



Designation: E 1954 – 98

Standard Practice for Conduct of Research in Psychophysiological Detection of Deception (Polygraph)¹

This standard is issued under the fixed designation E 1954; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers essential and recommended elements in the design, conduct, and reporting of research on psychophysiological detection of deception (polygraph). Analog and field research are addressed separately.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

E XXXX Terminology for Psychophysiological Detection of Deception, Terminology, and Ethics²

3. Terminology

3.1 Definitions:

3.1.1 For full explanations of terminology relating to psychophysiological detection of deception, refer to Terminology E XXXX.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *utility*—the proportion of results that are conclusive shall be considered a measure of utility, and shall be calculated by dividing the number of results that are conclusive by the total number of observations. The utility value obtained by this method shall not be less than 0.80 for validated techniques. If a technique permits retesting when initial results are not conclusive, the final result after testing is completed shall be the prevailing decision, and that result shall be used in the computation of utility.

3.2.2 *validity*—a polygraph testing technique shall be considered validated if the preponderance of the independent research determines the said technique achieves a criterion-related validity of 0.90 or greater in discriminating between

deceptive and truthful subjects. Calculation of criterion-related validity shall be the number of correct decisions divided by the number of conclusive decisions. Decisions not considered conclusive are those labeled “Incomplete”, “Inconclusive”, “Indefinite”, “No Opinion”, “Terminated”, or others that are not opinions regarding the veracity of a subject’s statements. If a testing technique permits retesting when initial results are not conclusive, the final result after all testing is completed shall be the prevailing decision, and that result shall be used in the computation of criterion-related validity.

4. Summary of Practice

4.1 Laboratory Research:

4.1.1 Unless subjects must be individually trained or conditioned to achieve some criterion, subject manipulation procedures shall require minimal human interaction. Those portions requiring human interaction shall be standardized to the extent possible.

4.1.2 All procedures shall be described and reported in sufficient detail that others can replicate them. This shall include logistical factors that may introduce systematic error, such as when subject handling allows them to reveal their programming to one another, or arrival times cue testing examiners regarding programming. All research-related materials shall be retained by the researcher for at least five years from date of publication. Reasonable accommodation shall be made to other researchers for access to research documentation and data. Documentation of procedures shall include, but not be limited to, copies of subject instructions, test questions, testing technique, question sequence, description of circumstances and facilities, raw data, and any tape recordings presented.

4.1.3 So far as possible, the only difference between programmed deceptive and programmed nondeceptive subjects should be their participation in the act to which deception occurs during the PDD testing.

4.1.4 Non-exploratory studies shall test a sufficient number of subjects to obtain a statistical power of 0.80 or higher using a 0.05 significance level. Studies that are exploratory in nature; that do not obtain this power level; shall be clearly identified as exploratory studies.

¹ This practice is under the jurisdiction of ASTM Committee E-52 on Forensic Psychophysiology and is the direct responsibility of Subcommittee E52.01 on Research.

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² *Annual Book of ASTM Standards*, Vol 14.02.