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Q Methodology: A Method for Understanding Complex Viewpoints in Communities Served by Extension

Abstract

This article introduces Q methodology, an idea-sorting activity that can help Extension improve outreach and education on new and contentious issues. Q methodology is a helpful tool when Extension professionals are confronted with controversial or complex resource management challenges. Through the analysis of a simple card-sorting exercise, researchers can determine quantitatively and qualitatively how different issues combine to result in (a) an individual's viewpoint on an issue and (b) groupings of different viewpoints within a community. We describe the basic approach to implementing Q methodology and suggest circumstances in which it can help facilitate Extension outreach and education.

Keywords: [Q methodology](#), [attitudes](#), [Extension outreach and education](#), [survey methods](#), [conflict resolution](#)

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Introduction

Extension professionals are often called on to assist communities with controversial natural resource management issues. For example, species listed under the Endangered Species Act are to be protected, new crop varieties are introduced, and federal land management priorities change. In other cases, Extension agents are tasked with facilitating the adoption of new technologies. In both types of situations, understanding constituents' attitudes and preferences and identifying common ground is often central to the Extension agent's role of mediating conflict and helping find solutions to resource management challenges. Here, we present Q methodology, an approach that can be used by Extension agents to gain new knowledge about the viewpoints of their constituents and improve the delivery of Extension programming, especially around controversial issues. Q methodology is unique because it (a) allows for identification of a range of viewpoints on a single issue through the use of an easy-to-implement technique and (b) provides both quantitative and qualitative data on individual and group viewpoints.

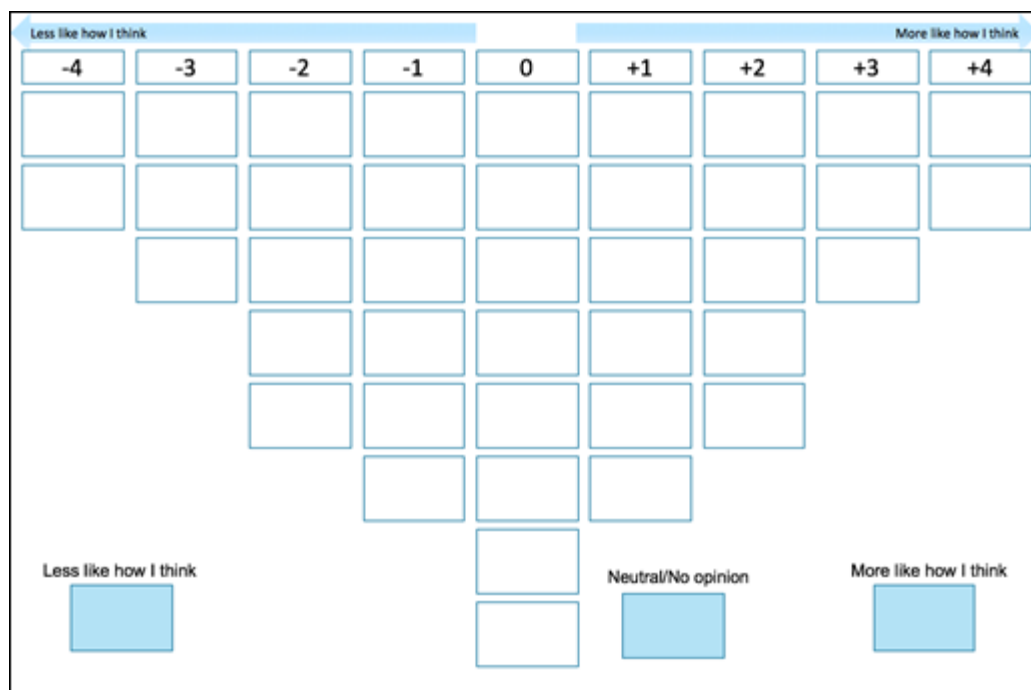
Q Methodology Explained

Q methodology is not new, but it has seldom been applied in Extension (only two articles in the *Journal of*

Extension mention Q methodology: Boyd, 2004, and Reisbeck, 1980). The method was developed by William Stephenson as a tool for psychologists to use to understand an individual's subjective viewpoints (Stephenson, 1935a; Stephenson, 1935b). The difference between Q methodology and survey, interview, or focus group approaches is that the response variable in Q methodology is the participant in the study, not the participants' answers to a series of questions (Brown, 1980; McKeown & Thomas, 2013; Watts & Stenner, 2012). This difference is what makes Q methodology a powerful tool for Extension. Surveys provide a snapshot of what respondents think about questions that probe different aspects of an issue, but they are poorly suited to providing understanding of how respondents think about the questions. Interviews and focus group research allow for a better understanding of how respondents think about an issue but provide only qualitative data, making comparison of viewpoints challenging. Q methodology provides both quantitative and qualitative data.

Q methodology is implemented through an idea-sorting exercise. All participants are presented with the same set of materials: a single question, a stack of note cards with printed statements, and a poster with a fixed distribution for sorting the cards. Figure 1 shows an example of a typical distribution for a Q methodology study. There is one empty rectangle for each note card (e.g., 40 statements, 40 rectangles). The rectangles at the bottom labeled "Less like how I think," "Neutral/No opinion," and "More like how I think" help participants with the initial sorting of statements. A normal distribution is used to force participants into decisions about what statements best represent the way they do or do not think about an issue. Without this distribution, many participants would place a large number of cards at the extreme ends of the distribution, making interpretation difficult.

Figure 1.
Example Q Sort Worksheet



Each sort in its entirety is a single data point in the study. The way a participant sorts the statements represents the participant's working understanding of the issue. Analysis of each participant's sort is conducted using correlation and factor analysis and is followed by qualitative analysis of the statements that load on each factor. Qualitative analysis allows the researcher to understand the meaning of factor groupings and the perspectives

they represent. Table 1 summarizes the steps in developing and implementing a Q methodology study. Tables 2 shows partial quantitative results from a Q methodology study conducted in Arizona.

Table 1.
Summary of Q Methodology Procedures

Step	Description
1. Selection of topic and statements	Appropriate topics for Q methodology studies are issues about which there is a range of opinions. The research question should be formulated as a subjective judgment, not a yes-or-no question. Statements should be drawn from prior knowledge of working with the community and are best if they are stated in the language participants would use.
2. Selection of participants	Q methodology can be applied in groups of various sizes, using census or sampling approaches. For issues relevant to only a small number of stakeholders, it is possible to use a census approach. In situations where the number of stakeholders exceeds 30 or so, a census becomes impractical, and a sampling strategy is needed.
3. Study implementation	Participants are provided with the set of statements and the distribution poster, and then they independently sort the statements according to how they think about the issue. After completing the sort, participants fill out an evaluation describing their thinking about the statements placed at the polar ends of the distribution and, optionally, demographic information.
4. Quantitative and qualitative analyses	Factor analysis is used for developing groupings of similar sorts based on correlations between sorts. Factor analysis provides idealized sorts representing each factor group. Qualitative interpretation of the ranking of statements by each factor group is used for understanding differences across groups.

Table 2.
Partial Quantitative Results of a Q Methodology Study

Statement	Factor					
	1		2		3	
	Score	Rank	Score	Rank	Score	Rank
1. I support habitat health for all species. It is a pyramid in which each thing depends on the other.	0.36	0	1.29	3	-0.79	-1
2. I use a planned grazing system to improve grasslands.	1.09	3	0.61	1	0.95	2

3. I work to make a healthy, functioning landscape.	1.35	3	1.28	3	-0.04	0
4. Ranching provides water and other natural things that would normally be there.	1.41	4	0.67	1	1.61	3
5. The benefit of restoration projects must offset the cost.	-0.30	0	0.18	0	-0.29	-1
6. I view myself as a temporary steward to improve the land for the next generation.	0.64	1	1.44	3	0.17	0

Note. Abbreviated example of the quantitative output from the factor analysis of individual Q sorts. Results are from our study in southern Arizona. We found three unique factor groups. Statements shown are the first six statements included in our study. Score is the index score indicating how strongly a statement loads on a given factor. Rank is the position of each statement in an idealized sort based on the score. Idealized sorts are then interpreted qualitatively for the purpose of understanding the viewpoints represented by each factor group.

Q methodology helps identify complex viewpoints. For example, two groups of participants may both think that climate change is real, but one group may trust scientists while the other distrusts scientists but believes in what they see happening on their farms. Understanding this difference could have implications for how to approach Extension programs and education.

Example: Rangeland Conservation

We used Q methodology in Arizona to understand the views of the ranching community toward conservation and range management. A detailed description of our study is available in Lien, Svancara, Vanasco, Ruyle, and López-Hoffman (2017). Our goal was to improve our understanding of ranchers' views on range management so that we could develop more effective approaches to mitigating conflict around endangered species conservation. There were 40 statements used in the sort. The statements addressed the environment, economics, culture, and the role of government. Each of these four issues contributes to ranchers' approaches to range management. Analysis showed three groupings of ranchers; the groups had similar views on conservation but differed from one another in their attitudes toward economic goals and the role of government. We used these findings to inform recommendations relating to the development of economic incentives for habitat conservation.

Conclusion

The strength of Q methodology is that it provides an in-depth understanding of a single issue. People do not develop opinions about issues in isolation. Rather, viewpoints are the result of how our thoughts on a range of issues come together to form an opinion about a specific issue. Whereas a survey may reveal groupings of respondents who generally agree on an issue, Q methodology helps researchers understand how respondents arrive at their viewpoints—differences in the range of factors that inform their thinking about the issue. Understanding individual viewpoints can highlight common ground between groups we may otherwise mistake as

being in total disagreement with one another. Q methodology is well suited to complex situations where identifying shared values between participants is difficult—a common situation in natural resources management. It is a useful tool for Extension professionals working to mediate or overcome conflict on resource management challenges.

Recommendations for Further Reading

For more information, consult the following resources.

Guides for implementing Q methodology:

- Brown S. R. (1980). *Political subjectivity: Applications of Q methodology in political science*. New Haven, CT: Yale University Press. Provides a detailed explanation of the statistical and methodological theory behind Q methodology.
- McKeown, B., & Thomas, D. B. (2013). *Q methodology*. Los Angeles, CA: Sage Publications. Short guide that introduces basic concepts.
- Watts, S., & Stenner, P. (2012). *Doing Q methodological research: Theory, method and interpretation*. Los Angeles, CA: Sage Publications. User-friendly implementation guide with examples and straightforward explanations.

Examples of implementation of Q methodology in a natural resources context:

- Chamberlain, E. C., Rutherford, M. B., & Gibeau, M. L. (2012). Human perspectives and conservation of grizzly bears in Banff National Park, Canada. *Conservation Biology*, 26, 420–431. doi:10.1111/j.1523-1739.2012.01856.x
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