Guttman scale

On a Guttman scale, items are arranged in an order so that an individual who agrees with a particular item also agrees with items of lower rank-order. For example, a series of items could be (1) "I am willing to be near ice cream"; (2) "I am willing to smell ice cream"; (3) "I am willing to eat ice cream"; and (4) "I love to eat ice cream". Agreement with any one item implies agreement with the lower-order items.

The concept of Guttman scale likewise applies to series of items in other kinds of tests, such as achievement tests, that have binary outcomes. For example, a test of math achievement might order questions based on their difficulty and instruct the examinee to begin in the middle. The assumption is if the examinee can successfully answer items of that difficulty (e.g., summing two 3-digit numbers), s/he would be able to answer the earlier questions (e.g., summing two 2-digit numbers). Some achievement tests are organized in a Guttman scale to reduce the duration of the test.

By designing surveys and tests such that they contain Guttman scales, researchers can simplify the analysis of the outcome of surveys and increase the robustness. Guttman scales also make it possible to detect and discard randomized answer patterns, as may be given by uncooperative respondents.