RESEARCH AND PRACTICE

Psychometric Issues for Practitioners in Child Maltreatment

—by Mark Chaffin and Joel Milner

Child protective services workers, prosecutors, and judges are sometimes called on to make far reaching decisions about children on the basis of incomplete or contradictory information. Following a report, for example, a worker must render a judgment regarding the occurrence of maltreatment in situations where the report of abuse *is* adamantly denied by the alleged abuser(s). When maltreatment by a parent is officially confirmed, different but equally difficult questions arise. What interventions are needed? Should the child be placed in foster care? How high is the risk of reabuse? Can the case be safely closed? Although substantial case data are hopefully available to assist in these determinations, the decision making process can sometimes be uncomfortably vague. In the search for clarity, decision-makers may turn to psychological testing for help.

Psychological tests can be seductive. The test score may bear the imprimatur of science, objectivity, and certainty, distinguishing it from the more subjective processes involved in clinical judgment. Although this appeal is not altogether baseless, it is critical to be aware of the very real limits of testing in order to assure its appropriate use. For standardized tests and psychological assessments to provide a real help, both testers and consumers of testing evaluations such as judges and CPS staff need to have a basic knowledge of testing. The first step is knowing how to ask the right questions.

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What is the Question?

One of the most frustrating experiences for a consumer of psychological evaluations is receiving a vague or indecipherable report with little clear relevance to the case at hand and no clear conclusions or recommendations. Often, the problem can be traced to an equally vague referral containing no clear or answerable referral question. When referring a client or conducting testing, it is critical to have a clear and answerable referral question. Often there is no *question* at all. "Mrs. Smith was ordered by the court to receive a mental evaluation," or "Sandra was sexually abused by her father," for example, are not questions. Neither, for that matter, are they problems to be evaluated. They are events in a client's history. The computer science maxim, "garbage in—garbage out," holds for consumers of psychological testing evaluations as well as for computer programmers. If there is no clear and well focused question, the results will most likely be inapplicable or unhelpful.

Don't assume that the evaluator will intuit what sorts of information or target areas will be helpful to you. Ask specific and focused questions. Examples might include: "Does Mr. Smith need inpatient or outpatient chemical dependency treatment?" "Are there mental health factors which might increase Mrs. Smith's risk of re-abusing and what sort of services would best impact these?" or, "Have Mr. and Mrs. Smith made progress from their previous evaluation in their knowledge of non-violent discipline strategies and appropriate expectations for their children?"

Clearly, it is critical for consumers of psychological evaluations in child maltreatment to formulate a clear idea about what questions are important. But what sorts of questions can psychological tests answer? And how can we determine the helpfulness of a particular instrument in answering a question? In order to address these issues, it is important to understand a few "psychometric" principles—principles related to test development and use.

Measurement Issues: Reliability and Validity

Before an assessment device is used, the adequacy of its "reliability" and "validity" must be considered. "Validity," in the psychometric sense, refers to whether or not an instrument hits its intended target. If a test has high validity, then it measures what it purports to measure (e.g. anxiety, coping styles, depression). "Reliability" refers to the consistency of an instrument's performance. If a test is reliable, then it will hit the same target consistently. Clearly the two concepts are related. Although an instrument cannot be valid without also being reliable (it can't be said to hit its intended target if it doesn't do so consistently), it can be reliable without being valid (it can hit the wrong target, but do so consistently).

Reliability

There are two major types of test reliability: "internal consistency" and "temporal stability." Estimates of internal consistency indicate the degree to which test items measure the same factor. One way of determining internal consistency is to divide the scale in half, and correlate the scores on each half. A more sophisticated and now more commonly used way is to use the "alpha coefficient." The alpha coefficient measures the correlation of scores on all possible halves of the test with their corresponding halves. Perfect internal consistency is reflected in an alpha coefficient of one (1.0). A random assortment of unrelated items would be expected to have an alpha of around zero (0.0).

It is worth noting that estimates of internal consistency set the upper limits of the test's validity. A test can only measure what it purports to measure (i.e., be valid) to the degree that it is measuring consistently. The validity of a test cannot exceed the level of internal consistency and is usually somewhat below the internal consistency value.

The other major type of reliability is "temporal stability," which indicates the degree to which a score will vary across time. A high degree of temporal stability is expected if the test purports to measure a personality characteristic which is believed to be stable

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(e.g., rigid expectations for children). However, a low to moderate temporal stability may be acceptable if the test measures a characteristic whose natural course might be expected to show change across time (e.g., mood).

Test developers measure temporal stability by giving the test repeatedly at varying intervals, such as one month or six months. Then they correlate test-retest scores. Test-retest correlation can range from zero (no correlation) to one (perfect correlation). The degree to which the same characteristic is being measured across time is determined by taking the square of the test-retest correlation. If, for example, the correlation is .70, then only 49% of what was measured initially is measured at the retest. In using a test with a temporal stability of 0.49, changes in a score across time might need to be interpreted cautiously because the change may only reflect the nature of the test, not *bona fide* changes in the client.

Validity

Validity data tell whether a test actually measures what it purports to measure. Despite statements that may appear in advertising copy, no test can ever be said to be "valid" or "fully validated." Test validation is a matter of degree for any given population. Frequently, data suggest that a test is valid for use with one population (e.g., adult parents), while no data are available for the same application with another population (e.g., adolescent parents), or another application with the same population (e.g., screening vs. diagnosis). Thus, an instrument developed and validated to screen adult parents for physical abuse potential would not necessarily be valid for screening adolescents or diagnosing abusiveness in either population.

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Group Differences and Individual Classification

One method of supporting a test's validity is to present data which show group differences: for example, demonstrating that a criterion group (e.g., sexual abusers) has a different average score from that of a comparison group (e.g., non-abusers or normals). Although differences between the criterion and control groups must exist if a test is valid, this finding alone is insufficient to demonstrate that the test is valid in differentiating *individual* sexual abusers from non-abusers. For example, although the average MMPI profile for sexual abusers as a group is elevated over that of a non-abusive group, abusers typically have a wide variety of individual scores and profiles, none of which is unique to sexual abusers. One study found that the most common individual profile type was present in only 7% of offenders tested (Hall, Maiuro, Vitaliano, & Proctor, 1986) and another study found that the most common individual profile showed no significant elevations (Chaffin, 1992). Consequently, despite evidence of group differences, there is no "profile" which could validly assist in classifying any individual as an abuser or non-abuser (Murphy & Peters, 1992).

In examining a test's validity and relevance for your application, it is important to have information on *individual* classification rates. Four rates are typically reported: selectivity, specificity, false positive classifications, and false negative classifications. Selectivity is reported in terms of the percent of individuals correctly classified in the criterion group (e.g., abusers correctly identified as abusers). Specificity is reported in terms of the percent of individuals correctly classified in the comparison group (e.g., non-abusers correctly classified as non-abusers). False positives and false negatives are reported in terms of the percent of misclassifications of non-abusers as abusers, and abusers as non-abusers, respectively.

Classification rates should be determined by using a separate sample from the one on which the test was normed or developed. This procedure is sometimes known as "cross-validation," and is an important step: when the same procedures and scoring are used across samples, there will be an inevitable and potentially substantial decrease or "shrinkage" in the correct classification rates.

Base Rates

However, even when a test has acceptable individual classification rates (say 80%), it still may not be appropriate in certain settings. This is because the usefulness of a test can vary depending on the frequency of its target in a particular population. A test is only useful if it produces a meaningful increase in classification accuracy beyond random guessing. For example, let's assume that 40% of APSAC members are psychologists. In this case, 40% would be the "base rate" of psychologists among APSAC members. We would then expect to be correct in classifying someone as a psychologist 40% of the time on the basis of a blind guess. A test designed to determine whether or not a member was a psychologist would only be useful if it meaningfully increased the accuracy of our classifications beyond the base rate.

The base rate of a particular characteristic in a population critically influences a test's accuracy. Optimal increases in prediction occur when the base rates are 50%, or, in other words, when 50% of the sample are criterion cases. For example, at least one study has found a roughly 50% rate of Post-Traumatic Stress Disorder among sexually abused children referred for treatment (McLeer, Deblinger, Atkins, Foa, & Ralphe, 1988), suggesting that use of valid PTSD scales with this population might be very appropriate.

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If the PTSD scale had an 80% correct classification rate and was administered to 100 children (50 with PTSD and 50 without), then 40 (80% of 50) in each group would be correctly classified. Remember, if we just guessed that all abused children had or didn't have PTSD, the accuracy rate would be 50%. Using the test would increase accuracy to 80%, and we could say that the test improves our classification rates.

When base rates are markedly lower than 50%, however, the usefulness of the test decreases to the point where serious errors can occur and the test should not be used. For example, what if a PTSD scale with an 80% correct classification rate is used in a sample where only 5% of the subjects actually had PTSD? If 100 children were tested (5 with PTSD and 95 without), then 4 PTSD children (80% of 5) would be correctly classified. However, only 77 of the non-PTSD children would be correctly classified (80% of 95), with 19 false positives. Thus, for the 23 children classified as having PTSD (4 correctly and 19 falsely), there would be only a 17% correct classification rate (4/23). Of course, the number of false negative classifications would be very small (one missed child with PTSD).

The computer science maxim, "garbage in—garbage out," holds for consumers of psychological testing evaluations as well as for computer programmers. If there is no clear and well focused question, the results will most likely be inapplicable or unhelpful.

The direction and implication of error rates in cases with very small or very large base rates needs to be carefully considered. In some instances, one might be willing to risk a high number of false positives in order to obtain a low risk of false negatives. In other situations, this would be disastrous.

For example, one particular instance where low base rates could lead to serious problems concerns scales intended to detect false allegations of sexual abuse by children, a phenomenon which several studies suggest accounts for only a small percentage of all allegations (Everson & Boat, 1989; Jones & McGraw, 1987). Assume that a valid scale to detect false allegations could be developed, say with an 80% correct classification rate. If the base rate for false allegations is 5%, the vast majority of children labeled by the test as "false accusers" could actually be *bona fide* abuse victims. The overall error rate in field use would be 20% (with 19 *bona fide* victims labeled as false accusers + one false accuser labeled as a *bona fide* victim), which is four times greater than the 5% error rate which would be obtained by simply assuming that all allegations were *bona fide* (five false accusers labeled as *bona fide* victims). In this example, use of the test would lead to greater error. More importantly, the direction of error would seriously place children at risk.

Response Distortions

Many psychological tests are self-report measures. They count on the person being tested to tell us accurately about himself or herself. A major issue when assessments use self-reports to evaluate parents in child maltreatment cases is the possibility that respondents will distort their responses to the test items. Response distortions include "faking good," "faking bad," and "random responding."

"Faking good" refers to an attempt to distort responses in a socially desirable manner, and is often a major problem in child maltreatment assessments. "Faking bad" refers to the respondent's attempt to present himself or herself in a socially undesirable manner, perhaps as a cry for help or a form of malingering. "Random responding" may be due to a variety of factors, such as a deliberate desire to avoid revealing personal data or difficulty understanding the items. A more comprehensive discussion of potential causes of these three types of distortions is available elsewhere (Milner, 1990).

Clearly, response distortions may be far more endemic in some groups than in others because some groups have more motivation to conceal or mislead. For example, response patterns would be expected to be far different among alleged sexual abusers "in denial" than among admitted sexual abusers. Yet most instruments used to assess sexual offenders only have data available for *admitted* offenders, severely compromising their utility with *alleged* offenders. Indeed, the validity of sex offender assessment instruments to assist fact finders in differentiating denial from innocence among alleged offenders has been seriously questioned (Murphy & Peters, 1992; Myers, Bays, Becker, Berliner, Corwin & Saywitz, 1989). Response distortions and other psychometric issues can also be an issue in phallometric assessments (Hall, Proctor, & Nelson, 1988) which, along with the low rates of clearly deviant response patterns among some groups of offenders (e.g., incest offenders, Marshall & Barbaree, 1988), has led many observers to conclude that phallometry offers no assistance in determining guilt vs. innocence (Simon & Schouten, 1992).

Because response distortions can render test data meaningless, testers should attempt to assess response bias and random responding. While some family violence instruments have built-in measures of response distortion (e.g., Child Abuse Potential Inventory; Milner, 1986a, 1990), most do not. When the instrument does not have its own built-in measure of response distortion, it is critical for the tester to estimate the accuracy of responding using separate dedicated scales designed to measure response sets or clinical assessment of response tendencies. In any case, the question of response distortions or bias, along with any cautions or concerns involving reliability, validity or potential error induced by very low or high base rates, should be addressed in the text of the report.

Standards

As the standards of test use have been revised

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over the years, there has been a trend toward increasing the responsibilities of the tester to assure that a test application is appropriate. The test user must be aware that if data are not available to support a particular test application, then the user is responsible for providing adequate documentation (i.e., research evidence) to support the new application. Documentation is also necessary when the test application is not new, but the population under investigation has not been previously studied. These responsibilities are spelled out in detail in the *Standards for Educational and Psychological Testing* (APA, 1985).

In addition, it is critical that testing be conducted by a qualified and specifically trained person (e.g., a psychologist or appropriately licensed professional). Decision-makers and other consumers of psychological testing evaluations should feel free to inquire about the limits, appropriateness and supporting data associated with a particular instrument or interpretation, as well as the evaluator's training and experience with testing and child maltreatment populations.

Resources

There are a number of resources available for familiarizing yourself with available psychological instruments and their potential usefulness in child maltreatment cases.

- For reviews of instruments and measures assessing personality characteristics, see, e.g., Mitchell (1983), or Sweetland & Keyser (1986).
- For specific reviews of instruments and measures for use with families, including child abuse perpetrator and child abuse victim measures, see, e.g., Grotevant & Carlson (1989), or Touliatos, Perlmutter, & Straus (1990).
- For discussions of assessment, legal and professional issues related to physical abuse perpetrators, see, e.g., Caldwell, Bogat, & Davidson (1988), Melton & Limber (1989), or Milner (1986b, 1989, 1991a, 1991b).
- For discussions of assessment, legal and professional issues relating to sexual abuse perpetrators, see, e.g., Murphy & Peters (1992), Peters & Murphy (1992), or O'Donohue & Letourneau (1992).
- For suggestions concerning a range of target areas and instruments for use with all types of maltreated children, see e.g., Bonner, Kaufman, Harbeck, & Brassard (1992).

Where Is Testing Most Useful?

In general, psychometric applications would currently appear to have extremely limited utility in investigative or abuse substantiation settings. This pertains not only to assessment of alleged abusers, but also to psychosocial assessments of children where no particular diagnostic profiles or syndromes are available which would meaningfully assist the process of determining the presence of abuse (APSAC, 1990). Testing data might be useful in some cases in order to provide a more comprehensive picture of a child's overall cognitive and expressive abilities, psychological functioning, etc. Although limited for investigative purposes, testing applications can provide a wide range of highly valuable information in treatment, prevention, or service settings.

Prevention

Primary prevention programs are generally targeted to the general community, and discriminating among individuals is not an issue. Consequently, primary prevention workers are not usually concerned with client assessment, except to evaluate programmatic outcomes or goal attainment. In secondary prevention settings, however, the focus is on preventing the occurrence of abuse among high risk parents. It is assumed that some parents are more at risk for child maltreatment than others, and consequently some sort of screening procedure must be instituted in order to triage clients into secondary prevention programs. A number of risk assessment and abuse potential screening scales are available which can assist in screening (e.g., Child Abuse Potential; Milner, 1986a). Given that most secondary prevention services (e.g., parenting classes, perinatal home visiting, etc.) are fairly benign and relatively non-stigmatizing, we might be willing to accept a significant number of false positives from screening instruments in order to reach a large percentage of truly at-risk parents.

Treatment

In treatment settings, formal assessment can play a number of roles. Testing can be useful in providing a broad range of information about how a child or parent copes, the extent of current symptoms or distress, what resources are present, and what problems may lie ahead. They can also assist in deriving recommendations concerning treatment needs, modalities, and settings as well as providing a baseline against which treatment progress can be assessed and documented.

Only recently have researchers begun to develop measures to assess abuse-specific issues in abused children. Examples include the Children's Impact of Traumatic Events Scale—Revised (CITES-R; Wolfe & Gentile, 1991) and the Trauma Symptom Checklist for Children (TSC-C; Briere, 1990). Naturally, abuse-specific instruments share many similarities in target areas with abuse-focused therapy, making them particularly well suited to assessing progress and documenting treatment outcome.

Conclusion

Psychological testing instruments can play a valuable role in making sure that abused children and their families receive appropriate and effective interventions. They can be an important tools. However, it is important to realize their limitations, and to recognize that they supplement, rather than replace, clinical or professional judgment. Also, it is important to realize that in some settings, the most appropriate test may be no test at all. Decision-makers and other consumers of evaluations should consult with a qualified psychologist who is familiar with child maltreatment issues in determining whether or not testing is appropriate and, if so, what instruments would be best suited to answering the specific questions posed by the referral.

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