



Designation: E2035 – 10

## Standard Terminology Relating to Forensic Psychophysiology<sup>1</sup>

This standard is issued under the fixed designation E2035; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This is a compilation of terms and corresponding definitions used in forensic psychophysiology. Legal or scientific terms that generally are understood or defined adequately in other readily available sources may not be included.

1.2 A definition is a single sentence with additional information included in notes. It is reviewed every five years, and the year of the last review or revision is appended.

1.3 Definitions identical to those published by another standards organization or ASTM committee are identified with the abbreviation of the name of the organization or the identifying document and ASTM committee; for example, ASME is the American Society of Mechanical Engineering.

1.4 Definitions of terms specific to a particular field are identified with an abbreviation.

### 2. Significance and Use

2.1 These terms have particular application to the scientific discipline of forensic psychophysiology. In addition, a hierarchy of sources of definitions are used in the development of this terminology. The hierarchy is as follows: Webster's New World Dictionary, Third College Edition; technical dictionaries; and the Compilation of ASTM Standard Definitions. The subcommittee developed a suitable definition after all of the sources in the hierarchy are found wanting.

### 3. Terminology

#### 3.1 Terms and Definitions:

**Air Force modified general question test (AFMGQT),** *n*—test format with flexible question orderings and numbers of relevant questions.

DISCUSSION—The AFMGQT can be used in single-issue, multiple facet, and multiple-issue PDD examinations. The AFMGQT uses relevant, comparison, sacrifice relevant and irrelevant questions.

**artifact,** *n*—a change in a PDD tracing that is not attributable to a review test question, stimulus, recovery, or homeostasis.

<sup>1</sup> This terminology standard is under the jurisdiction of ASTM Committee E52 on Forensic Psychophysiology and is the direct responsibility of Subcommittee E52.06 on Terminology.

Current edition approved Aug. 1, 2010. Published September 2010. Originally approved in 1999. Last previous edition approved in 2007 as E2035 – 07<sup>ε1</sup>. DOI: 10.1520/E2035-10.

**cardiovascular tracing,** *n*—a display of physiological patterns of the subject's relative blood pressure and pulse rate.

DISCUSSION—The cardiograph component records this activity.

**comparison question,** *n*—type of question, the physiological responses from which are compared to those generated by the relevant questions.

**counterintelligence-scope polygraph (CSP),** *n*—screening examination administered by the Federal Government on individuals with sensitive security clearances to detect and deter espionage, security breaches, sabotage, or other acts against the government.

DISCUSSION—Sometimes referred to as a *loyalty* examination.

**Daubert v. Merrell Dow Pharmaceuticals, Inc.,** *n*—although not a PDD case, the Daubert case set aside the landmark Frye rule's "general acceptability" provisions in favor of the Federal Rules of Evidence.

DISCUSSION—This paved the way for the admissibility of PDD evidence in most jurisdictions.<sup>2</sup>

**deception indicated (DI),** *n*—a conventional term for a PDD outcome.

DISCUSSION—A decision of DI means that the physiological data are stable and interpretable and that the evaluation criteria used by the examiner concluded that the examinee was not being completely truthful to the relevant issue. DI corresponds to the term *significant physiological responses (SPR)*.

**deception test,** *n*—a family of PDD examinations where direct questions are posed to the examinee during physiological recording regarding the examinee's involvement in what is covered in the relevant question.

DISCUSSION—Unlike recognition tests, both truthful and deceptive examinees are aware of which questions are relevant, and direct participation, not just recognition, is tested. Deception tests include PDD comparison question tests and PDD relevant/irrelevant tests.

**disclosure examinations over sexual history,** *n*—a clinical polygraph examination intended to explore pre-conviction "lifetime" sexual behavioral histories and activities which

<sup>2</sup> For more information, see *Daubert v. Merrell Dow Pharmaceuticals, Inc.* (1992), 509 U.S. 579, 125 1. Ed 2d 469; *United States v. Frye* 54 App D.C. 46, 293 F 1013.

include the disclosure of additional victims, sexual education sources, victimization, exposure and utilization of pornography, the onset of masturbation, paraphilias, sexual deviance, and therapeutic issues.

**DISCUSSION**—It is a utility-designed multiple-issue polygraph test, subject to the successive hurdles decision approach.

**electrodermal tracing, n**—the display of physiological patterns of either skin resistance or skin conductance obtained through exosomatic recording with a galvanograph component.

**evidentiary PDD examination, n**—test procedures that are designed to meet minimum standards for admissibility in court or administrative hearings.

**DISCUSSION**— Among the necessary components are: electronic recording of the session, use of a PDD technique for which the preponderance of the published peer-reviewed research shows an average accuracy of 90 % or better; individually validated scoring rules, and optimized decision rules. Use of a movement sensor is also recommended.

**false negative, n**—misclassification of a deceptive person as truthful.

**false positive, n**—misclassification of a truthful person as deceptive.

**forensic psychophysiology, n**—the scientific discipline dealing with the relationship and applications of PDD tests within the legal system.

**DISCUSSION**— It encompasses the academic discipline that provides the student, the practitioner, and the researcher with the theoretical and applied psychological, physiological, and psychophysiological fundamentals for a thorough understanding of PDD tests and the skills and qualifications for conducting PDD examinations. The modifier “forensic” delineates and delimits this discipline from the broader discipline of psychophysiology.

**format, n**—the established sequence or rules for ordering questions for presentation during testing.

**homeostasis, n**—a complex interactive regulatory system by which the body strives to maintain a state of internal equilibrium.

**investigative PDD procedures, n**—routine PDD examinations that are used to explore wider issues than evidentiary PDD examinations and are not intended to meet exacting evidentiary standards.

**DISCUSSION**—Investigative procedures may include applicant testing, PCSOT, and multiple-facet criminal testing.

**irrelevant question, n**—An irrelevant question is designed to be a non-emotion provoking question (also referred to as *norms* or *neutral questions*).

**modified general question test (MGQT), n**—test format patterned after the Reid test and modified by the U.S. military. It contains relevant, irrelevant, and comparison questions.

**DISCUSSION**—The MGQT is widely used in the field and has a body of validity research.

**monitoring examination, n**—A clinical polygraph examina-

tion specifically intended to uncover whether the offender has committed any illegal sexual act(s) with a child or any other sexual act forbidden by law during a sex offender’s period of supervision.

**DISCUSSION**—The requested test timeframe can be since the imposition of the offender’s parole or probation, since his last test, or since any other period designated by supervision officers. This is exclusively a single-issue polygraph test.

**multiple-facet polygraph test, n**—a test in which the relevant questions cover the same event, though the questions may cover different aspects of that event.

**DISCUSSION**—Because the relevant questions all relate to the same event, in field conditions the examinee would typically be entirely either truthful or deceptive to all questions, though this is not a condition of the multiple-facet polygraph test. One multiple-facet PDD format is the Reid test.

**multiple-issue polygraph test, n**—a test in which the relevant questions cover two or more areas that are partially or completely independent from one another.

**DISCUSSION**— Forms of multiple-issue polygraph testing include PCSOT, applicant testing, and counterintelligence screening.

**no deception indicated (NDI), n**—a conventional term for a PDD outcome.

**DISCUSSION**—A decision of NDI means that the physiological data are stable and interpretable and that the evaluation criteria used by the examiner concluded that the examinee was being completely truthful to the relevant issue. NDI corresponds to the term *no significant physiological responses (NSR)*.

**noise, n**—in PDD, it is the random variation in the recorded data that has no diagnostic value, and when excessive, may take the identification of diagnostic patterns more difficult.

**no opinion (NO), n**—a PDD examination finding which indicates that no decision could be made because the testing protocol was incomplete, distorted, or interfered with in such a way as to prevent proper evaluation.

**DISCUSSION**—This lack of completion could be due to the failure of the examinee to cooperate, premature termination of the examination, or any other event which prevents the successful completion of testing or the proper collection of the physiological data.

**no significant responses (NSR), n**—results of a screening examination which denote that the screening phase of testing was completed, the examiner deemed the physiological data interpretable, and there were no consistent and significant responses to any of the relevant questions.

**optimal decision rules, n**—those that restrict the types and proportion of error to those that can be tolerated by the consumers of the polygraph results.

**DISCUSSION**—Because it is not possible to simultaneously reduce errors of one type (that is, false positives) without increasing errors of the other type, optimal decision rules are central to a judicious and rational process by which the payoff to the consumers of the polygraph decision is greatest and the cost associated with errors is minimized. Optimal decision rules for investigative and evidentiary polygraphy may be different from one another.