Building Cultural Competence and Ethical Practices in STEM Education Research

March 8, 2019

Odis Johnson Jr., PhD
Associate Professor of Sociology and Education
Washington University in St. Louis
AGENDA

• Ethics/Protections
• Research Design
• Culture and Reliability
• Eliminating Deficit Thinking
• Culturally Responsive Dissemination
IRB

• Professional conduct
  • Anonymity (no identifying information is retained)
  • Consent (consent and assent)
  • Confidentiality (data cannot be linked to individuals)

• Non-disclosure of participation (Deductive disclosure)
• Certificate of Confidentiality (Free of legal jeopardy)
• COI (“Conflicts of Interests”)
• NSF now requires all submitted proposals to begin IRB approval process while grants are pending
HANDLING ETHICAL CONFLICTS AND EXPERIMENTATION IN EDUCATIONAL RESEARCH

Providing innovations to some but not all students, or subjecting some students to practices of unknown benefit while others are spared may be unethical. This may be less of a concern in higher education as it is in primary/secondary.

• **Staggered Treatments**: all students that were initially in the control group are later added to the treatment group, and in some cases, those that received the experimental treatment might be reassigned to the control. These reassignments would occur at a time that makes sense (e.g. semester break) and when the risk of treatment diffusion is unlikely (e.g. different subjects being taught each semester)

• **“No Control” Trials**: in this experimental design two or more innovations are compared to each other so the potential risks and benefits are shared by all students
Unreliability

• **EXP:** Survey reliability of “fade” concept
  • Biased: Not a consistent predictor

• **EXP:** SAT “oarsman is to regatta”
  • Shortly thereafter the College Board set up a fairness-review process that subjected every potential SAT question to close examination for racial stereotypes, loaded words, inappropriate assumptions, or anything else that might put minority students at a disadvantage. Questions dealing with subjects beyond the experience of a typical inner-city student, such as yachting or debutante balls, were thrown out.
The dependability, consistency and predictability of an operation can be found in *how often it yields the same results when applied*.
CULTURAL COMPETENCE IN RESEARCH

Before selecting a scale to use, ask:

On what population was the scale normed?

EXP:

• Most (if not all) masculinity scales are constructed using college student samples at predominantly white, 4-year institutions.

• Samples have a higher income, more white students, etc., than the U.S. population of males.

• Norms matter (Johnson 2018).
DEFICIT PARADIGMS & INEQUALITY

INEQUALITY RESEARCH ≠ DEFICIT THINKING

• Frame research about culture with a recognition of those structural and institutional factors that support it. This is especially needed when discussing racial/ethnic and gender groups.

• Research that does not identify the structural/institutional factors supporting inequality does not help broaden participation and is therefore not transformative.

• Research that uses an assets approach is important, but must nonetheless identify the structural/institutional factors that support positive STEM outcomes.

• Within-racial/ethnic group research assumes that not all members of a population needs intervention and can help identify the structural/institutional factors that support success.
CULTURALLY RESPONSIVE RESEARCH

THE REALITY

• Once completed, our research rarely reaches the communities it concerns, nor those that were research participants.

• Broader impacts require that researchers consider ways to leverage research for social transformation.

• Cross-cultural dissemination is sorely needed, but its occurrence is unknown.

QUESTIONS TO ASK OF YOUR WORK

• “Besieged institutions” (especially K-12) or partners in change?

• How can we maximize the risk-benefit ratio in our participants’ favor?

• How do we achieve culturally responsive replication?

• How can we encourage the adoption of best practices by institutions that experience repeated failure with the majority of their populations of color?
Thanks and Questions

Odis Johnson, Jr., PhD.
o.johnson@wustl.edu
http://sociology.wustl.edu/people
https://twitter.com/NEqualityMatrix