Richard:
As cited in the literature this week, organizing the steps to this point of your study is crucial in determining where (and how) you go from here. Begin to establish a framework of how the sources you reviewed fit with your purpose in general, and your research questions in particular. Note how and why the reference material you've accumulated relates to each chapter of your paper. Whether you're using database software, spreadsheets, Word tables, or even handwritten note cards, organization of the body of work you've assembled is a key factor. Finalizing your research paper requires a synthesis of many elements. Writing up your research project is not a simple process, but you can take steps to lighten your load. Organization is one of those steps.

Mertens, D. M. (2010). Chapter 3: Literature review and focusing the research. In Research and evaluation in education and psychology. Integrating diversity with quantitative, qualitative, and mixed methods. (3rd ed.) (pp. 89-121). Thousand Oaks, CA: SAGE Publications, Inc

Mark:
Validity is the idea or concept that a tool or instrument actually measures what it is supposed to measure. For example, a scale is used to measure someone's weight. Hence, a scale is a valid instrument to measure weight. However, the same scale is not a valid instrument to measure someone's height. Further, in research there are tools and surveys that measure certain concepts relating to human beings. In my research project, which is about situation awareness, there is a tool called SAGAT that is a valid measure for situation awareness and has been used in multiple studies to measure situation awareness. If one were to use the SAGAT tool to measure depression in subjects, it would be an invalid instrument because it is not designed to measure depression.

Reliability is the ability for the instrument or tool to repeat consistently the measure it is taken; hence it has repeatability. Continuing with the above example, if a person were to get on a scale five different times in 7 minutes and his readings were as follows, 150, 161, 145, 133, and 141, we would say that the scale has no reliability. Yet it has validity because a scale is a well-known instrument for measuring weight. If this scale were properly calibrated and the same experiment was performed with five measurements in 7 minutes and the data were: 150, 151, 149, 151, and 150, then the reliability would be good.

When using Q methodology, there are strengths and weaknesses with the technique. One of the strengths is that it combines the strengths of both qualitative and quantitative research methods when addressing a phenomenon and the views of the phenomenon are directly from the subjects. Another strength of this method is that the participants are given more power and they decide personally what is the most important aspects of a given phenomenon. The participants more or less through their Q sorts drive the input and the researcher has much less input value. Finally, utilizing this method allows for researchers and those reviewing the study

to have direct access into the feelings, attitudes and perceptions of the subjects which can be very insightful when trying to understand how a phenomenon impacts subjects. It can help to generate theory and new ideas versus trying to test a hypothesis.

There are some weaknesses to the Q methodology as well. First, when the researcher is developing the concourse through interviews with people who are involved in the subject to be studied, this process can be very long and tedious. In order to have a complete understanding of a subject all avenues of the phenomenon should be investigated and installed into the concourse. If the researcher in this phase is not thorough and all encompassing, some of the items for the Q sort may not be included. Second, there was been some concern with the subjects during the Q sort stage that there is a “forced choice” required when placing items into the matrix. This could inhibit or alter the subject’s placement of the statements in places where they may actually want to place them. Finally, another weakness of the Q methodology is that there could be researcher bias in the selection and formation of statements that will be used in the Q sort. While the researcher is getting his initial statements and ideas or concepts from interviews, his interpretation of these could bias the statements presented to the subjects for the Q sort.

References

Karim, K. (2001). Q methodology- Advantages and the disadvantages of this research method. Journal of Community Nursing, 15(4), 8-12.

Simons, J. (2013). An introduction to Q methodology. Nurse Researcher, 20(3), 28-32.

Trochim, W. M. (2006). Research methods knowledge base. Web Center for Social Research Methods. Retrieved from http://www.socialresearchmethods.net/kb/survey.php

William’s comment to mark:

Mark, very clearly written and explained post. I like your usage of the scale, very practical example. You spoke of researcher bias, do you feel that can go hand in hand with participant selection process to gather participants that are like minded or either not as informed in the area of research to allow for an even great array of bias?

Donna’s comment to mark:

Hi Mark,

I also thought the example of the scale was very clear and simple. Under your advantages, you stated that the method allows researchers to have direct access into feeling, attitudes and perceptions. I am not sure I would agree with this statement. The order of the sort gives some information, but it is through the interview stage where the participants share why the order was given that would reveal the most meaning information and allow the sort data to be interpreted. Since the method ultimately still relies on the interview for a full picture, I do not see this method as more detached or objective than other. I do see the sort as gathering information individuals to find commonality interesting though.

Donna's own post:
Part 1:

In chemistry, we discuss accuracy versus precision. In scientific experimentation, accuracy compares an experimental result to the known or accepted value. In other words, how "right" is your result. Precision involves the comparison of one experimental result to another and is really measuring how reproducible a result is. In class, I usually show students a dart board as shown below to help clarify. It helps them to see that both are important in interpreting the quality of experimental results. I usually state that #3 shown below should not be reported as "accurate" since it is only the averaged result that would be considered accurate by definition. Poor quality data can be identified when both accuracy and precision are reported.

Image result for dart board to show accuracy vs precision

These two terms seem analogous in some ways to validity and reliability. Validity is being sure the measuring instrument can actually measure the variable you are interested in. When discussing accuracy, we talk about different types of errors, systematic and random. In validity, there are internal and external factors.

Reliability is very much like precision, in that it deals with how reproducible the results are. There is always uncertainty in all measurements, however it is up to the researcher to determine what levels are acceptable. It may vary by experiment or set of conditions and that is why discussing reliability or precision is significant.

Part 2:

Some advantages of the Q-Methodology are that it combines both qualitative and quantitative methods, can be used with a small sample size, and since the results are factorial and cannot be predicted, may lead to participants giving "truer" feedback than in other self-reporting methodologies.

Some disadvantages are that it can be time consuming, there may be bias introduced by the researcher in determining the statements that will be sorted, and there is some concern over

reliability of results.

References

Cross, R. M. (2005). Exploring attitudes: the case for Q methodology. Health education research, 20(2), 206-213.

Richard’s comment to Dana:

Some great posts from the "picture worth a thousand words" department. We have a number of interesting questions raised here about validity and reliability. How do we assess the reliability of our research and the instruments we use to collect data? The first step is to strive to ensure our measures of constructs are as valid as possible. Then we consider the methods that minimize errors in collecting and measuring data.

If we want to measure the time required to get from home to the grocery, we might take the same vehicle, the same route, at the same time of day. Our results are likely to be of limited variability, considering the factors we build into the process.

On the other hand, how do we measure the confidence of students with their peers? We’d have a much bigger job on our hands, first, defining what we mean be confidence and distinguishing it from other personal traits. We’d have to identify valid and reliable indicators of how confidence is present or absent in our sample. Which study would you like to pursue?

William’s own post:
Part 1

Difference between validity and reliability is that with validity you know you can trust and depend on something at all times, it has been proven to work and with reliability it works most of the time but there are sometimes where it just not going to do what is needed.

How to get down?

Validity

Reliability

P.S. This is why I will never bungee jump!

Part 2

Q – Method Strengths

Neither entirely quantitative nor qualitative but a successful combination of both research styles (Ernest, 2011)
Allows for a person to express their point of view for purpose of hold it constant for inspection and comparison (Ernest, 2011)
Sayable and seeable results (Watts & Stenner, 2005)
Q – Method Weaknesses

Methodology may discourage researchers that are looking for qualitative data to keep from having to incorporate quantitative data (Watts & Stenner, 2005)
Not typically used in a case study (Watts & Stenner, 2005
It can be very difficult for participants to do and how to rank phrases (Karim, 2001)
References

Ernest, J. M. (2011). Using Q Methodology as a mixed methods approach to study beliefs about early childhood education. International Journal of Multiple Research Approaches, 5(2), 223-237. doi:10.5172/mra.2011.5.2.223

Karim, K. (2001). Q methodology- Advantages and the disadvantages of this research method. Journal of Community Nursing, 15(4), 8-12.

Watts, S., & Stenner, P. (2005). Doing Q methodology: theory, method and interpretation. Qualitative Research in Psychology, 2(1), 67-91. doi:10.1191/1478088705qp022oa