

Running Head: ACTUARIAL RISK ASSESSMENT

**Actuarial Risk Assessment: Commentary on Berlin et al.**

Stephen D. Hart, Ph.D.

Department of Psychology

Simon Fraser University

Address correspondence to Professor Stephen Hart, Department of Psychology, Simon Fraser University, 8888 University Drive, Burnaby, British Columbia, Canada, V5A 1S6, or via the Internet to [hart@sfu.ca](mailto:hart@sfu.ca).

**Abstract**

Berlin and his colleagues (in press, this issue) have raised some important questions regarding the use of actuarial risk assessment instruments in sex offender civil commitment proceedings, also known as sexually violent predator or SVP proceedings. Their primary point is that interpreting the findings of existing actuarial risk assessment instruments is a tricky business because it is not certain the extent to which probability estimates derived from group data can be applied to individual cases. I agree completely with Berlin et al. on this point, but disagree with them concerning the extent to which probability estimates — and, therefore, actuarial instruments — are legally relevant in SVP proceedings. I outline some potential problems with respect to the legal admissibility of actuarial instruments, including their legal relevance.

**Actuarial Risk Assessment: Commentary on Berlin et al.**Clinical Versus Actuarial Redux

The paper by Berlin et al. occurs in context of the longstanding debate in psychology concerning the relative merits of clinical (i.e., discretionary) versus actuarial (i.e., formulaic) decision making. The debate has reared its ugly head once again with respect to the assessment of risk for violence and sexual violence, resulting in a major intellectual schism. The schism remains and shows signs of growing, despite widespread consensus regarding the desirability of structured decision-making and despite well reasoned and reasonable attempts at rapprochement (e.g., Dvoskin & Heilbrun, 2001).

What we might call “orthodox actuarialism” holds that actuarial decision making is the best means — indeed, the only acceptable means — of making decisions; discretion should be rarely or, ideally, not at all (Meehl, 1954/1996; see also Dawes, Faust, & Meehl, 1989). For example, on the basis of 50 years of research comparing the two forms of decision making (e.g., Grove et al., 2000), Grove and Meehl (1996) declared that using anything other than the actuarial approach “is not only unscientific and irrational, it is unethical” (p. 320). Illustrative comments specifically with respect to violence risk assessment comes from Quinsey and colleagues: “What we are advising is not the addition of actuarial methods to existing practice, but rather the complete replacement of existing practice with actuarial methods” and “Actuarial methods are too good and clinical judgement too poor to risk contaminating the former with the latter” (Quinsey, Harris, Rice, & Cormier, 1998, p. 171). Similar claims have been made regarding the superiority of actuarial decision making with respect to sexual violence risk assessment (Doren, 2000; Hanson & Bussière, 1998).

In contrast, “latitudinarian actuarialism” accepts that actuarial decision-making is a

potentially useful adjunctive strategy for helping to structure professional decision making (e.g., Hanson, 1998; Monahan et al., 2001; Otto, 2000). But the latitudinarian creed is based on two fundamental assumptions that are unacceptable to the orthodoxy: first, the final decision is a professional one, and for legal and ethical reasons must therefore provide for the exercise of discretion; and second, the potential usefulness of actuarial methods must be evaluated to determine the weight (if any) that should be accorded them when making a final decision. With respect to risk assessment, the major problem is that some latitudinarians have seriously questioned orthodox views regarding the superiority of actuarial methods, pointing out the near-total absence of relevant research (for details, see Litwack, 2001; specifically with respect to sexual violence, see Hart, Laws, & Kropp, in press).

### Interpreting Actuarial Instruments

Berlin and his colleagues (in press, this issue), in true latitudinarian fashion, have raised some important questions regarding the use of actuarial risk assessment methods in sex offender civil commitment — also known as sexually violent predator, or SVP — proceedings. These are perhaps the most controversial and high-stakes proceedings in which mental health professionals are involved: Decision errors may result in either serious harm to the citizens or the indefinite loss of the patient's most basic rights and freedoms. (In contrast, capital sentencing involves, most commonly, a choice between two horrible punishments: The death penalty versus life in prison without possibility of parole. At least there is little risk to citizens in the event of a decision error.)

For me, the take-home message of the Berlin et al. paper was that interpreting the findings of existing actuarial risk assessment instruments is a tricky business because it is not certain the extent to which frequentist probability estimates derived from group data can be applied to individual cases. Existing actuarial instruments estimate the absolute likelihood or

specific probability that an individual person will commit sexual violence in the future based on retrospective studies of groups of sex offenders released into the community. As the authors pointed out, the findings of actuarial instruments are merely statistical profile evidence. This means that the applicability of the group data to an individual is based on inductive logic, or argument by analogy (“This man *resembles* offenders who were likely to recidivate, therefore he *is* likely to recidivate.”). Furthermore, the authors noted, the accuracy of the statistical profiles generated by actuarial instruments themselves are limited by the small sample sizes (“experience pools”) on which they were based—as well as the small number of risk factors included in the instruments. This means the precision or “margin of error” of absolute risk estimates made using an actuarial estimate. Finally, the authors made a point that is crucial but frequently ignored: Probability estimates based on group data may not reflect the “true” probabilities for any individuals in the group—the same way that the mean test score for a group of people may be a score obtained by no-one in the group. The only times when group data are clearly applicable to individual cases is when the probabilities approach either null or unity (i.e., 0% or 100%). Consider a group of 100 offenders, 50 of whom recidivate within 5 years. Does this mean that every member of the group had a 50% chance of recidivism? Or that half had a 100% chance and half a 0% chance? Or perhaps 25 had a 100% chance, 25 had a 75% chance, 25 had a 25% chance, and 25 had a 0% chance.... There is simply no way to determine the answer at this time.

### The Legal Relevance of Actuarial Instruments

I agree completely with Berlin et al. regarding the difficulties interpreting actuarial findings. My disagreement concerns the extent to which probability estimates and, therefore, actuarial instruments are legally relevant in SVP proceedings. Berlin et al. begin their paper by stating, “The civil commitment of so-called ‘sexually violent predators’ requires that a prediction be made regarding the likelihood that a given individual will engage in future acts of

‘sexual violence’” (p. ??; emphasis added). Yet, analysis of SVP statutes indicates this is not the case.

Most SVP statutes require four conditions for commitment (Janus, 2000): first, the person must have perpetrated sexual violence in the past; second, the person must suffer currently from a mental abnormality; third, the person must have an elevated risk for future sexual violence; and fourth, there must be a causal nexus between the mental disorder and the risk (i.e., the elevated risk for future sexual violence must be, at least in part, due to the mental abnormality). Some jurisdictions further require that the nature of the causal nexus is an impairment of volitional control. There is nothing in SVP statutes, as described here, that requires an evaluator to determine the absolute probability of future sexual violence. As a consequence, actuarial risk assessment instruments are neither necessary nor sufficient to establish that the four conditions for commitment are met. Actuarial instruments do not establish a history of sexual violence; they do not establish the presence of mental disorder; and they do not establish a causal nexus between mental abnormality and elevated risk, or the quantum of risk that is attributable to mental abnormality. To this extent, they are legally irrelevant.

Actuarial instruments *may* be of assistance in determining whether a person is at elevated risk for sexual violence. There are some important qualifications here, however. First, the definition of sexual violence of sexual violence used in the construction of the actuarial instrument must be consistent with the statutory definition. In some states, certain types of sexual offenses (e.g., incest, acquaintance rape, non-contact sex offenses) may be excluded from the definition of sexual violence. If the actuarial instrument uses a different definition of sexual violence, it may provide a biased estimate of risk. Second, the statute may require evaluators to estimate the risks posed by the person under a variety of conditions short of total confinement (i.e., under less restrictive alternatives). Existing actuarial instruments cannot be used to make

this kind of “conditional” risk estimate. Third, it is not clear whether statutory definitions of “probability” or “likelihood” of future sexual violence refer to the risk posed by the person, or to the degree of confidence that the person poses a risk. Consider a case in which the trier of fact (i.e., judge or jury) is 100% certain that the person poses a 50% likelihood of recidivism, versus a case in which the trier of fact is 50% certain that the person poses a 100% likelihood of recidivism. Is the risk equivalent in these cases? What if we change the confidence/likelihood estimates to 20%/80% versus 80%/20%, or 40%/60% versus 60%/40%? (This distinction between confidence and likelihood mirrors the distinction in science between frequentist and subjectivist definitions of probability; see Shafer, 1993.) Regardless, the ultimate legal issue of whether or not the degree of risk is sufficient for commitment is an issue to be decided by the trier of fact (i.e., the judge or jury), not by the evaluator or by an actuarial instrument. To the extent that actuarial instruments fail to use statutory definitions of sexual violence, cannot be used to make conditional risk estimates, and fail to inform discussion of objective versus subjective aspects of risk, they are legally irrelevant.

#### The Legal Admissibility of Expert Opinion Based on Actuarial Instruments

Any expert who uses actuarial instruments in SVP proceedings must be prepared to justify this decision before a trier of fact (Petrila & Otto, in press). The expert’s response may determine the weight given to any opinions based even in part on the instruments, or even whether the opinions may be expressed at all. Under common law, judges act as gatekeepers for expert testimony so that the flow of the trial itself is not disturbed by opinions and research that are difficult to understand, of dubious relevance, or of questionable validity. The general legal criteria for the admissibility of expert opinion evidence include the following: (a) the evidence is relevant to some legal issue; (b) the evidence is outside the typical knowledge or understanding of laypeople; and, (c) the evidence is more probative than prejudicial, that is, more likely to help

triers of fact reach a correct or proper decision than to mislead or confuse them (e.g., *Federal Rules of Evidence*, 1976). Additional legal criteria may be applicable. An important criterion is whether the theories or procedures underlying expert testimony are generally accepted in the relevant scientific or professional community (e.g., *Daubert v. Merrell Dow Pharmaceuticals*, 1993; *Frye v. United States*, 1923); others include the extent to which the theory is testable, whether the procedures have established error rates, and whether the theory or procedures have been subjected to peer review (e.g., *Daubert v. Merrell Dow Pharmaceuticals*, 1993). Although these latter criteria apply to all forms of expert testimony (e.g., *Kumho Tire Co. v. Carmichael*, 1999), they are especially relevant in cases where that testimony is based on scientific theory or procedures — as opposed to testimony based on training and experience — as triers of fact are likely to have difficulty weighing the probative value of scientific testimony due to its inherent complexity (Faigman, 1995).

In light of this discussion, it is perhaps unsurprising that the admissibility or scope of expert opinion based on actuarial instruments has been challenged. In cases where these challenges have been successful — that is, resulting in the exclusion of expert opinion — judges have cited several reasons for their decisions (e.g., *In re Valdez et al.*, 2000): lack of relevance, as actuarial procedures may define sexual violence differently from the statute that is the basis for legal proceedings and also fail to address the causal nexus issue; potential for prejudice, as actuarial tests may give the false impression that they provide accurate and reliable information about the ultimate legal issue of risk; lack of general acceptance, as actuarial procedures are used and evaluated positively only by a minority of experts in the field of sexual violence; and lack of probative value, including an absence of independent, peer-reviewed, cross-validation research that establishes error rates for the results of actuarial instruments.



## Conclusion

Berlin et al. have done a great service by drawing the attention of the field to some difficulties in using actuarial instruments in SVP proceedings. But they have only started the debate; many things remain to be considered. Those who conduct SVP evaluations must evaluate the methods they use — including, but not limited to, actuarial instruments — comprehensively, that is, from scientific, professional, and legal perspectives. Given the limitations of our existing assessment and decision-making methods, as well as the stakes involved in SVP decisions, this debate that demands our immediate attention.

## References

- Daubert v. Merrell Dow Pharmaceuticals* (1993), 509 U.S. 579.
- Dawes, R., Faust, D., & Meehl, P. (1989). Clinical versus actuarial judgment. *Science*, *243*, 1668-1674.
- Doren, D. (2000). Evidentiary issues, actuarial scales, and sex offender civil commitments. *Sex Offender Law Report*, *1*, 65-66, 78-79.
- Dvoskin, J. A., & Heilbrun, K. (2001). Risk assessment and release decision-making: Toward resolving the great debate. *Journal of the American Academy of Psychiatry and the Law*, *29*, 6-10.
- Faigman, D. L. (1995). The evidentiary status of social science under Daubert: Is it “scientific,” “technical,” or “other” knowledge? *Psychology, Public Policy, and Law*, *1*, 960-971.
- Federal Rules of Evidence*. (1976). 28 United States Code §§ 101-1103.
- Frye v. United States* (1923), 293 F. 1013 (D.C. Cir.).
- Grove W., & Meehl, P. (1996). Comparative efficiency of informal (subjective, impressionistic) and formal (mechanical, algorithmic) prediction procedures: The clinical-statistical controversy. *Psychology, Public Policy, and Law*, *2*, 293-323.
- Grove, W. M., Zald, D. H., Lebow, B. S., Snitz, B. E., & Nelson, C. (2000). Clinical versus mechanical prediction: A meta-analysis. *Psychological Assessment*, *12*, 19-30.
- Hanson, R. K. (1998). What do we know about sex offender risk assessment? *Psychology, Public Policy, and Law*, *4*, 50-72.
- Hanson, R. K., & Bussière, M. T. (1998). Predicting relapse: A meta-analysis of sexual offender recidivism studies. *Journal of Consulting and Clinical Psychology*, *66*, 348-362.
- Hart, S. D., Laws, D. R., & Kropp, P. R. (in press). The promise and the peril of sex offender risk assessment. In T. Ward & D. R. Laws (Eds.), *Sexual deviance: Issues and*

- controversies*. Newbury Park, CA: Sage.
- Janus, E. S. (2000). Sexual predator commitment laws: Lessons for law and the behavioral sciences. *Behavioral Sciences and the Law*, 18, 5-21.
- Kumho Tire Co. v. Carmichael* (1999), 526 U.S. 137.
- In re Valdez et al.* (2000). No. 99-000045CI (unpublished opinion, August 21, 2000).
- Litwack, T. R. (2001). Actuarial versus clinical assessments of dangerousness. *Psychology, Public Policy, and Law*, 7, 409-443.
- Meehl, P. E. (1996). *Clinical versus statistical prediction: A theoretical analysis and a review of the literature*. Northvale, NJ: Jason Aronson. (Original work published in 1954.)
- Monahan, J., Steadman, H. J., Silver, E., Appelbaum, P. S., Robbins, P. C., Mulvey, E. P., Roth, L. H., Grisso, T., & Banks, S. (2001). *Rethinking risk assessment: The MacArthur study of mental disorder and violence*. New York: Oxford University Press.
- Otto, R. K. (2000). Assessing and managing violence risk in outpatient settings. *Journal of Clinical Psychology*, 56, 1239-1262.
- Petrila, J., & Otto, R. (in press). Admissibility of expert testimony in sexually violent predator proceedings. In A. Schlank (Ed.), *The sexual predator*. Kingston, NJ: Civic Research Press.
- Quinsey, V. L., Harris, G. T., Rice, M. E., & Cormier, C. A. (1998). *Violent offenders: Appraising and managing risk*. Washington, DC: American Psychological Association.
- Shafer, G. (1993). Can the various meaning of probability be reconciled? In G. Keren & C. Lewis (Eds.). *A handbook for data analysis in the behavioral sciences, Vol. 1: Methodological Issues* (pp. 165-196). Hillsdale, NJ: Lawrence Erlbaum.