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Q-Methodology: Research problem, purpose, and questions

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Research Methodology Group

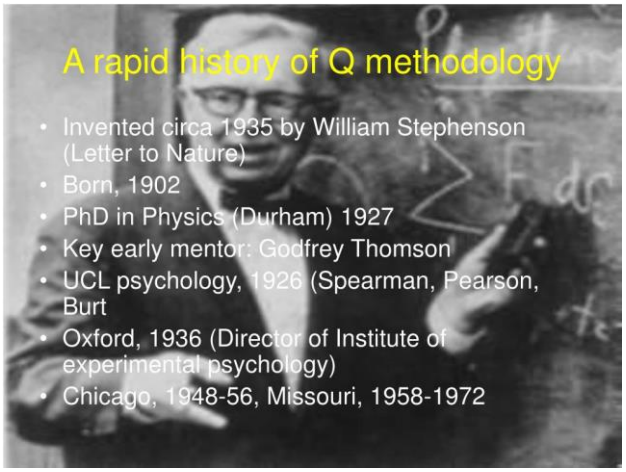
Agenda

Focus on Q-methodology design essential components

Provide examples

Answer your questions

Q-Methodology Prominent Methodologist



William Stephenson (1902-1989)

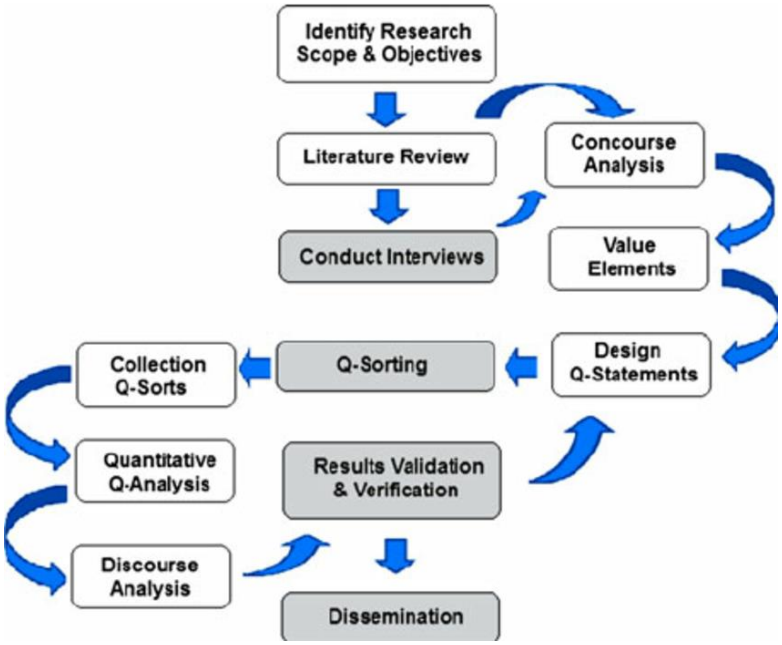
• Between physics and psychology Points-of-view: The 'third-person' view and the 'first-person' view.

• Between objectivity and subjectivity Points-of-view on points-of-view: Second order observation

• Between quantitative and qualitative Prime emphasis on exploration rather than hypothesis testing

Synopsis of the Q-Methodology

- Focus on the **subjective dimension** of any issue towards which different points-of-view can be expressed (e.g. ‘viewpoints on the role of qualitative methods in psychology’)
- A sample of participants (**the p-set**)
- Sorts a sample of items **(the q-set**)
- Into a subjectively meaningful pattern (**the q-sort**)
- Resulting q-sorts are **factor analysed by-person** (**q-analysis**)
- Yielding a **set of factors** whose interpretation **reveals a set of points-of-view (the f-set)**



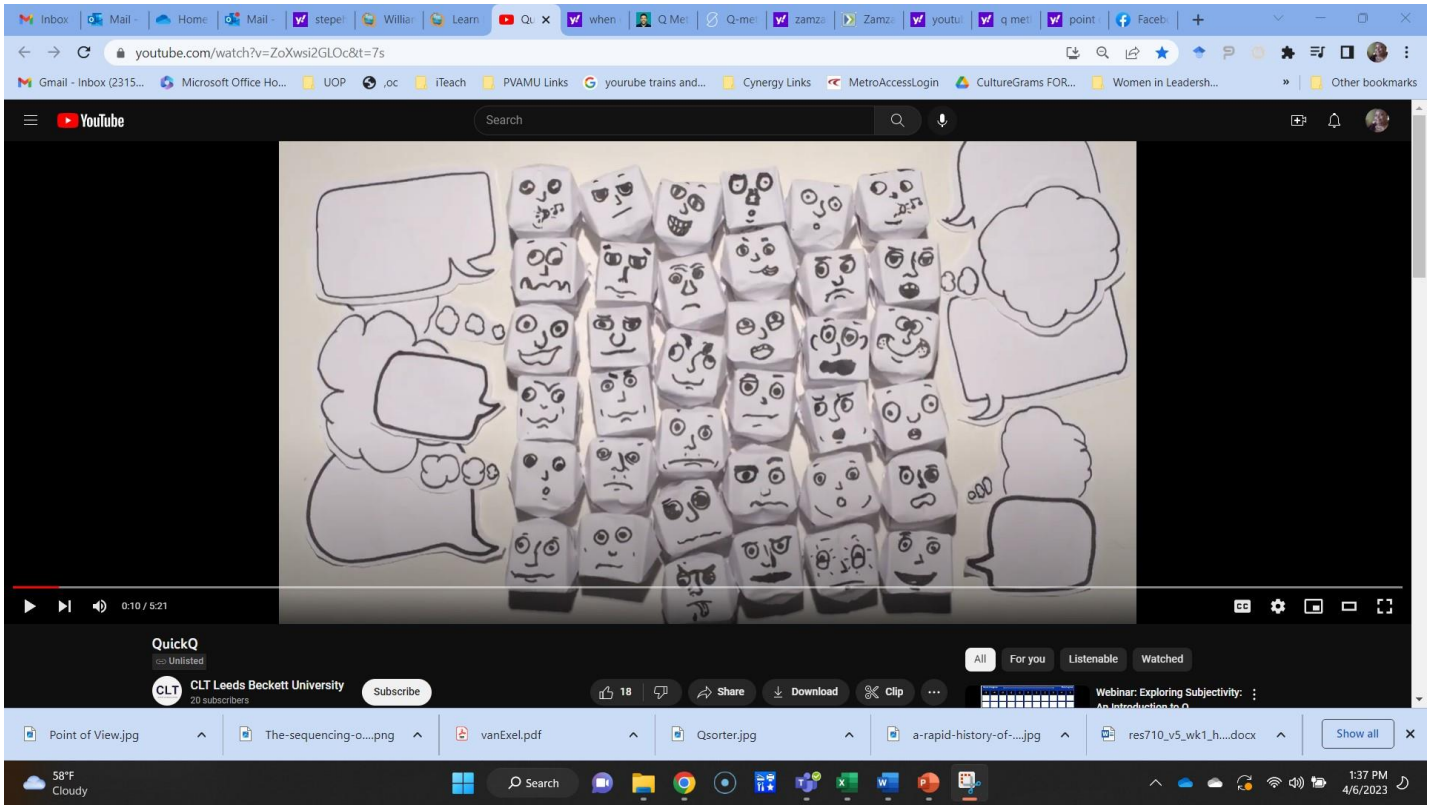
Synopsis of the Q-Methodology

"Q methodology provides a foundation for the systematic study of subjectivity, a person's viewpoint, opinion, beliefs, attitude, and the like (Brown 1993).

Typically, in a Q methodological study people are presented with a sample of statements about some topic, called the Q-set. Respondents, called the P-set, are asked to rank-order the statements from their individual point of view, according to some preference, judgement or feeling about them, mostly using a quasi-normal distribution.

By Q sorting people give their subjective meaning to the statements, and by doing so reveal their subjective viewpoint (Smith 2001) or personal profile (Brouwer 1999)."

Synopsis of the Q-Methodology



QuickQ: https://www.youtube.com/watch?v=ZoXwsi2GLOc&t=7s

When to use Q-Methodology

Q Methodology provides a means of **exploring qualitative, subjective perspectives but using quantitative techniques** to do so.

This is valuable for the researcher as it provides a level of transparency around the data collected which is not present when using most other qualitative research methods.

Some of the main reasons for selecting Q Methodology may include:

- When there is a wide range of potential perspectives or viewpoints to be shared.
- When it would be beneficial to develop consensus around the topic.
- When the topic being investigated is not easily defined or understood.
- When there are multiple contrasting viewpoints around the topic.
- When viewpoints are not always readily articulated by the stakeholders/participants.
- When the topic does not normally accept or value qualitative research methods.
- When the researcher wishes to combine qualitative and quantitative information.

When to Use Q-Methodology

Q-sort is a mixed methodology.

- It uses the qualitative judgements of the researcher in defining the problem, developing statements to investigate the perspectives of participants (some of the statements may be developed after interviewing key informants), and selecting participants.
- It uses quantitative options of analysis. It can be very helpful in unearthing perspectives without requiring participants to articulate these clearly themselves.

It is a **useful complement** to a range of other objective evaluation measures.

- For example, Q-methodology can be used to examine teacher's perspectives on teaching as part of an evaluation of a school district. Other evaluation measures can include test scores, attendance and completion.

Q-Methodology: Key Terms

- **Concourse:** A collection of viewpoints that provide a comprehensive summary of a given topic.
- **Condition of Instruction:** Instructions for the participants detailing the main question or problem to be solved and how to complete the Q-Sort.
- **Forced Distribution:** The forced requirement for the participant to rank the statements in line with the Q-Grid.
- **P-Set:** The set of participants.
- **Q-Grid:** The grid structure, or score sheet, that the participants use to rank the statements.
- **Q-Set:** The set of statements used for the Q-Sort.
- **Q-Sort:** The process of sorting the statements.

7 Steps in Designing Q-Methodology : Blueprint Proposal Method Components

- Definition of the domain of discourse on the particular issue
- Development of the set of statements (Q-set)
- Selection of the participants representing different perspectives
- Q sort by participants
- Conducting the post Q-Sort interviews
- Analysis
- interpretation

Definition of the domain of discourse on the particular issue

When devising the statements that are to be used for the Q-Sort, it is essential that **they cover the full range of viewpoints** that the participants may have on the topic being explored. This is achieved through the development of a concourse.

A concourses can be established using two different methods:

1. Naturalistic - Obtained from the participants in the form of verbal or written information.

2. Ready-made - Obtained from existing published information, such as books, newspapers, journals, websites or social media.

Development of the set of statements (Q-set)

The **Q-Set** is a **selection of statements which have been drawn from the concourse,** and which should be **representative of all viewpoints** included within the concourse.

The Q-Set is of critical importance in allowing participants the ability to express their own personal viewpoint on the topic.

However, the creation of the Q-Set is entirely at the discretion of the researcher and is considered as much an art as it is a science.

Development of the set of statements (Q-set)

What should be considered when writing statements for a Q-Set?

The statements included in the Q-Set should be subjective opinion statements that have the potential to generate feelings, emotions and views regarding the topic. The researcher should therefore consider the following guidelines proposed by Webler, Danielson and Tuler (2009) on what makes a good Q-Sort statement.

- Statements must be 'salient' – most important, prominent, relevant, significant.
- Statements must be meaningful to the people completing the Q sorts.
- Statements must be understandable.
- Statements must have excess meaning – can be interpreted in slightly different ways.
- Statements must be something that people are likely to have opinion about.
- Statements must be both positively and negatively framed to provide balance.

Development of the set of statements (Q-set)

How do you know if the Q-Sort statements cover all viewpoints on a topic?
Due to the subjectivity of the researcher's selection of statements there is a need for continuous revision and testing of the statements to refine the Q-Set and ensure it is fit for purpose. this will typically involve piloting the statements and obtaining feedback from the participants in order to make amendments. When the researcher gets to the point where feedback from participants is adding little additional perspective on the topic confidence can be taken that the statements cover al viewpoints associated with the topic.

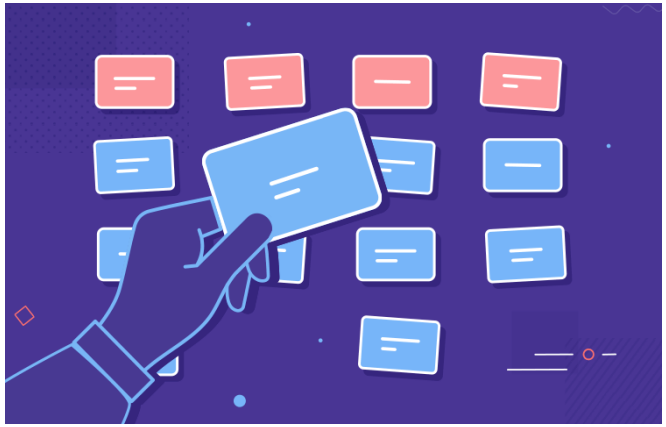
How many statements should be included in a Q-Sort?
There is no rule for the total number of statements that should be used for a Q-Sort. It ultimately depends on the complexity of the topic and the type of participant who will be completing the Q-Sorts. Watts and Stenner (2012) propose that **40-80 statements** would be expected

Ultimately, the needs to be a sufficient number of statements to capture all associated viewpoint, whilst also considering that an excessive number of unnecessary statements may reduce the motivation of the participants to maintain engagement throughout the entire Q-Sort.

Development of the set of statements (Q-set)

What are the alternatives to statements for Q-Sorts?

There are a number of alternatives to statements that can be used for a Q-Sort.



The researcher could use single words, images, sounds, smells, tastes, objects or anything else they feel is appropriate for the purpose of the study. It is the ranking of the items that is of importance, not what those items are.

As with many aspects of Q-Methodology, the researcher has control over how they structure and manage what is to be sorted and ranked.

Selection of the participants representing different perspectives

How do you select participants for a Q-Sort?
The selection of the P-Set is not achieved randomly, instead participants are deliberately selected to ensure the P-Set is as heterogeneous as possible. **In other words, the researcher wants the P-Set to be diverse in viewpoints and character.**

Exel and Graff (2005) explain that Q-Methodology promotes the use of a structured sample of respondents who are theoretically relevant to the problem under consideration.

How many participants do you need for a Q-Sort?
As the participants in Q-Methodology are the variables, and not the samples, it is not necessary for the total number of participants to be excessively large.

- Brown (2003), student of Williams Stephenson, suggests that typically **no more than 40 participants** is necessary.
- More recently, Webler, Danielson and Tuler (2009) proposed that the typical number of participants required for an effective Q-Methodological study is between **one and three dozens** (12-36).

It is considered appropriate to use a total participant number in the tens rather than the hundreds or thousands.

Selection of the participants representing different perspectives

How can you make sure the participants cover the full range of viewpoints for the Q-Sort Topic?

It is **the researcher's responsibility** to include participants that cover the full breadth of the concourse being explored.

- For example, if the researcher is aiming to explore different people's viewpoints on a political topic, it is important that the participants include people with different political backgrounds, from different areas and regions, ages, genders, etc.
- Alternatively, if the researcher is aiming to explore the political views of recent College graduates then the breath of the participants may narrow slightly to meet this specific research need.However, for this example, the researcher would still need to ensure the recent college graduates selected still offer a range of viewpoints and sufficiently varied enough to cover the concourse being investigated.

To summarize, the participants should enable the researcher to fully explore all viewpoints associated with the research topic being investigated.

Q sort by participants

There are **three main elements** that need to be considered when conducting a Q-Sort.

- Creating the Q-Grid
- Creating the ‘condition of instruction’
- Allowing the participants to complete the Q-Sort

Q sort by participants

The Q-Grid can be considered as the ‘score sheet’ for the Q-Sort.

Traditionally, Q-Grids tended to have a quasi-normal distribution (a U-shaped normal distribution).

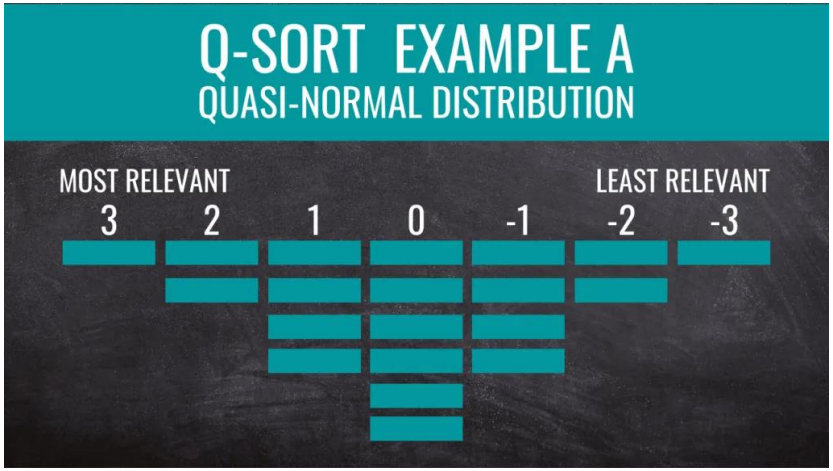
The shape and structure of the Q-Grid is **determined by the researchers** and will be largely dependent on the types of responses they are looking for as well as the number of statements being ranked.

- For example, if the researcher wants to find out which single statement is the most salient to the participants, they would likely create a Q-Grid that has a single option at each extremity.
- Alternatively, if the researcher is less interested in specific single statement rankings and would prefer to explore a broader placement of statements then a flatter structure might be adopted.

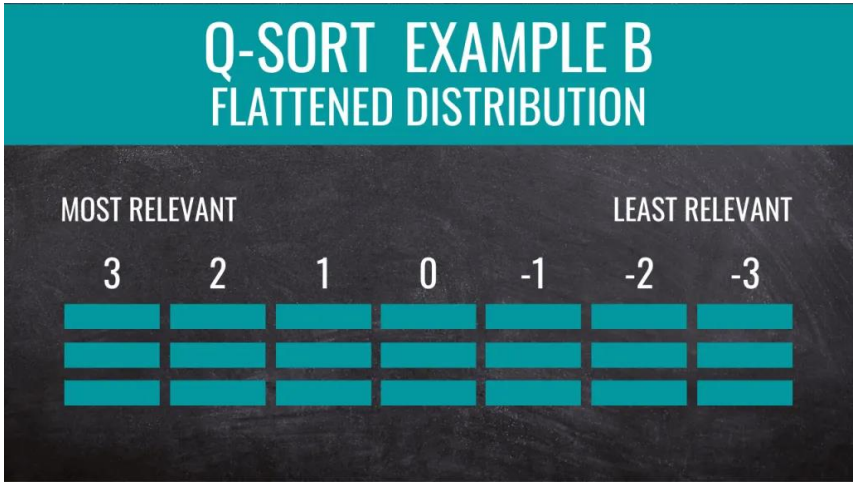
Once the structure is in place, the researcher will then need to assign a score or value to each column contained within the Q-Grid.

Q sort by participants

Q-Sort Example A



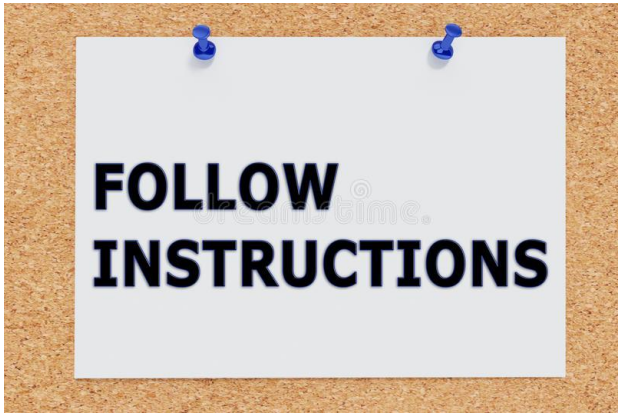
Q-Sort Example B



Source: https://jonathansandling.com/q-methodology-complete-beginners-guide/

Q sort by participants

The **condition of instruction** is used during the Q-Sort process and contains a short introduction to what the study is about, the question that the participants will be answering/exploring, as well as clear instructions on exactly how the participants can complete the Q-Sort.



Also included in the condition of instruction are the **relative terms** used by participants when completing the Q-Sort. In the examples given above, **most relevant and least relevant** are used, however this could be replaced by other terms and phrases to meet the need for the specific study being conducted, e.g. *agree/disagree, like/dislike, most favorite/least favorite,* etc.

Q sort by participants

The researcher will provide the participants with the **Q-Set (the full set of statements), the Q-Grid and the condition of instruction**. The participants will then rank the statements based on their own personal viewpoints on the topic being investigated.

The process of ranking statements via the Q-Sort is referred to as a 'forced distribution.'

Forced distribution is an important component of Q-Methodology and this can be explained by comparing the difference between using a Q-Sort and a Questionnaire to explore the same research question.

- If a 20 statement questionnaire was used and participants were asked to mark if they agree or disagree with each statement using a standard Likert scale, the researcher may find that a participant agrees with all statements equally, or at least agrees with a large number of the statements equally.
- Whereas, if the same 20 statements were used for a Q-Sort the participant is forced to rank the statements they agree with in a hierarchical manner. By doing so it forces the participant to think more critically about the topic and allows the researcher to dig a little deeper into the most salient views on the topic.

Q sort by participants

The first step of completing the Q-Sort is **the initial sort**.

The participant is shown all the statements from the Q-Set and asked to place each statement into one of three buckets:

- **Agree/Relevant**
- **Neutral**
- **Disagree/not Relevant**

This process of initially sorting the statements into three buckets allows the participant to familiarize them self with the Q-Set and also make the next step of sorting the statements in line with the Q-Grid more manageable.

Q sort by participants

Now that the participant has the statements in three buckets they will find it much easier to rank the statements on the Q-Grid.

- Statements which the participant had agreed with will tend to be placed at the positive end of the Q-Grid
- Neutral statements will tend to be placed in the middle of the Q-Grid
- Statements the participant had disagreed with tend to be placed at the negative end of the Q-Grid.

The participant has the ability to completely change any statement placement from the initial sort and also move statements around as they progressively complete the Q-Grid.

Once the participant is confident that their ranking of the statements on the Q-Grid accurately represents their views on the topic they will confirm they have completed the Q-Sort with the researchers. Once all participants have completed the Q-Sort the researcher will have collected their data.

How to Conduct Post Q-Sort Interviews using Q Methodology

The researcher may wish to conduct the participant interviews prior to analyzing the Q-Sort data or the researcher may prefer to analyse the data and use this information to inform which participants are selected for interview as well as what themes to explore and what questions to ask.

- Due to the typical number of participants taking part in a Q Methodology study it will not be practical to conduct interviews with every participant on a 1-2-1 basis.
- Participants could be selected at random for interview, or if data analysis has already taken place (step 6), then participants could be purposefully selected to ensure all, or predominant, viewpoints are heard.
- For 1-2-1 interviews, the researcher could select individuals who align closely with each of the factor profiles that have been produced following data analysis.

For focus groups, the researcher can create groups in any way they see fit.

- If the participants consist of different groups of people (e.g., male and female, staff and customers, students and teachers, etc.), then focus groups could be set up to explore the views of each of these sub-groups.
  - A group could be created using people who align with a specific factor profile (produced from the data analysis – step 6).
  - A group could be created using one individual from each of the factor profiles to put them together in a mixed group.

How to Conduct Post Q-Sort Interviews using Q Methodology

Conducting 1-2-1 Interviews following a Q-Sort

The researcher will typically ask the participant to justify their placement of statements (or items) on the Q-Grid, with particular interest in the statements they placed at each extreme end of the Q-Grid.

- *"Why did you select this statement as 'most relevant'?"*
- *"Why did you select this statement as 'least relevant'?"*
- *"Why is statement 12 more relevant than statement 4?"*
- *"I can see that most of the statements you most agree with fall under the same theme, why do you think this might be?"*

It is important to be responsive and flexible in your questioning to ensure the dialogue is progressive and allows for the participant and researcher to pursue different lines of thought as they arise.

How to Conduct Post Q-Sort Interviews using Q Methodology

Conducting Focus Groups following a Q-Sort

The types of questions and themes discussed in a focus group will largely be the same as those discussed in 1-2-1 interviews. You will want to ask the participants to justify theory placement of specific statements on the Q-Grid.

But when conducting focus groups some additional considerations need to be taken into account.

- Focus groups should not be too large. 3-6 participants is generally preferred.
- It is helpful to set some ground rules at the start around allowing others to speak, not interrupting each other, timeframe, expectations, themes to be covered, etc. This helps to control the discussion and generate more meaningful input from all participants.
- If the focus groups are made up of sub-groups within the participants, such as different age groups, genders, ethnicities or job roles, the views of these groups can be explored to identify any common areas of agreement or disagreement.
- If the focus group has been selected on account of all participants having a profile aligned with a specific factor, then all participants will be broadly in agreement. In this situation, common themes can be covered with each participant taking it in turns to share their own explanations and experiences.
- If the focus group has been selected using individuals from different factors, then the participants will be mixed in their agreement and disagreement towards specific statements and themes. In this situation, the researcher can expect more debate which will need to be facilitated accordingly.

How to Conduct Post Q-Sort Interviews using Q Methodology

It is important to record any interviews or focus groups conducted to ensure you have evidence to return to should you wish to do so at a later date (you almost certainly will need to).

- Ideally, videoing or recording the audio of the discussion would be the preferred option as this will offer you a richer record. It also leaves you free as the researcher to engage in discuss without having to worry about making written notes as this can be highly distracting.
- the other alternative is taking written notes but when using this methods it is often impossible to capture everything that is said. You could use another person as the note taker but similar issues will usually remain present as the discussion flows naturally.
- if you are conducting interviews or focus groups virtually, the software being used will normally have a recording option so this is an ideal approach to take in this situation.

Obviously if you are recording anything you will need to gain consent from the participants.

Analysis

Data analysis is not a simple process if you do not have prior knowledge of statistics. Brown (1980) is considered a must read if you are serious about understanding the statistical knowledge for Q-Methodology. This is really where the methodology becomes more complex if you do not have a background in statistics.

However, there are some general rules to follow and consider which will support you in this process.

- The analytic process: factor extraction
- You can run Q-analyses using most data analysis software packages such as SPPS, R or Stata.
- There are also a few free analysis tools online which may be of use to you. A good example of this is Ken-Q Analysis where you can upload your data via an excel spreadsheet and your data is analysed for you following your input on a few basic data calculation instructions.

Q-Methodology follows a process of factor analysis which have an infinite number of acceptable solutions.

Interpretation.

Stephenson developed the Q-sort for the purpose of making a gestalt or holistic form of data collection easier.

In keeping with Q-Methodology, to interpret a factor thoroughly, you should be able to explain or account for the entire item configuration captured in the relevant factor array. If this can be achieved your final interpretation will capture the factor's full viewpoint.

Cross factor item comparison is not the primary concern in factor interpretation. Instead, the interpretation should be driven by the interrelationship of the many items within a particular factor array.

Interpretation

The **crib sheet** provides a structured way to consistently interpret each and every factor and that has the potential to produce holistic factor interpretations.

A crib sheet contains four categories:

- the highest and lowest ranked items in a factor array are listed,
- as are the items that the relevant factor has ranked higher or
- lower than any of the other study factors.

The categories allow you to identify the most important issues. It is also important to consider the items in the middle of the distribution. Sometimes these items can act as fulcrum for the viewpoint being expressed. Such items can prove pivotal to our understanding of a relevant factor.

Your attention should oscillate between the individual items and the whole viewpoint. Keep your eye on the whole story and focus on the individual items, considering it place in the overall picture.

Examples

Operant Subjectivity
The International Journal of Q Methodology

Mathematics Teachers' Perceptions of Practice: A Q-Methodology Study

Jane M. Wilburne
Pennsylvania State University-Harrisburg

David A. Wegwert
Pennsylvania State University

Dana Pompelia Fraze
Mississippi State University

Drew Polly
University of North Carolina at Charlotte

Abstract: The instructional practices enacted by mathematics teachers have the most powerful impact on students' learning. In our study, we analyzed mathematics teachers' perceptions of their instructional practices, specifically related to their use of actions that support high-leverage practices. Q Methodology was used to investigate the divergent perceptions of mathematics teachers' teaching practices. Employing principal component analysis with varimax rotation, five factors were extracted that represented the perceptions held by 38 elementary, middle-level, and high school teachers from Pennsylvania, North Carolina, and Mississippi. We identified the five factors as Promoting Students' Productivity; Using High Level Tasks; Promoting Sense-Making and Reasoning; Encouraging Mathematical Representation; and Acknowledging Students in Time. The mathematics teachers' perceptions of their teaching actions that support high-leverage practices will benefit mathematics coaches, mathematics educators, professional development providers, and the teachers themselves.

Keywords: high-leverage practices, perceptions of instruction, Q methodology, Q sort

Introduction

Research indicates that teachers' classroom instructional practices have a powerful impact on student achievement (e.g., Carlisle, Ladd, & Vigdor, 2010; Rivkin, Hanushek, & Kain, 2005). In fact, what teachers do in the classroom has a greater effect on students' learning than do the teachers' own personal beliefs about learning (Creemers & Kyriakides, 2008). Efforts to improve the quality of teaching in the U.S. have emphasized the need for ambitious teaching practices that aim "to teach all kinds of students to not only to know academic subjects, but also to be able to use what they know in working on authentic problems in academic domains" (Lampert, Boerst, & Graziani, 2011, p. 136). Ambitious teaching requires teachers to implement teaching practices that elicit thinking, facilitate productive discourse, and promote deep understanding to enhance students' learning. These practices center on the teacher

Corresponding author: [redacted]

Examples

The instructional practices enacted by mathematics teachers have the most powerful impact on students' learning. In our study, we analyzed mathematics teachers' perceptions of their instructional practices, specifically related to their use of actions that support high-leverage practices. **Q Methodology was used to investigate the divergent perceptions of mathematics teachers' teaching practices.** Employing principal component analysis with varimax rotation, five factors were extracted that represented the perceptions held by 38 elementary, middle-level, and high school teachers from Pennsylvania, North Carolina, and Mississippi. We identified the five factors as: Promoting Students' Productivity; Using High-Level Tasks; Promoting Sense-Making and Reasoning; Encouraging Mathematical Representation; and Acknowledging Students in Time. The mathematics teachers' perceptions of their teaching actions that support high-leverage practices will benefit mathematics coaches, mathematics educators, professional development providers, and the teachers themselves.

Examples

Operant Subjectivity
The International Journal of Q Methodology

Attribution and Ideology in American Politics: Causal Reasoning, Political Cognition, and Partisan Polarization in the Age of Trump[1]

Robert Leonard
University of Tennessee

Daniel Nordlund
Dan R. Thomas
Northway College

Abstract: This research reports two Q-studies addressing the possibility that the partisan political divide defining contemporary American politics derives from differences in the way the right and Left reason causally in addition to the more obvious content-specific contrasts in policy positions and beliefs. Attribution theory, the study of lay explanatory styles emphasizing either "internal" considerations — dispositional predilections of actors or "external" factors — broader environmental/contextual considerations — is employed in concourse compilation for two political controversies [economic inequality and electoral success in the 2016 presidential election], and two studies are reported. Results from the first demonstrate sharp differences between ideological and partisan opponents: Republican respondents display clear tendencies to employ dispositional attributions in accounting for economic inequality, praising the well-to-dos diligent and deserving for their success while denigrating the poor for their failure to compete in free-market capitalism. The second study amplifies and extends these findings by comparing Republican and Democratic accounts of the 2016 election results. Again, those on the right are found to overdo dispositional attributions in a manner consistent with the "fundamental attribution error" first identified by Fritz Heider and extended by Thomas Pettigrew to inter-group prejudice as "the ultimate attribution error." A concluding discussion seeks to contextualize these partisan-based differences with reference to the divisive nature of President Trump's leadership while identifying a way forward for further research.

Keywords: actor-observer bias, American politics in the Age of Trump, causal reasoning, fundamental attribution error, political cognition

[1] Revised version of a paper presented at the annual meeting of the International Society for the Scientific Study of Subjectivity, Charleston, North Carolina, October 11-13, 2018. Authors' names appear in alphabetical order. We would like to thank Professor Steven R. Brown, and three anonymous reviewers for their valuable comments on earlier drafts of this article.

Contact author: dan.thomas@northway.edu

Examples

This research reports **two Q-studies addressing the possibility that the partisan political divide defining contemporary American politics derives from differences in the way the Right and Left reason causally in addition to the more obvious content-specific contrasts in policy positions and the like.** Attribution theory, the study of lay explanatory styles emphasizing either "internal" considerations — dispositional predilections of actors or "external" factors — broader environmental/contextual considerations — is employed in concourse compilation for two political controversies (economic inequality and electoral success in the 2016 presidential election), and two studies are reported. Results from the first demonstrate sharp differences between ideological and partisan opponents: Republican respondents display clear tendencies to employ dispositional attributions in accounting for economic inequality, praising the well-to-do as diligent and deserving for their success while denigrating the poor for their failure to compete in free-market capitalism. The second study amplifies and extends these findings by comparing Republican and Democratic accounts of the 2016 election results. Again, those on the Right are found to overdo dispositional attributions in a manner consistent with the “fundamental attribution error” first identified by Fritz Heider and extended by Thomas Pettigrew to inter-group prejudice as “the ultimate attribution error.” A concluding discussion seeks to contextualize these partisan-based differences with reference to the divisive nature of President Trump’s leadership while identifying a way forward for further research.

Examples

An Examination of Journalist Perceptions toward Covering Tragedy and Trauma

Published: Apr 1, 2013

Mark H. Masse
Mark N. Popovich
Dennis F. Kinsey

Examples

Researchers in this study utilized Q methodology **to examine the perceptions of 16 current and former print and broadcast journalists in central Indiana and upstate New York about their role in reporting on tragedy and trauma.** A Q-sort instrument containing 40 statements was developed around five categories: Adventure, Bearing Witness, Career Concerns, Societal Impact, and Professionalism. Eight statements were developed for each of the five categories, constituting the Q sample. Personal interviews and a short survey were employed to help interpret the perceptions of the 16 participating journalists concerning statements provided by war correspondents, police beat reporters, and other "trauma journalists," who had covered crises, disasters, and stories involving fatalities. PQMethod was used to analyze the statement ratings made by reporters and two factors evolved: Empathists and Traditionalists. Researchers concluded that reporters covering tragedy and trauma are more aware of the role of emotion and compassionate involvement with sources than would be recommended by traditional newsroom guidelines on detached, objective information gathering.

Next steps…

Visit and join the Research Methodology Group

Join Research Methodology Group Teams

- Review materials
- Recorded webinars
- Short burst learning Videos
- Office hours

Provide us with your feedback

- Complete this very brief Survey (less than 1 minute)

Next meeting: **Research problem, purpose, and questions for a casual comparative (EX Post Facto) design**

- April 20, 4-5 pm Arizona Time
- Access via the Workshop site

Selected Resources/References

Operant Subjectivity - The International Journal of Q Methodology

This journal from the International Society for the Scientific Study of Subjectivity aims to provide the latest research and opinion on Q Methodology in order to foster a greater understanding of subjectivity.

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Questions?

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