VIEW Technical Glossary

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VIEW

An Assessment of Problem Solving Style[SM]

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This glossary will help you become acquainted with some of the words, phrases, and acronyms that are used in the downloadable resources for VIEW: An Assessment of Problem Solving Style℠.

Analysis of Variance (or ANOVA). A test of the statistical significance of the differences among the mean scores of two or more groups on one or more variables or factors (Vogt, 1998).

Assessment. Any systematic method of obtaining information from tests or other sources, used to draw inferences about characteristics of people, objects, or programs. (AERA/APA/NCME Standards, 1999).

Communality. The proportion of a variable's total variance that is explained by a factor structure. Common factor variance is another term used to describe the concept that is symbolized by the symbol h^2 (Vogt, 1998).

Concurrent Validity. The relationship between scores on a survey, questionnaire or any other type of assessment instrument and that of another that is available at the same time (Ary, Jacobs, & Razavieh, 1972). Currently referred to as a specific case of criterion-related evidence.

Confirmatory Factor Analysis (CFA). A statistical technique used to verify the factor structure of a set of observed variables. CFA utilizes structural equation modeling to test the fit of the data to a theoretical model and results in goodness of fit indices.

Construct. A theoretical variable inferred from multiple sources of data; the concept or the characteristic that an instrument is designed to measure.

Construct Validity. The extent to which a survey, questionnaire or any other type of assessment instrument reflects the constructs presumed to underlie the instruments performance and further the extent to which the constructs relate to the theories they are based upon (Ary, Jacobs, & Razavieh, 1972). {See: validity arguments.]

Content Validity. Evidence based on test content; the extent to which an assessment represents the content domain of the tasks to be measured (Ary, Jacobs, & Razavieh, 1972; Linn & Gronlund, 1995; AERA/APA Standards, 1999).

Correlation. The magnitude of the relationship that exists between two or more variables. A linear statistical procedure that tells how closely two variables (predictor and criterion) correspond (Cronbach, 1984).

Correlation Coefficient. A correlation coefficient is a numerical representation of a correlation. The coefficient is normally reported as a two-place decimal number ranging from a perfect negative correlation of -1.0 to a perfect positive correlation of +1.0. A coefficient of zero means there is no relationship between the variables being analyzed. Coefficients are often reported with a number that represents the level of significance (the probability that the true relationship is zero). The most

common form of correlation, when the scale of measurement is either interval or ratio data, is the Pearson Product Moment Correlation Coefficient or Pearson Correlation Coefficient (r).

Creative Problem Solving (CPS). CPS is a process for working on problems in a manner that promotes creativity and new perspectives. CPS Version 6.1™ (Isaksen, Dorval & Treffinger, 2011; Treffinger, Isaksen, & Dorval, 2006) includes four components and eight stages. It provides an organizing framework for generating and developing new and useful outcomes or actions for a broad range of situations (opportunities, challenges, concerns, or problems). In contrast, we use the term "creative problem solving" (lower case) to represent any efforts made by a person or group to use their creativity to solve a problem; this usage does not refer to a specific model, method, or framework.

Cronbach's Alpha. Cronbach's Alpha is a statistical measure of the internal reliability of question items in a scale. The alpha score ranges from a low of 0 to a high of 1.0 and indicates how much the items in a dimension are measuring the same thing (Vogt, 1998). The Alpha obtained for a scale when converted to a percentage indicates the percent of variance of the total score that is reliable, or systematic, variance (Pedhazur & Schmelkin, 1991). The minimum standard of reliability often used for Educational and Psychological measurements is .70 (Nunnally, 1978). The standard statistical notation for a reliability coefficient is α.

Debrief and Debriefing. A descriptive presentation of VIEW information and results to clients; a debrief includes a formal explanation of psychometric properties, background, history, uses of instrumentation, and description of the client's results on VIEW's three dimensions. *Debriefing* involves reflecting on an experience or activity, thinking about what you observed, felt, or learned; commonly involves exchanging those observations, feelings, and learnings with other participants in a group.

Demographic Data. Standard descriptive information about the characteristics of a population or sample, including such information as gender, age, income, religion, or educational status.

Dependent Variable. The variable of interest in an explanatory study; a criterion or outcome measure. In statistical procedures the dependent variable is represented by "y" (Pedhazur & Schmelkin, 1991).

Dimension. The term "dimension" refers to the major components of VIEW and their conceptual foundations. The three dimensions of VIEW are: Orientation to Change, Manner of Processing, and Ways of Deciding.

Distribution. An array of the values for any variable, illustrating the pattern of the scores. A distribution is often presented in graphic form, from the lowest to highest values.

Eigenvalue. The amount of variance accounted for by an individual factor in factor analysis, also referred to as the latent root (Hair, Anderson & Tatham, 1987, p.234).

Error of Measurement. The difference between an observed score and the corresponding true score (hypothetically, the average of the scores obtained if an individual were to respond to an instrument an unlimited number of times) or proficiency (see: *Standard Error of Measurement*).

Exploratory Factor Analysis. A dimension reduction technique that reduces a larger number of variables to a smaller number of factors that account for the greatest amount of variation among the original set of variables (Grimm & Yarnold, 1995, p.12).

Factor Analysis. Any of several multivariate statistical methods of describing the interrelationships of a set of variables by statistically deriving new variables, called factors, that are fewer in number than the original set of variables. Principal Component and Maximum Likelihood are variations of Factor Analysis.

Independent Variable. The variable(s) used in an explanatory study that have been hypothesized as possible contributors (or causal factors) in relation to the dependent variable. In statistical procedures the independent variable is represented by "x " (Pedhazur & Schmelkin, 1991).

Internal Consistency. A type of reliability, measuring the degree to which there is consistency across items, assessing the extent to which a scale is measuring the same quality throughout (Zeisset, 2000, p. 28).

Inventory. A questionnaire or checklist, usually in self-report form, that elicits information about an individual's preferences, characteristics, or typical reactions to situations and problems.

Inter-Item Reliability. The extent to which all the items of a scale consistently assess the variable being measured. (Common measures are Cronbach's Alpha or split-half measures such as the Kuder-Richardson KR-20 or KR-21 coefficients).

Item. A statement or a question for which a respondent is to select or construct a response.

Kuder-Richardson (KR-20 or KR-21). Measures of the internal consistency or reliability of measurement in instruments, surveys, or questionnaires that have only two possible answers, such as agree/disagree or yes/no (Vogt, 1998).

Kurtosis. The degree of peakedness in a symmetric distribution.

Learning Style. A person's consistent or stable preferences for dealing with a variety of different tasks or situations. There are many theoretical models and instruments for assessing various aspects of learning style. These can be used for self-understanding, for improving teamwork and effective group participation, and for understanding the working dynamics of CPS within a group.

Level of Creativity. A person's capacity or ability to produce many, varied, or unusual ideas that are useful or to elaborate on possibilities already generated; responds to the question, "How creative are you?" Contrasted with *Style of Creativity* or *Creativity Style.*

Level of Significance. An estimation of the probability that the results of a statistical procedure are the function of chance alone. If the level of significance is reported at p<.01 it means the probability of the observed result occurring by chance would be less than one in a hundred.

Leptokurtic. A distribution pattern where the points along the X-axis are clustered resulting in a higher peak than the curvature found in a normal distribution.

Likert Scale. A questionnaire format developed by Rensis Likert. In this format the respondents evaluate a statement and respond by saying whether they 'strongly agree,' 'agree,' 'disagree,' and 'strongly disagree' (Vogt, 1998).

Linearity. A description of the relationship between two or more variables that, when plotted on a graph, forms a straight line (Vogt, 1998).

Manner of Processing. A dimension within VIEW: An Assessment of Problem Solving Style that deals with how people use their inner energy and resources, and that of others when managing change or solving problems.

Mean. The arithmetic average of a group of scores (Vogt, 1998); generally, the sum of all scores divided by the number of scores in the set.

Median. The middle score in a set of ranked scores (Vogt, 1998); the median is a hypothetical value that divides a distribution of scores exactly in half (50% of the actual scores fall above the median, and 50% below).

Mesokurtic. A distribution pattern that reflects a normal distribution. (see *normal distribution*).

Mode. The most common or frequently occurring score in a set of scores (Vogt, 1998).

Negative Skew. A distribution pattern where the high point of the distribution curve (most responses) is to the right of the theoretical mean (low end).

Normal Distribution. A symmetrical distribution, where about as many scores are found at the low end (negative end) as at the high (positive end) and most of the scores fall in the middle of the distribution (Zeisset, 2000, p. 4).

Normal Curve. Theoretically perfect frequency distribution, in which the mean, the mode and median are all the same and which takes the form of a symmetrical bell shaped curve (Zeisset, 2000, p. 6).

Norms. The distribution of scores on a particular variable or instrument within an extensive sample with which the scores of other individuals or groups can be compared.

Observed Scores. Actual score obtained from the data submitted by the subject.

Orientation to Change. A dimension within VIEW: An Assessment of Problem Solving Style that deals with preferences for responding to and managing novelty, structure and authority, and search strategy when dealing with change or solving problems.

Orthogonal. A term used to describe the orientation of the axes (perpendicular to each other) when uncorrelated variables are plotted on a graph. In factor analysis an orthogonal rotation is used when it is assumed that the factors extracted are not correlated (Vogt, 1998). A "varimax" rotation is the term used in SPSS to describe an orthogonal rotation. (An *oblique* rotation describes an approach for dealing with correlated variables.)

P (or p). The symbol for probability value or p value. When used in the expression 'p<.05' it signifies the probability that this result could have been produced by chance (random error) is less than 5%. In other words 'p<.05' means that the odds are less than one in 20 that the result represents a chance occurrence. (Vogt, 1998).

Platykurtic. A distribution pattern that has a positive skew (see positive skew).

Positive Skew. A distribution pattern where the high point of the distribution curve (most responses) is to the left of the theoretical mean (high end).

Predictive Validity. The extent to which a survey, questionnaire, or test can predict accurately the future performance of individuals; now generally described as "evidence based on relations to other variables."

Preference. Preference refers to the description and interpretation of a person's style, based on his or her score, for any VIEW dimension.

Preference for Novelty. A subscale or element within the Orientation to Change dimension of VIEW: An Assessment of Problem Solving Style that encompasses how people prefer to deal with originality when approaching problems and change.

Principal Components Analysis. A method for factoring a correlation matrix directly, transforming a large set of correlated variables into smaller set of variables (Vogt, 1998). It is a statistical procedure used in Factor Analysis.

Profiling.   A vehicle to help identify peoples' strengths and talents for a particular goal or task, in a particular context and circumstances, for specific outcomes (Isaksen, Puccio, & Treffinger, 1993, p. 157).

Qualitative. Refers to efforts to understand the meaning of data, using analysis and judgment rather than statistical analysis.

Quantitative. Referring to data that are represented in numerical form and can be analyzed statistically.

Range. The distance between the highest and the lowest scores. The range is the simplest measure of variability (Zeisset, 2000, p. 8).

Regression Analysis. Methods of explaining or predicting the variability of a dependent variable using data about one or more independent variables. Regression analysis responds to the question, "What values in the dependent variable might we expect, given certain values in the independent variables?" (Vogt, 1998).

Reliability. The degree of consistency or stability with which an instrument, survey or questionnaire measures whatever it is measuring (Ary, Jacobs, & Razavieh, 1972, p. 200).

SPSS (Statistical Package for Social Sciences). One of the more popular computer software packages for statistical data analysis. As a result of being acquired by IBM in 2009, the current name is: IBM SPSS Statistics.

Sampling. The process of selecting subjects who represent a larger group or population in question. If the sampling is random and representative of the larger group the results from the sample can be extended to the larger group with a fair degree of confidence.

Scale. The system of numbers, and their units, by which a value is reported on some dimension of measurement.

Score. Any specific number resulting from the assessment of an individual. Specifically for VIEW, a score is a numerical value that locates a subject's position along the continuum for the two styles in any VIEW dimension or subscale.

Scree Test; Scree Plot. A graphic method for determining the number of factors to be identified within a set of data that were analyzed using factor analysis; assists in determining the optimum number of factors needed to understand or explain the data.

Search Strategy. A subscale or element within the Orientation to Change dimension of VIEW: An Assessment of Problem Solving Style that encompasses how people prefer to deal with openness and closure when solving problems or dealing with change.

Semantic Differential Scale. A technique for assessing responses to a variety of bipolar adjective pairs. It is designed to assess the meaning of the concepts or the differences between the concepts. Semantic Differential Scales capture both directionality (e.g. is it good or bad?) and intensity (e.g. how good or how bad?).

Significance. The probability that the observed results occurred by chance. Results are generally accepted as statistically significant when there is less than a 5% likelihood that they occurred by chance (less than 5 times in 100, or p<.05). A stricter criterion of significance is p<.01, or "less than a 1% likelihood that the observed result occurred by chance" (Zeisset, 2000, p. 20). Statistical significance does not mean practical significance or "importance" of results.

Spearman-Brown. A statistical formula used to determine the gain in the reliability of an instrument that might result if the sample size were increased.

Stability. A measure of the reliability of scores over time (e.g. through test-retest reliability).

Standard Deviation. The most common measure of variability, or the "scatter" of scores in a distribution, based on the differences between each score and the arithmetic mean of the distribution (Zeisset, 2000, p. 8).

Standard Error of Measure. Estimates the Standard Deviation (SD) of the distribution of scores that would be obtained if a person took a test many times. Usually estimated from group data, calculated using the SD and reliability coefficient of a test, it is an alternate way to look at a test's reliability (Zeisset, 2000, p. 60).

Standard Scores. (z-score) tells how far above or below the mean any given score is in *standard deviation units*.

Structure and Authority. A subscale or element within the Orientation to Change dimension of VIEW: An Assessment of Problem Solving Style that encompasses how people prefer to recognize and respond to structure and authority when solving problems or dealing with change.

Style. Style is the set of labels we used to define and describe each dimension of VIEW. There are two styles for each of the three dimensions of VIEW.

Style of Creativity. An individual's preferences or predispositions to deal with people or situations in consistent ways, and to use particular methods for gathering data, making decisions, and interacting with the environment. Deals with how individuals express and best use their creativity ("How are you creative?"), not with how creative they are. (Contrast with *Level of Creativity*.)

Test-Retest Reliability. A correlation between the scores on two administrations of a measurement instrument given to the same subjects over a period of time. A high correlation indicates high reliability (Vogt, 1998).

Validity. The degree to which a test or instrument measures what it purports to measure. Traditionally, three common forms of validity have been: content, criterion-related, and construct. The 1999 AERA/APA/NCME Standards (p. 184) define validity as "the degree to which accumulated evidence and theory support specific interpretations of test scores entailed by a proposed uses of a test," and define validity argument as "an explicit scientific justification of the degree to which accumulated evidence and theory support the proposed interpretation(s) of test scores."

Variable. An attribute or characteristic that can change or that can vary.

Variance. A measure of variability representing the spread or "scatter" of scores around the central point of a distribution.

Ways of Deciding. A dimension within VIEW: An Assessment of Problem Solving Style that deals with preferences for task concerns or personal and interpersonal needs when focusing thinking or moving forward toward decisions and action.

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