

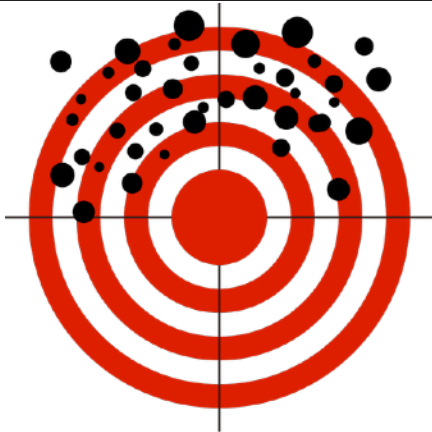
Illustrating Reliability versus Validity of a Measurement

Imagine that a construct we want to measure is the bullseye (the center) of a target, as illustrated by the bullseye in each of the diagrams below. Then imagine that we have a measure, such as a survey, a questionnaire, a laboratory task, a brain imaging device, or any of a myriad types of measurements we use in psychological science.

Now imagine that each time we use our measurement is like shooting an arrow toward the target. Because our goal is to measure each construct reliably and validly, we want our arrow shots to be as consistent (reliable) and accurate (valid) as possible. We want them to consistently (reliably) and accurately (validly) hit the target's bullseye.

In the diagrams below, our arrow shots are illustrated with black dots. The larger the dots, the more of our arrows — our measurements — landed on that spot. Each diagram illustrates a relation between reliability and validity.

POOR RELIABILITY and POOR VALIDITY



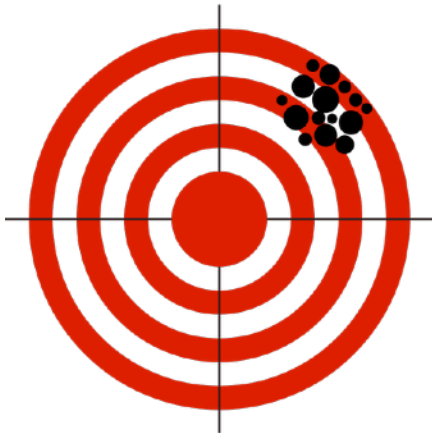
The measure illustrated by this diagram has poor reliability.

Our arrow shots aren't consistent; they are splayed out across the target. Therefore, our measure isn't reliable.

The measure illustrated by this diagram also has poor validity.

Our arrow shots aren't close to the bullseye. Therefore, our metaphorical measure isn't accurate; it doesn't come close enough to measuring the construct (the metaphorical bullseye) that we want to measure.

GOOD RELIABILITY and POOR VALIDITY



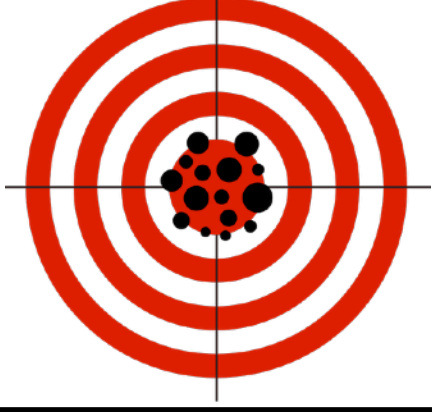
The measure illustrated by this diagram has good reliability.

Our arrow shots are rather consistent; they are clustered together on the target. Therefore, our measure is relatively consistent; it consistently measures something. However that something might not be the construct we want to measure (in this illustration it is not, because our consistent measurements are not on the bullseye of the target).

But the measure illustrated by this diagram has poor validity.

Our arrow shots aren't close to the bullseye. Therefore, our metaphorical measure isn't accurate; it doesn't come close enough to measuring the construct (the metaphorical bullseye) that we want to measure.

GOOD RELIABILITY and GOOD VALIDITY



The measure illustrated by this diagram has good reliability.

Our arrow shots are rather consistent; they are clustered together on the target. Therefore, our measure is relatively reliable.

And the measure illustrated by this diagram has good validity.

Our arrow shots are rather close to the bullseye. Therefore, our metaphorical measure is relatively accurate; it comes close to measuring the construct (the metaphorical bullseye) that we want to measure.