

Writing Problem Statements, Hypotheses, and Operational Definitions

Problem Statement

What are the effects of type of material, age, gender, and problem complexity upon performance in a concept attainment task?

Hypotheses

1. There is no difference in the performance of individuals using figural materials and those using verbal materials.
2. There is no difference in the performance of individuals in the age range 20 to 25 and those in the range of 26 to 30 years.
3. There is not difference in performance of males and females.
4. Concept attainment problems containing two and three relevant dimensions are of equal difficulty.

Operation Definitions

Because a concept attainment task is very specific, the task itself should be described as part of the procedures section.

Type of materials: figural: pictorial 3x3 cards in which the concepts are embedded. Verbal: 3x3 cards with verbal statements corresponding to the pictorial cards.

Relevant dimension: A cauterization common to all cards that exemplify a concept (dimension might be a solid border).

Performance: Time in minutes and seconds required to attain the concept.

Problem complexity: The number of relevant dimensions in the concept. The greater the number the more complex the problem.

Age and gender are operationally defined in the hypothesis.

Exogenous Variables

Type of material
Age (organismic)
Gender (organismic)
Problem complexity

Endogenous Variables

Time required to attain the concept

Possible Intervening Variables

General intelligence of individual (organismic)
Spatial relations skill of the individual (organismic)
Efficiency and accuracy of the experimenter administering the task.

Possible Control Variables

Age
Gender

From Wiersma, William (2000). *Research Methods in Education*. Needham Heights, MA: Allyn & Bacon.