METHODS OF VALIDATING SELF-REPORTS OF DRUG USE: A CRITICAL REVIEW

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One of the most difficult tasks facing social researchers is the accurate assessment of an individual's nonmedical drug use. The usual problems of recall and recognition are compounded by the possible consequences of revealing socially undesirable and, often, criminal behavior. Some researchers estimate that the actual rates of nonmedical experience with certain drugs or recent use of illicit substances by respondents may be double the figures reported [5]. The evidence available to assess this claim is neither complete nor conclusive [5,12,25]. The few methodological studies that have been conducted have usually focused on a particular segment of the population such as addicts in treatment, drug users with arrest records or in jail, students, or servicemen. Many researchers check self-reports against a single criterion, which may also have questionable validity. Despite such limitations reviewers of these studies have concluded that the overall validity self-reports are acceptable for many research purposes. However, the problem is not only to establish an adequate level of overall validity in the general population but to determine the differential validity of reports in special segments of the population, among different patterns and types of drug usage, and under certain interviewing or questioning situations.

The purpose of this paper is to classify possible methods of validation to facilitate more systematic examination of the validity of self-reports of nonmedical drug use. These methods can generally be grouped into three categories: the examination of internal validity, an assessment of construct validity, and a determination of empirical validity.

INTERNAL VALIDITY

Internal validity can be indicated by rates of response to individual drug questions, the consistency of responses within an instrument, consistency of reports over time, and evidence of the candidness of the respondent.

Response Rates

Most studies report generally low refusal rates on individual items. Only 2.5 percent of the items that asked directly about use in a national sample of male high school students were not answered [16], and 3 percent in a study of enlisted men in Vietnam [23]. On the other hand, one paper reported that one of every eight college student respondents failed to complete a direct question on drug use, and one in 20 did not answer a more indirect question [13]. In another high school study, nonresponse rates to items on specific drugs varied from 1 to 6 percent [25].

Concurrent Consistency

The available evidence indicates that the responses to similar drug items within the same questionnaire are consistent. The greatest inconsistency between responses for a variety of products was 4 percent for usage of an "ups" drug classification [15]. Another study reported that only 15 of over 8,000 college student questionnaires contained "flagrant inconsistencies" [14]. Less than 1 percent of respondents answered questions on marihuana use differently compared to 2 percent on questions of alcohol usage. In a final study, few inconsistent responses were given to questions on ever trying, most recent use of, and age at first use of marihuana [25].

Another check on response consistency is the comparison of individual and aggregate rates of reported use under different techniques of eliciting drug use information. A number of studies have been unable to demonstrate that settings or instructions emphasizing anonymity or confidentiality have an impact on rates of reported use [15,17,18]. However, there is some evidence that greater frequency of use and more recent use is reported with anonymous procedures [18]. The design of the drug questions themselves also appears to affect rates of reported use. A randomized response technique guaranteeing anonymity produced fewer response refusals and higher estimates of drug usage among college students compared to a traditional questionnaire [13]. Among Army personnel differential rates of drug usage were reported in an anonymous questionnaire and in a randomized response technique as a function of the rank of the respondent [6]. These results suggest that different techniques may produce differing rates of response for respondents with varying levels of sophistication, education, and experience.

Consistency Over Time

Varying stabilities in responses over time have been found. Identical rates of reported use were found in questionnaires administered to high school students 2 weeks apart [15]. In a study of college students responding to the identical questionnaire 1 month later, 5 percent changed their answers [14]. The direction of change was equally distributed among those who changed their answers. In another study test-retest coefficients for reports of drug use ranged from 65 percent to 95 percent for patients transferring from one treatment facility to another [28]. Inconsistency was found to vary greatly depending on the type, pattern, and recency of use in a sample of high school students. Among illicit drug users, 9 percent of the marihuana users gave inconsistent responses over a 6-month period compared to 56 percent of illicit users of tranquilizers [25].

Candidness

A third method of establishing the internal validity of response patterns is by attempting to determine the honesty of the respondent. One direct method is to ask the respondents how honest they were. In a national survey, 78 percent of the adults interviewed reported that they were completely honest in their answers to

questions on marihuana usage and did not hold back any information. Two percent later said they had had more experience, and 2 percent admitted less experience with marihuana than they had indicated on the questionnaire [2]. Another researcher found that 80 percent of the high school students in one study and 70 percent in a second "felt free to answer all the questions on drugs honestly" [15]. However, only 40 percent of the students felt that other students answered the drug questions honestly. In a study of enlisted men in Vietnam, 3 percent of the respondents reported that their answers were not completely honest [23]. In a longitudinal study 10 percent of the college students disclosed that they did not candidly answer questions on drug usage in the initial interview [14]. The substantial increase in the admission of "ever using" drugs in a followup interview of these students 1 year later could indicate an increased trust of the researchers, more social acceptance of use, or more peer pressure to identify oneself as a drug user rather than actual increases in use.

Another check on honesty in responding is the interviewer's perception of the respondent. Interviewers in a national study of marihuana use felt that 85 percent of the respondents were cooperative, and they were completely confident in 75 percent of the reports of use by the respondents [2]. These figures indicate that up to one in every five respondents may distort their drug usage. The impact of such distortions on the results of studies has rarely been examined.

Fictitious products have often been used to identify respondents who exaggerate use [15,20, 25,28]. However, the low proportion of reports for these products and their relationship to other use patterns seems to show that instead of an adequate check on accuracy of reporting, these techniques are more likely to identify respondents who are not familiar with particular products.

The results of an early validation study indicate less candor. A comparison of questionnaire admissions of using or selling narcotic drugs with subsequent responses with a polygraph showed only 10 percent of the respondents truthfully admitted either using or selling narcotic drugs on the questionnaire [8]. An additional 5 percent were detected as reporting falsely on the questionnaire. Two and a half percent of the respondents refused to answer this question. Based on these results, claims that actual use rates may be double those reported in studies in the late 1960's or early 1970's may not be exaggerated.

CONSTRUCT VALIDITY

A number of other procedures have been suggested that emphasize the correlation of use reports with other variables known or believed to be associated with drug use. The attribution of drug usage through the use of highly correlated variables avoids problems of probing sensitive areas, invading privacy, or identifying dishonest respondents.

One indirect method is the comparison of proportions of respondents admitting use with estimates of use by respondents or the proportions of use reported in other studies [12,16]. A second method involves the correspondence between self-reported use and use by friends [15, 16,25,28]. In one study 63 percent of the best friends of adolescent drug users also reported drug use compared to 22 percent of those of nonusers [25].

Users have been found to differ from nonusers on a number of variables not directly connected to drug use. In one sample of high school students, absenteeism for users was triple that for nonusers [25]. In another, admitted drug use was related to attitudes toward use and behaviors thought to be associated with use including opposition to the Vietnam war, poor school performance, delinquency, and countercultural lifestyle [16]. Although a variety of demographic characteristics, personality traits, attitudinal variables, and sociocultural lifestyles have been found to be associated with drug use, correlation is not sufficient evidence of validity. Construct validation procedures may provide a good indication of the accuracy of use reports among stereotypic drug users. However, occasional users or users who do not have the characteristics of "typical" drug users may deny use of drugs as well as other forms of deviant or delinquent behavior.

EMPIRICAL VALIDITY

A direct check on the accuracy of self-reports is information on use from other sources. Official records and urinalyses are the principal criteria that have been employed.

Records
A landmark methodological study in the drug field used prescription records as the criterion. Validity coefficients for self-reports of medical drug use in the past year ranged from 83 percent for tranquilizers to as low as 64 percent for antibiotics [19]. These results do not compare unfavorably to the accuracy of reports of other information, such as voter registration (82 percent), library card ownership (87 percent) and age according to driver's license records (92 percent) [7].

It might be expected that the validity of reports of illicit drug use would be somewhat lower than reports of medical use of prescription drugs. Furthermore, it is difficult to find accurate records of illicit drug use. A recent attempt to validate reports of illicit drug use against treatment records suggested that treatment records contain many inaccuracies [1]. Drug registers or arrest records for narcotics offenses identify few users who are not identified through self-reports or urinalysis [11,24]. In a comprehensive study of the utility of using records for the identification of drug users, 44 percent of 190 respondents reported taking drugs and 3 percent reported addiction, although they had no police, medical, or armed service record of use [22].

Double-blind validation studies using records are a valuable and necessary part of any research effort to accurately assess the validity of self-reports. However, the substantial number

of self-admitted users not listed in treatment records, drug registers, or arrest records indicate that such criteria have limitations.

Urinalysis

Current technological advances have made it possible to check the use of drugs by chemical methods. Urine samples taken at the time of a followup interview of returning Vietnam servicemen corresponded closely to the self-reports [21]. High correlations between self-reports and urinalysis results have been found for groups of known heroin or narcotic addicts [4,9]. However, two studies of arrestee populations demonstrate that self-reports and urinalysis corresponded for only 35 percent and 25 percent of respondents identified, respectively, as current narcotic or heroin users [11,24]. Almost half of the current narcotic or heroin users in both studies were identified by self-reports alone. In one of the studies 27 percent of the respondents with evidence of heroin in the urinalysis denied current usage. When the validity of reports of nonopiate use was also examined, the correspondence between interview data and urinalysis was much lower for amphetamine (30 percent) and barbiturate (33 percent) use than for heroin use (83 percent) [11]. These results suggest that the validity coefficients may be drug specific.

Chemical means of detection have a number of shortcomings. Only a limited number of drug substances are amenable to detection. Usual methods can only detect heroin (metabolized as morphine) in the system up to 24 hours after injection [10]. Use of a number of drugs cannot now be readily and economically detected, nor can medical use of legally prescribed drugs be distinguished from nonmedical use. Chemical analyses employed in urinalyses are subject to frequent technical breakdowns. Careful monitoring through the introduction of standard samples is necessary, particularly to maintain precision in the detection of amphetamines [11]. With such procedures and multiple tests, error rates of 1.5 percent can be obtained [3], which indicate much greater accuracy than self-reports.

Observation

The use of informants or participant-observers may have some utility in identifying drug users and, perhaps, the type, quantity and purity of drug use among various populations of users. One study found a high agreement of self-reports with information obtained from after-care counselors and relatives [27]. In such studies there may be legal and ethical questions at stake and the potential problem of jeopardizing respondent-researcher or client-patient relationships.

CONCLUSIONS

Accurate assessment of drug use by self-reports is fundamental to a variety of research efforts in the drug field. Estimates of the extent of untreated drug abuse, evaluations of treatment programs, and analysis of the relationship between drug use and its assumed consequences such as criminal behavior require valid information on drug use. Acceptable levels of validity need to be established for studies focusing on the prevalence of use at a particular time, trends in usage patterns over time, and relationships between drug usage and other behaviors.

Different levels of validity may be required for each, and certain aspects of validity should be emphasized, depending on the information needed. Some level of inaccuracy may be tolerable in estimates of prevalence because systematic reporting error can be incorporated into the calculation of confidence intervals. An acceptable level of such error should be specified, and appropriate guidelines for correction procedures should be established. Differential reporting accuracy by drug and respondent characteristics also needs to be determined.

Changes in rates of drug usage over time need to be separated from systematic measurement error. Trend estimates may be distorted by changes in validity of reporting over time due to increased social acceptance of some drugs as well as instability in response patterns. Such estimates require more precision than simple point prevalence estimates.

Maximum validity is required for the determination of the relationship between drug use and other behaviors, especially those which may also be underreported. For example, in one study, arrestees with drug-positive urines who denied use were more likely to have been arrested for crimes against persons than respondents who admitted use. By combining self-reports with urinalysis results, a more complete and accurate analysis of the relationship between drug use and criminal behavior was possible [11].

Careful validation and specified levels of validity minimize the misinterpretation of results due to inaccurate or dishonest reporting. As has been pointed out no single method or criterion is adequate to test the validity of self-reports. Combinations of internal, construct, and empirical validation procedures should be employed. Where feasible a variety of techniques should be systematically incorporated into the design of all studies where self-reports are the principal measure of drug use to determine if the measures have sufficient validity to accomplish the stated purpose of the study.

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