Identifying Patterns of Changes in Self-Perception: Q Methodology

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In this case study, we reflect on the process of carrying out a longitudinal study to investigate the dynamics of people’s subjective views of themselves in relation to their learning and use of the target language during a study-abroad experience. We do so through our own first use of Q methodology. This narrative account takes the readers from the very starting point of how we decided to investigate the topic using Q methodology to the presentations of the outcome. The focus is on sharing the thoughts and feelings that went into making crucial decisions and dealing with problems that emerged in the process. The details of the statistical procedures are kept to a minimum, and this case study does not include discussions on the applied linguistics theories pertaining to the actual research. Practical suggestions are offered throughout the account.

Learning Outcomes

- To confirm an understanding of some of the key terms and concepts used in Q methodology through a practical application
- To become familiar with the steps and time required to carry out a Q methodology study
• To understand the strengths of the methodology and types of research questions suitable for the research focus
• To understand some of the possible problems that researchers may encounter in carrying out a longitudinal study that employs Q methodology

In the Beginning …

The starting point for this research project was our desire to understand how language learners perceive themselves both as learners and users of a foreign language and how those perceptions change through participation in study-abroad programs. Our experiences as language educators had taught us that for many learners, study-abroad was of great importance, not only in terms of their language development but also as a means of personal growth, and we wanted to find out more about that process of change itself. Our ultimate aim was a pedagogic one: we hoped that by learning more about the changes experienced by learners, we would be better able to prepare them for an overseas experience and re-integrate them into the home classroom on their return. Put simply, we were investigating how people experience and interpret change in themselves, and how this knowledge could be utilized educationally.

Essentially, we are interested in the psychology of second language (L2) learning, which is a field that has grown enormously in recent years. We are interested in the inner mental activity of language learners, how it impacts on language learning, and how it is, in turn, affected by the language learning experience. This poses a huge methodological challenge: how do we know what is going on inside other people’s heads? The traditional approach to this challenge has been for the researcher to prepare a list of statements—often in the form of a Likert-scale questionnaire—for participants to indicate to what extent they agree with those statements. There are numerous flaws in this approach, but chief among these is the risk that the researcher will put words in the mouths of participants by forcing them to respond to items they have no real interest in, or alternatively, the researcher may deny the participant a legitimate voice by omitting key concerns. Another approach has been to give freer rein to the participant—often in the form of interviews—with the researcher later interpreting these data. Obvious limitations with this approach are that individuals are not always explicitly aware of some of their own more complex inner thoughts, and even when they
are, they may struggle to articulate them effectively; research following this approach can be highly reliant on the researcher’s own interpretations of what can be a very limited sample. In our field—the psychology of second language learning—the former approach has tended to dominate, but in recent years, there has been a significant increase in the latter.

For us personally, we have never been totally comfortable in either camp. We both were trained in the quantitative tradition, and our doctorates were based on large-sample attitudinal questionnaires. On one hand, perhaps as a result of this experience, we were able to see some of the limitations inherent in such an approach. On the other hand, we often found ourselves less than convinced by a lot of research with a more qualitative orientation, which sometimes seemed to be either unsystematic or lacking relevance to anyone but those involved in the actual research. Our hope as researchers was to be able to investigate the complexity and individuality of people’s inner thoughts but to do so in a systematic, principled way that would produce findings of interest to a wider audience. For a long time, this appeared to be a vain, forlorn hope.

What Is Q?

In the early stages of our research design, almost coincidentally, we both came to know about Q methodology independently and thought it might be something we could use to identify patterns of change in students’ feelings and beliefs by collecting data from a group of participants over time.

Simply put, Q is an integrated package of philosophy, concepts, data collection, statistical analysis, and data interpretation used to classify and describe the subjective viewpoints of a group of people in a specific context. It was developed in the early 20th century by a British psychologist, William Stephenson, in reaction to the conventional factor analysis which had been already widely accepted and practiced as the primary approach in the field of individual differences research in psychology. While such quantitative survey methods based on correlation between tests or items are effective at the macro-level to learn about the central tendency of a population, the differences that actually exist between the individuals who participated in the study get lost in the process of averaging and standardization. The aim of Q methodology is to understand
differences that exist among the feelings and views that individuals have on a topic without decomposing them into a limited number of variables. The emphasis of subjectivity and the whole person is ensured by its design with three main components. With the use of Q sort, a unique data collection technique, each participant expresses his or her feelings by comparing and rating a wide range of statements about the topic. The principal statistical procedure, by-person factor analysis, extracts factors based on the correlations between persons rather than between tests so that the factors actually show the similarity of people's complex feelings. Finally, the process of interpretation of these factors is comprehensive and iterative as it requires researchers to start with the entire set of statements, not only the ones that scored highly.

Due to space limitations, we simply offer a brief outline of steps involved in conducting a Q study at this stage and flesh this out as we go through the narrative of our own study. Typically, there are five stages that are integral to a sound Q study:

1. Deciding on a research question
2. Creating a Q set, a set of statements relating to the research question
3. Collecting data by having participants sort the statements in the Q set (Q sort)
4. Carrying out a by-person factor analysis
5. Interpreting the results of the statistical analysis and other data to develop a narrative account of each view identified

As we learned more about the methodology, we became excited about its potential; it mixes elements of quantitative and qualitative methodologies in a principled manner. Interpreting the results of the statistical analysis is very similar to the process of interpreting the coded data in qualitative approaches, constructing a narrative that describes the whole without breaking it up into bits and pieces.

Designing the Research

Coming up with an ideal research design is one thing, but implementing that design in the real world is another. One needs to begin with what is possible, to be highly pragmatic. Our original plan had been to set up a simple pre–post design in which
we ask the participants to sort a set of statements and to be interviewed about their sorts prior to their departure, and once again upon their return. However, for various administrative or logistic reasons, this was not possible (in this case, the primary hurdle was that the participants were not all taking part in exactly the same programs, with differences in both dates and destinations). With the benefit of hindsight, we now regard these complications as a blessing because they forced us to rethink our approach and we settled upon a three-stage—before, during, and after—design (Time 1 = before departure; Time 2 = while overseas; Time 3 = on return).

All of the participants—Japanese university students—took part in the research voluntarily. We had the opportunity to explain our research at orientation sessions for the study-abroad program (March 2012), and a total of 20 students (out of 35) agreed to participate in the study, sign the consent form, and fill out a short form which provided some basic demographic and background information. A rule of thumb for the sample size in Q studies is to be fewer than the number of items in the Q set (statements). Because we had 50 statements prepared, 20 participants seemed like an ideal number.

Mixing Offline and Online Q Sorts

The next practical challenge we faced was how to collect data while students were overseas. It would have been great if we had had the funds available that would have allowed us to travel around the world and do the research in person, but this was never an option. Our strategy was to use online software at Time 2 and collect data in person at other times (Time 1 and Time 3). Making this decision was not easy; we were concerned that mixing online and face-to-face data collection could be problematic. We had to look for support in the literature including the archives of the official email discussion list for the Scientific Study of Subjectivity (ISSSS), the organization that promotes Q methodology. We found some discussion threads that led us to the presentation given by Amy Hogan (2010) comparing offline and online Q sorts. The conclusion we drew from what Hogan and others experienced Q practitioners had to say was that Q sorts offline and online are very similar in experience; therefore, it is unlikely to bring about any significant difference in the subjective responses to the statements so long as they share the same procedures
and characteristics. Except, of course, the offline administration undoubtedly has the advantage of doing immediate post-sort interviews.

Creating a Q Set

As novice Q practitioners, the first big challenge for us was to make a comprehensive and well-balanced Q set. When we use the term ‘set’, we mean a group of statements that will be used in the actual research. Because our field was language education, we looked for ideas in the established research on language learning motivation and beliefs. We gathered a total of 127 statements and felt that the set had good coverage.

The next step we faced was how to reduce the number while maintaining an adequate level of comprehensiveness. Maintaining a balance was key. That is, we looked at all the items and sorted them into seven main themes that emerged: aspiration, obligation, language learning/learner, language use/user, friends and family, beliefs, and learning environment. Our main rationale for this strategy was that having the basic themes in mind would help us in the process of reducing the items by eliminating redundancy and overlap while maintaining coverage. When we were satisfied with a set of 50 statements, we translated them into Japanese, the native language of the participants.

Again, the total number of the cards was arbitrary in a sense, but it fell within the guidelines suggested in the literature (40–60 cards) and the maximum number of participants we could secure. Plain expressions were used to avoid ambiguity as were some colloquial expressions where we felt they would help clarify the intended meaning. The order was randomized and each item was printed on a blank business card with a number from a set of 1–50. On the reverse side of the card was a serial number based on the themes which we thought might come in handy later in the process of analysis (see Figures 1 and 2): aspiration (1–10), obligation (11–15), language learning/learner (16–26), language use/user (27–33), friends and family (34–38), beliefs (39–44), and environment (45–50). We did not arrange the cards in this order when giving them to the participants, as we felt that this might affect how they sorted the statements.

Figure 1. A photo of a Q sort.
We piloted this initial set and revised or replaced statements that seemed to be either redundant or unclear. We felt that the final set was well-balanced and had good coverage. In hindsight, however, we came to have certain regrets about the construction of the final set, which we discuss in more detail toward the end of this case study.

A few other details needed to be worked out before conducting the actual research. A Q sort requires participants to sort cards on a grid and then assign numerical values to statements based on where they are placed on that grid. We needed to consider the most appropriate grid layout. We simply opted for what is recommended in the literature.
(e.g. Watts & Stenner, 2012); this was a forced-choice with a range from -5 to +5 (see Figure 3). This means that all participants must assign a -5 to two statements, a -4 to three statements and so on; the distribution pattern is the same for all participants. As the choice of distribution does not make much difference to the results of the final statistical analysis, this provides a convenient framework of comparison for the participants.

Figure 3. Fixed distribution for the 50-card sorts in this study.

The numbering of statements in this manner proved to be something of an issue, both in explaining the activity to participants and in disseminating the research. People used to familiar questionnaire formats assumed that, for example, a -5 ranking represented a strongly negative view of the individual statement itself; however, in a Q sort, this value refers only to how the participant ranks the statement in relation to the set as a whole; in fact, it would be possible to have a Q set composed entirely of statements the participant felt positively about, yet still include negative values on the cards. In future studies, we would reconsider this approach, as the labeling of the cards is essentially a cosmetic device designed to assist the participant and does not affect the data analysis.
Administering Q Sorts and Post-Sort Interviews

Contrary to the messy business of developing the Q sort, the actual administration of Q sorts is relatively straightforward. The biggest concerns were time and space management. The simple act of arranging 50 cards requires a surprising amount of physical space; similarly, opportunities for contact with the participants were limited—unlike us, they had other things to do—so we had to administer the research in a way that least inconvenienced the participants in order to maximize their goodwill and cooperation. We were fortunate to be able to secure a large room with sizable tables. We set up the room so that up to three or four students could do a sort independently and simultaneously. As the students arrived in the classroom, we explained the procedure with the aid of a sheet of instructions in both languages and handed a set of the cards. A card with the condition of instruction was placed above the grid so that the sorter could see it anytime: How descriptive is this statement about your view of L2 learning and L2 use?

The students first roughly sorted the 50 cards into three piles: agree, disagree, and neutral. This was to facilitate the ranking of 50 statements; basically, a pile of 50 statements can be overwhelming at first, so encouraging a quick, rough sort is a good way of getting things moving. The next step was to take one of the piles and start placing each item under a score on the grid. When a sort was complete, we encouraged the student to have a final look at the placement of the statements and think about any changes they would like to make. Then it was time to turn the cards to record the numerical value for the statements. To record each Q sort, we took a photo of the assembled set of cards on a digital camera, and this proved to be a great help in the management of data and prevented errors associated with processing the data. (On several occasions, we found that we had entered numbers incorrectly into the software, and looking at the photos enabled us to quickly identify our errors.)

After the sorting of the cards was complete, we then used the cards as the basis for a short follow-up interview. At Time 1, because this was the first time to talk to the students in depth and in person, we used the demographic information form as the
starting point of the interview before moving on to the main discussion. We asked the students to explain why they assigned the particular ranking to the statements. This was recorded and transcribed to supplement the numerical data in the subsequent interpretation process.

Once the data collection was finished for the day, we processed the numerical data into the dedicated software. In plain language, this means that one of us read the item numbers while looking at the various photos, and the other sat down at a computer and typed into input all those numbers into PQMethod, a specifically designed and free package that does all the complicated calculations necessary for the statistical analysis.

For Time 2, although the procedure of Q sort was no different for the students, setting it up online required us to learn another software program, FlashQ. So instead of coming to do the sort in person, the students were able to do the sort online wherever they were at this point in time. We sent out an email with instructions on how to complete the procedure online, and because many of the students had apparently found more exciting things to do while abroad, we needed to send out several follow-up reminder emails. Eventually, a total of 19 out of the original 20 participants sorted the statements online.

To be honest, we had mixed feelings about the online method of data collection. On one hand, it looked highly professional and allowed for the speedy and efficient collection of data. On the other hand, we were only able to access the final product in the form of the completed sort; we were not able to witness first-hand the process of sorting, the various hesitations and changes of mind that are possible in a face-to-face encounter.

Time 3 was essentially the same procedure as Time 1: face-to-face Q sort administration and post-sort interviews. The only difference was the total number of sorts. Despite our best efforts to remind them of the original agreement, there was a noticeable drop from 19 to 10 for the third round of data collection. This reminded us how difficult it is to maintain participants for a longitudinal repeated-measure study. After all, it had been more than a year since Time 1; while a research project may have great importance for a researcher, this enthusiasm is not always shared by participants.
We learned (again!) that there was a lot more to doing research than developing instruments and analyzing the data. Being trained in the quantitative tradition of inquiry, losing some participants and not being able to keep the structure typical of repeated-measure studies troubled us. However, we were not comparing the three sets of data statistically, and there was no reason to consider that those who sorted the statements for the third time were less representative of the group of the 35 students who went abroad in terms of their views; we decided it was not an issue that would invalidate or devalue the Time 3 segment of the study.

Extracting and Interpreting Factors

The aim of Q methodology is to describe subjective views exist in a particular group of people. The purpose of the statistical analysis component of a Q study, the by-person factor analysis, is to find the similarities in the patterns of sorted statements. The technicalities of this procedure can be quite complex, and we do not have the space here to go into that level of detail. In fact, for us, one of the great attractions of Q was that it does not require a great level of statistical expertise; for many researchers, the conceptual understanding of correlations and ability to manipulate a basic software program is sufficient to obtain and read the results of the output. In our case, it took us a few days to learn the software PQMethod. After getting a hang on the software itself, we used the centroid method of factor extraction and manually selected the most effective rotation. What this means is that looking at the map of the views expressed by the sorts, finding clusters, and deciding where to draw boundary lines. A boundary is a factor. After deciding on the factors to be studied, we rigorously combed through the model sorts of the 50 statements calculated for each factor, called a factor array, to develop a description of the view represented by each factor. In that process, we went back and forth between the statement and its assigned score in comparison with the rest of the statements within the factor and to its ranking in other factors. It is this painstaking task of reading into the ranking of the statements and finding clues in demographic data, background information, and interview transcripts that helped us appreciate the uniqueness of the insights Q methodology could offer. To our initial disappointment, however, it was clear that there was only one meaningful factor on which all 20 participants loaded. On reflection, this should not have been surprising. At
the first point of data collection, all of these young people were about to embark upon a major life experience, a great adventure. We found a group of people who shared a sense of optimism about making easy progress in their language proficiency while having exciting new experiences and making friends. We named this factor the **Naive Optimist**. We became even more curious than before to see whether and how this view would change.

After 8 months, different views emerged in the analysis of the Time 2 data. There were three main factors which we named *Shellshocked Doubter, Comfortable User*, and *Duty-bound Learner*. The factor arrays showed that Shellshocked Doubters seemed to have lost all confidence in the possibility of mastering the language after experiencing the harsh reality of studying in a foreign country. The second factor identified as Comfortable Users were those who were relaxed, not too gung-ho about mastering the target language, and feeling comfortable with themselves communicating in the language. Finally, the third factor, Duty-bound Learners, had a strong sense of *ought to* and were feeling alone in the struggle to improve the language skills. We found the descriptions of these factors were useful in understanding the feelings that may be held by the students returned from the short-term programs who may be enrolling in our classes. Furthermore, we became very curious as to how these views would change again or remain unchanged a half-year later.

For the final set of sorts, we found three distinct but new factors: *Returned Optimist, Confident Striver*, and *Content User*. We cannot go into the findings in too much detail here, but we will focus on one in order to provide an illustration of the possibilities of Q. We found that the Returned Optimists were very positive and optimistic in their views of themselves as language learners. It seems that the disappointment and shock in not making immediate progress abroad held by Shellshocked Doubters had waned, and the experience abroad had been re-connected with the positive feelings they had always had about learning and using English. Starting with the Naive Optimist view held by all participants before departure, we could begin to form a coherent narrative. It is possible to think of young people full of excitement and hope at the prospect of an adventure abroad, but this optimism may be accompanied by some unrealistic expectations. As a result, once the individuals actually go overseas, those unrealistic expectations may be brought crashing down as reality bites. Finally, we may see a readjustment as the initial shock wears thin and a sense of optimism returns within the context of adapted
goals and expectations. For us as educators, these findings in a narrative form have clear practical implications for the ways in which we prepare young people for periods of study-abroad and how we can help them manage their goals. Looking back at our findings, the first thing that strikes us is how intuitively correct they seem and how much they accord with our actual experience. We see this as a great testament to the potential of Q in that these findings allowed us to articulate our professional intuitions in a clear and systematic fashion.

Presenting the Results

One thing (or one of many things!) that needs to be remembered about Q methodology is that it can be difficult to write up the results due to the descriptive nature of the final outcome, which tends to take up a lot of space. This is an issue common to most forms of qualitative inquiry. Nevertheless, there was one specific issue we faced with our Q study, and that was Q itself. Its relatively new, or at least unfamiliar, status means that any form of research presentation requires not only an introduction and explanation of the methodology itself but also an account of the basic terms and concepts that are crucial in the presentation of the results. In itself, this was no great problem, but we did feel that the focus on the method was at times distracting from the main message of our research. For example, when we presented our findings at conferences, we found that a lot of comments and questions from the audience were about Q rather than our own data. It was also a challenge to write about the study. We published a book chapter connected to the research for an anthology on language learning motivation (Dörnyei, MacIntyre, & Henry, in press). It was actually quite a challenge to write an effective account within the available word limit, and the main reason for this was the need to explain the basics of Q. The solution we came up with in this case was to provide a basic outline of the main principles and techniques associated with Q methodology as an appendix separate from the main body of the text. This was a good compromise, but we were very fortunate in having understanding and supportive editors.
Closing Remarks

After this first trial with Q methodology, we are both convinced of its potential in gaining an understanding of individuals’ feelings and beliefs in a unique way that no other methodology can offer. We found the process of developing the descriptive nature of the factors gives an opportunity to become intimate with the learners’ feelings and opinions and to experience the feelings. However, the methodology works only when great care is taken particularly in the development of a research question suitable for the methodology and a Q set that would respond to the research question. We advise anybody who is going to try out Q methodology for the first time to give themselves ample time at the early stages of the research. We would also advise them to be bold. On reflection, we now feel that we were a little timid in the construction of our set of items; perhaps because we were lacking confidence using an unfamiliar method, we fell back on established items from the literature when we now feel it would have been much better to ignore the established literature and create our own statements based on interviews with focus groups.

As a final comment, we should add that it was actually a lot of fun, both for us as researchers and for the participants. In addition to the fact that it provides an opportunity for the participants to reflect and learn about themselves, there is a game- or puzzle-like quality to the act of sorting the cards, and this seemed to bring out a higher level of engagement with the research on the part of our participants; this was in marked contrast to the collective sigh or lack of interest often shown by a group of learners faced with a long, repetitive questionnaire. This puzzle-like dimension was then taken up by us as researchers as we sought to interpret the data, and perhaps the highest recommendation that we can offer for a Q approach is that, like with all good games and puzzles, once you have finished one, you cannot wait to get started on the next.

Exercises and Discussion Questions

• 1. In what ways are Q sorting and Likert-scale questionnaires similar or different?
2. Given that the goal of Q methodology is to identify commonly held subjective views (feelings and opinions) about a certain topic among the people within a certain context, think of a relevant topic in your discipline and develop a list of possible research questions.

3. Do you feel there are any major differences between printed questionnaires and those online? In your own experience, do you feel that you engage any differently between the forms of questionnaire?

4. Consider the ways and places in which you would collect statements to develop a Q set.

5. A Q set does not have to be a collection of statements. It can be a set of words, pictures, or objects. Can you think of relevant items that may be used to collect data for your research questions? Can you think of a research question that is better answered by objects?

Further Reading


### Web Resources

A comprehensive *Q methodology resource website managed by ISSS*; [http://qmethod.org/about](http://qmethod.org/about)

*The Q method Page managed by Peter Schmolck, the developer of PQMethod statistical software*; [http://schmolck.userweb.mwn.de/qmethod/#PQMethod](http://schmolck.userweb.mwn.de/qmethod/#PQMethod)

*The FlashQ, a website for an online Q sort software managed by Christian Hackert and Gernot Braehler*; [http://www.hackert.biz/flashq/home/](http://www.hackert.biz/flashq/home/)

A 5-min introductory animation video that explains *Q methodology by Tim Deignan*; [https://www.youtube.com/watch?v=0AejeH6jw2c](https://www.youtube.com/watch?v=0AejeH6jw2c)

### References


[http://dx.doi.org/10.4135/978144627305014556079](http://dx.doi.org/10.4135/978144627305014556079)