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## Questions and answers about language testing statistics: Characteristics of sound mixed methods research

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### Question:

In Brown, 2005, you described the characteristics of sound qualitative research by discussing the importance of dependability, credibility, confirmability, and transferability. I think it would also be useful to know about the characteristics of sound quantitative and even mixed methods research. Could you address these research paradigms as well?

### Answer:

You are absolutely right, Brown (2005) reviewed the characteristics of good quality qualitative research. Since then, the first part of your question was answered in Brown (2015a) which covered the characteristics of sound quantitative research. Here, I will address the second part of your question by examining the characteristics of sound mixed methods research. I will begin by reviewing my definition of what I think *research* is, as well as the key concepts in qualitative and quantitative research. Then I will turn to the issues that researchers need to address in order to produce sound mixed methods research. I will do so by explaining nine forms of legitimation and six techniques that can be applied. As I proceed through these explanations, you will see how mixed methods research includes both quantitative and qualitative methods, but also creates a research paradigm that is unique in its own right.

### What is research?

In the two related columns on this topic (listed in the previous paragraph), I showed how I came to settle (in Brown, 1992 and 2004) on a single definition for research that was broad enough to include all the definitions listed in Brown (1992): research is "any systematic and principled inquiry." I also showed how quantitative and qualitative research can be systematic and principled in different, but similar ways. Generally speaking, *quantitative research* can be defended by the researcher and judged by the reader in terms of its reliability, validity, replicability, and generalizability. In contrast, *qualitative research* can be defended or judged in term of its dependability, credibility, confirmability, and transferability. Naturally, because mixed methods research systematically combines both quantitative and qualitative methods, mixed methods researchers should consider all of the issues raised in the previous two sentences for each of the research types, but should also consider the characteristics of properly combining the two types of research in such a way that it is not just a hodge-podge of quantitative and qualitative methods (sometimes referred to snidely as *multi-methods research*), but rather is a systematic and principled combination of the two research paradigms that results in a third paradigm—one that can truly be called *mixed methods research* (MMR).

### How can we know if mixed methods research is systematic and principled?

We can enhance, defend, and judge the quality of MMR based on a concept called *legitimation* (Onwuegbuzie & Johnson, 2006). Brown (2014) defined legitimation as "the degree to which MMR integration of qualitative and quantitative research strengthens and provides legitimacy, fidelity, authority,

weight, soundness, credibility, trustworthiness, and even standing to the results and interpretations in MMR. Clearly, MMR investigators will want to think about legitimation in terms of how they can design their research to enhance it and thereby enhance the resulting *meta-inferences* (i.e., inferences at the MMR or integration level of study)” (p. 128).

Brown (2015b) summarized the extensive discussion originally presented by Onwuegbuzie and Johnson (2006, pp. 56-60) of the following nine subtypes of legitimation:

1. *Sample legitimation* - integrating qualitative and quantitative samples.
2. *Inside-outside legitimation* - adequately using insider and outsider perspectives.
3. *Weakness minimization legitimation* - compensating for the weaknesses in some approaches with the strengths of others.
4. *Sequential legitimation* - minimizing the effects of method sequencing.
5. *Conversion legitimation* - maximizing the effects of using both qualitative and quantitative data.
6. *Paradigmatic mixing legitimation* - combining and blending the traditions, standards, and belief systems that underlie qualitative and quantitative paradigms.
7. *Commensurability legitimation* - maximizing the benefits that accrue from switching and integrating different worldviews.
8. *Multiple validities legitimation* - maximizing the benefits that arise from legitimation of the separate qualitative and quantitative methods based on the use of quantitative, qualitative, and mixed validity types.
9. *Political legitimation* - maximizing the degree to which the consumers of the MMR value the inferences from both qualitative and quantitative methods.

Thus legitimation can be enhanced or defended in an MMR study by systematically combining samples, inside-outside perspectives, and paradigms, as well as by minimizing the effects of the weaknesses in and sequencing of different research methods, and maximizing the degree to which consumers value both qualitative and quantitative inferences, the effects of using both qualitative and quantitative data, integrating different worldviews, using separate qualitative and quantitative methods, and mixing validity types. Using some or all of these strategies to strengthen the legitimation of any particular MMR study will increase the soundness of any meta-inferences that result.

If these nine concepts seem a bit overwhelming, it may help to know that Brown (2015b, pp. 133-135) discusses six key practical techniques that mixed methods researcher can apply when trying to enhance the legitimation of their studies.

1. *Convergence* techniques examine the qualitative and quantitative data for evidence of similar conclusions.
2. *Divergence* techniques look at the data for contradictions, surprises, anomalies that could lead to new conclusions or to additional new research avenues.
3. *Elaboration* techniques examine the various data sources to see if some of them might amplify or expand on interpretations from other data sources.
4. *Clarification* techniques investigate various data sources to see if they might help understand, explain, or illuminate interpretations from other data sources.

5. *Exemplification* techniques look at various data sources for examples of inferences drawn from other data.
6. *Interaction* techniques move from qualitative to quantitative to qualitative and back to build cyclically on all five of the previous techniques.

Again, using these techniques in an MMR study will enhance its soundness, and as such, readers should look for evidence of these techniques in judging the quality of MMR studies.

## Conclusion

In direct answer to your original question, the characteristics that researchers should employ to strengthen the quality of an MMR study and readers should look for in judging the quality of an MMR study are the following *forms of legitimation*: sample, inside-outside, weakness minimization, sequential, conversion, paradigmatic mixing, commensurability, multiple validities, and political forms of legitimation. To accomplish some or all of that, several *techniques* can be applied by the MMR investigator: convergence, divergence, elaboration, clarification, exemplification, and interaction techniques.

However, neither the MMR investigator nor the reader should expect all nine forms of legitimation and six techniques to be appropriate for any particular study. Instead, any decisions about the quality of MMR should be a matter of degrees. More specifically, it would help to ask how many of the forms of legitimation and techniques were applied? To what degree were they used? And, how effectively did they work together?

If you find MMR intriguing, you can explore further in Brown, 2014 and 2015b, or if you are hopelessly fascinated by MMR, some or all of the following general MMR books may prove useful: Bergman (2008); Cresswell (2003, 2009); Cresswell and Plano Clark (2007); Greene (2007); Mertens (2010); Plano Clark and Creswell (2008); Tashakkorie and Teddlie (1998, 2010); and Teddlie and Tashakkorie (2009).

## References

- Bergman, M. (Ed.). (2008). *Advances in mixed methods research*. Thousand Oaks, CA: Sage.
- Brown, J. D. (1992). What is research? *TESOL Matters*, 2 (5), 10.
- Brown, J. D. (2004). Research methods for Applied Linguistics: Scope, characteristics, and standards. In A. Davies & C. Elder (Eds.), *The handbook of applied linguistics* (pp. 476-500). Oxford: Blackwell.
- Brown, J. D. (2005). Statistics Corner. Questions and answers about language testing statistics: Characteristics of sound qualitative research. *Shiken: JALT Testing & Evaluation SIG Newsletter*, 9(2), 31-33. Also retrieved from the World Wide Web at [http://www.jalt.org/test/bro\\_22.htm](http://www.jalt.org/test/bro_22.htm)
- Brown, J. D. (2014). *Mixed methods research for TESOL*. Edinburgh: University of Edinburgh Press.
- Brown, J. D. (2015a). Statistics Corner. Questions and answers about language testing statistics: Characteristics of sound quantitative research. *Shiken Research Bulletin*, 19(2), 24-28. [http://teval.jalt.org/sites/teval.jalt.org/files/19-02-24\\_Brown.pdf](http://teval.jalt.org/sites/teval.jalt.org/files/19-02-24_Brown.pdf)
- Brown, J. D. (2015b). Mixed methods research. In J. D. Brown & C. Coombe (Eds.) (2015c). *The Cambridge guide to research in language teaching and learning* (pp. 78-84). Cambridge: Cambridge.
- Cresswell, J. W. (2003, 2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage.

- Creswell, J. W., & Plano Clark, V. L. (2007). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage.
- Greene, J. C. (2007). *Mixed methods in social inquiry*. San Francisco: Wiley.
- Mertens, D. M. (2010). *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods*. Thousand Oaks, CA: Sage.
- Onwuegbuzie, A. J., & Johnson, R. B. (2006). The validity issue in mixed research. *Research in the Schools*, 13(1), 48-63.
- Plano Clark, V. L., & Creswell, J. W. (Eds.). (2008). *The mixed methods reader*. Thousand Oaks, CA: Sage.
- Tashakkori, A., & Teddlie, C. (Eds.) (2010). *Sage handbook of mixed methods in social & behavioral research* (2<sup>nd</sup> ed.). Thousand Oaks, CA: Sage.
- Tashakkorie, A., & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches* (Applied Social Research Methods Series Number 46). Thousand Oaks, CA: Sage.
- Teddlie, C., & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches to social and behavioral sciences*. Thousand Oaks, CA: Sage.

### **Where to submit questions:**

Your question can remain anonymous if you so desire. Please submit questions for this column to the following e-mail or snail-mail addresses:

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