Measurement of Latent Traits and The Debate About Theories of Intelligence
Constructs versus Measures

• In scientific theories, “constructs” are theoretical terms that refer to unobserved, “idealized” entities.
  – In psychology and cognitive science, constructs include terms like “memory” and “attention.”

• “Measures” are the observations used in science to learn about constructs.
  – These include things like reaction times, accuracy scores, and response frequencies.
Latent Traits

• “Latent traits” are a specific kind of construct:
  – Relatively *stable* qualities of individuals that are changeable, but only over the long term.
    • Transient things, such as “attention,” are not traits.
  – Latent traits include everyday things like attitudes, preferences, and dispositions (e.g., “talkative”).
  – Latent traits also include many kinds of things that educators are interested in:
    • Ability, aptitude, expertise, and intelligence.
Measuring Latent Traits

• It is important to recognize that no single measure of a latent trait is ever taken to be a perfectly accurate measure of that trait.
  – Instead, different kinds of “measures” or “tests” are seen as “tapping into” the latent trait.
  – Different measures may “tap into” a latent trait in different ways, capturing some aspects of the trait better than others.
  – Multiple measures can provide “converging” evidence.
  – Just because measures aren’t perfect, this doesn’t mean they can’t be useful or “good.”
Intelligence as a Latent Trait

• In different theories of intelligence, “intelligence” should be taken to be a latent trait that is observed only indirectly.
  – Different theories of intelligence may rely on different tests or measures for evidence.
  – However, theories of intelligence refer to the underlying construct of intelligence—the latent trait—and not the tests used to measure it.
  – It is crucial to keep the construct and its measures separate when considering these theories.
This Week’s Debate

• This week, we will hold a debate that pits the “geocentric” (g) theory of intelligence against the theory of “multiple intelligences.”
  – Our debate will **not** be about the validity of tests of intelligence. In order to have that debate, it would be necessary to first agree on a theory. But that’s precisely what the debate’s about!
  – When a measure associated with one theory or the other is predictive of ability or success, this represents evidence in favor of that theory.
More Ground Rules

• It’s very important that the debate we hold not devolve into a political debate.
• The question of which theory is more “beneficial” or “just” is not at issue.
• We want to focus on theoretical arguments and the evidence used to support them.
• This is a sensitive topic, so please keep things civil. Let’s just have a fun, objective debate!