drug Use Mostly Accurate”

- “For marijuana, the agreement rate [between self-report and urine tests] was 89.8%”
- “Urine tests and self-reports of cocaine use in the past seven days were in agreement 98.5% of the time.”
- “’This validity study concluded that biological drug tests can be used as objective markers of drug use to verify self-reports among youth and young adults,’ the researchers noted. ”

(Downloaded 11/13/07)

NOW FOR THE DATA

Please Note:

The following tables are reproduced as they appear in the report. The percentages seem accurate –they are referenced repeatedly in the text - but many of the N's in the marginals are slightly inconsistent with those percentages.

Marijuana Use

		Urine Test		
		Negative	Positive	
30-Day Self-Report	No	82.9%	4.4%	(3,285)
	Yes	5.8%	6.9%	(475)
		(3,342)	(418)	(3,760)

Marijuana Use

		Urine Test	
		Negative	Positive
Past 30-Day Self-Report	No	3,117 (93%)	165 (39%)
	Yes	218 (7%)	259 (61%)
		(100%)	(100%)

Backcalculation $\frac{39}{61} = \frac{?}{218}$? = 139 = 3.7% of sample

The urine tests (1) fail to detect everyone who last used more than 3 days ago and (2) sometimes cannot detect all specific drugs within a general class, which is why there are some respondents who test negative, but report use.

Based on these results, the report estimates the prevalence of past 30 day marijuana use as: 4.4% plus 6.9% plus 5.8% = 17.1%, instead of the 12.7% by self-report alone, stating that the prevalence "could have been as high as 17.1%," implying this is a maximum estimate.

Actually this conclusion is not justified, because it assumes that there are no users among the individuals who test negative and deny use.

There is a group of 3,342 individuals who test negative for marijuana. Among these may be two subgroups: (1) individuals who have used marijuana within the past 30 days and (2) those who have not.

We can do a backcalculation to impute how many individuals in the negative test group used marijuana in the past 30 days, but denied it.

According to the table, 61% of 418 individuals **known to be marijuana users** by testing admit use and 39% deny use.

Assume that users in the negative test group deny use at the same rate as users in the positive test group. (Note that respondents do not know their test result when reporting.)

Thus, if 218 individuals admit use in the negative test group, we estimate that there are 139 additional users in the negative test group who deny use.

39/61 = ?/218 ? = 139 = 3.7% of total sample

The imputed 139 additional users constitute 3.7% of the total sample.

Thus, we estimate the prevalence of past 30 day marijuana use as: 4.4% plus 6.9% plus 5.8% plus 3.7% = 20.8%, instead of the 17.1% estimate in the report.

Cocaine Use

		Urine Test		
		Negative	Positive	
30-Day Self-Report	No	97.9%	1.1%	(3,781)
	Yes	0.6%	0.3%	(43)
		(3,709)	(52)	(3,761)

Opiate and Prescription Pain Reliever (PPR) Use

		Urine Test		
		Negative	Positive	
30-Day Self-Report	No	97.7%	0.8%	(3,739)
	Yes	1.5%	0.1%	(32)
		(3,721)	(50)	(3,771)

Stimulant (Amphetamine) Use

		Urine Test		
		Negative	Positive	
30-Day Self-Report	No	98.1%	0.9%	(3,720)
	Yes	0.9%	0.1%	(42)
		(3,720)	(42)	(3,762)

Prevalence Estimates of 30 day Drug Use, 12-25 year olds (in percent)

	Marijuana	Cocaine	Opiates	Stimulants
(1) SR alone	12.7	0.9	1.6	1.0
(2) Test alone	11.3	1.4	0.9	1.0
(3) SR plus test	17.1	2.0	2.4	1.9
(4) SR plus test plus imputation	20.8	4.2	14.4	10.0
(3) / (1)	1.35	2.22	1.50	1.90
(4) / (1)	1.64	4.67	9.00	10.00

Conclusion

Despite the biased manner in which the results have been highlighted and disseminated, the findings of the validity study are fully consistent with prior research showing that self-reports substantially underestimate drug use PREVALENCE and can dramatically affect indicators of change.

High “agreement rates” due to the fact that the great majority of respondents were not drug users and consequently tested negative, are irrelevant.

The conclusions within the study report and especially the subsequent “highlights” and “summaries” of the study failed to consider the implications of its results for estimating the PREVALENCE of illicit drug use among youth and young adults, which was the rationale for commissioning the study in the first place.

Thus, the present national surveys of illicit drug use seem inadequate for evaluating national drug demand reduction policies and programs.

Implications for Evaluation Field

The paper is pertinent to the larger issue of measuring stigmatized and/or illegal behaviors for policy or program evaluation purposes. When valid reports of such behaviors are problematic, better techniques must be developed to obtain accurate reports, or alternative measures of the behaviors must be considered or developed. In such cases an “evaluability assessment” of the practice, program or policy must take priority (Wholey, 2004).

References

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