Validity of Behavioral Measures as Proxies for HIV-related Outcomes

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Validity of Self Reports

- The literature has suggested that self-reports are generally valid, but that for sensitive behaviors people may “under-report” their behavior.
- Over the decades, self-reports have been compared mostly to other self-reports to support their validity (consistency over time, related to similar measures)
- Only fairly recently have a variety of biological measures been available to compare to self-reports to assess their validity
- In this presentation we look at what is known about the validity of 3 key outcomes in HIV health communication and behavior change interventions: sexual behavior, substance use, and adherence

Sexual Behavior: Ever Had Sex

- One key report of sexual behavior is whether or not an individual (typically an adolescent or young adult) has had sex or not
- While “virginity tests” have been widespread in a variety of cultures over the millennia, for a variety of reasons these are neither known to be particularly valid tests of virginity, nor are they likely to be well-accepted checks of whether an individual has had sex in research studies
- Probably the best available data relate to longitudinal studies in which someone has indicated at one time they HAVE had sex and later indicate they HAVE NOT

Data on “Survey Virgins”

- A small number of studies have assessed “survey virginity”: becoming a virgin on a later survey when one had had sex on an earlier survey
- Results suggest about 9-15% of individuals fall into this category. Perhaps slightly higher in developing country contexts.
- May be due to “mis-reporting” but also perhaps to re-labeling of the earlier event (perhaps penetration didn’t occur, maybe it was only oral sex, perhaps it was a coercive situation)

Sexual Behavior: Condom Use

- Most methodological studies used other self-reports (e.g., partners' reports, assessment of internal consistency within one individual) to assess validity of self-reports of condom use
- An early biomarker and incident STIs coincident with reports of consistent condom use suggested over-reporting rates of 10%-19%
- More recently several biomarkers (tests for presence of PSA or Y chromosome DNA) in a female's vagina have been used as a marker for the occurrence of unprotected intercourse
- Studies have found an average of 38% of those indicating consistent condom use had positive test results. Some concerns about specificity of these tests.

Substance Use

- For substance use, we have the closest thing to a “gold standard,” a generally reliable measure of the truth, whether an individual has used a substance over a period of time or not. These measures are not perfect, but are probably the best biological indicator of behavior we have.
- Results comparing self-reports to biological tests (typically urinalysis-related assays) suggest high levels of agreement in the general population and for tobacco, alcohol, and marijuana.
- Similar comparisons generally show less valid reports in individuals in substance use treatment and in adolescents for substances other than alcohol or tobacco

“HHS/SAMHSA Validity Study”

- The largest attempt to validate self-reports of substance use in a population-based sample is called “The Validity Study,” a special supplement to the ongoing National Survey of Drug use and Health, in 2000-2001, with those ages 12-25. 90% of those interviewed agreed to provide a urine specimen, resulting in 3800 urine tests.
- Of those who indicated no tobacco use in the past 7 days, 8.8% had positive urinalysis results. For marijuana, the rate was 4.5%. For more illegal drugs (cocaine, amphetamines), the rates of discrepancy between self-report and urinalysis results were relatively low but not reliable, since the sample sizes were very small.

Medication Adherence

- Clearly, there is a tendency to over-report this behavior to look better in the eyes of their clinician or even a researcher.
- A variety of increasingly more "unobtrusive" measures have been designed to be less likely to be sensitive to reporting biases
- These include: pill counts, data on prescription refills, and increasingly electronic recording devices (MEM caps that send a signal to the researcher when bottle caps are opened, cell phone videos of patients taking meds, recently a matrix of trays for multiple meds that send data when opened, and biological outcomes).

Adherence validity data

- Pill counts generally find 10% higher levels of non-adherence compared to self-reports. MEMS Cap data often find 25-35% higher levels of non-adherence than self-reports.
- Biological outcomes desired as a result of medication adherence (e.g., for HIV, viral load) while desirable as medical outcomes are much poorer reflections of adherence, as there can be many factors other than adherence leading to the outcomes. Correlations between good measures of adherence and biological outcomes are often as low as .5.

Conclusion

- Self-reports are generally adequate measures of key outcomes for HIV behavior change interventions, but especially in higher risk populations, are probably significantly influenced by social desirability.
- Improving privacy of the survey administration context (ACASI seems best), using reporting periods that people can easily report on (typically moderate like 3-6 months) and assessing perceived truthfulness may all help increase validity.
- Collecting both self-reports and biological measures is probably most desirable when practical and affordable.
- There are some concerns about the accuracy of biomarkers of sexual intercourse.