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Lessons Learned: Some Guidelines to Factor Interpretation

Elizabeth Anne Albright
Langston University

Kaia Christofferson
Amanda McCabe
Diane Montgomery
Oklahoma State University

Abstract: Data Interpretation is an essential process in understanding the results of a Q-methodological study. Employing a team approach to provide further practice of the interpretation process, we used an earlier study of values preferred in adolescent friendship to highlight the lessons discovered in our interpretative work. The uniqueness of this research was the iterative team interpretation of a staged process and the faculty mentor relationship in the teamwork. Lessons learned included the time it takes to develop understanding, the importance of mentorship and the use of abduction, intuition, and holistic interpretation. Further lessons focused on the development of an ability to take the role of the hypothetical person, learning strategies to overcome novice researcher status, how to use the PQMethod report and the use of all the reported data in the analysis and interpretation.

Keywords: interpretation of factors, presentation of findings, Q methodology

Our research team began with three graduate students who wanted to continue to practice Q methodology with close mentorship from a faculty member in order to unravel the complexities in factor interpretation. The interpretation of factors is regarded as a central procedure in most Q methodology manuscripts and published articles; yet, little detail is provided about the process. Our review of Q methodology studies often revealed the mere reporting of statements or only just the distinguishing items that are provided in the results report of such well-known software packages such as PCQ or PQMethod. Therefore, along with a veteran Q researcher, the team engaged in the thoughtful and intuitive process of interpreting an earlier study of the values preferred in adolescent friendships. This article attempts to distill the lessons learned from this process, including the importance of deep understanding of the results report to represent the holistic findings.

The Literature on Factor Interpretation

In research studies using Q methodology, the results are usually presented as interpreted factors. However, a broad range of interpretation processes is reported as results are presented in various ways. The outcome of interpretation ranges from the provision of a short narrative (Woods, 2012) or listing of quantitative data – often only the distinguishing items (Cai, Stone, Petrini & McMillan, 2016; Hunter, 2012) – to a detailed discourse with conceptual understanding, field notes, and interview data to support the telling of the story (Cairns & Stirling, 2014). An analysis of the Q Method listserv demonstrates the prevalence of common issues associated with Q set construction, statistical issues with factor analysis and the number of participants or statements. There is little mention of the hard work of data interpretation. As Kitzinger (1999) noted, there appears to be much reporting of these nuts and bolts of the *method* to the exclusion of the telling of the factor story, which constitutes the findings as the essence of the *methodology*. Furthermore, as Ramlo (2016) notes, models of interpretation need to be explicit for beginners.

Experience with the process of interpretation of data is often promoted as a necessity. In the well-known Sage publication on conducting a Q study, McKeown and Thomas (2013) acknowledge the difficulties in interpreting factors. They believe that a thorough knowledge of the topic of study and practice in conducting several Q studies will hone the necessary skills and allow a deeper and richer understanding of the factors. To allow for other potential interpretations, Kitzinger (1999) calls for the inclusion of the results as raw data in a Q study (statements with the array position in each factor denoted), allowing others to detect the comprehensive process of interpretation used by the researcher. Barbosa, Erickson, and Wiloughby (1998/1999) advocate a thorough examination of each statement across all factors, thus “to verify the adequacy and appropriateness of the factor profile and label” (p. 55). These researchers offered this process as a systematic strategy to facilitate novice interpretation, giving a nod to an experienced Q methodologist who makes comparisons by “simply looking” (p. 56) at the data.

Giving life to interpretation requires an understanding of the concourse. Wolf (2004) represents factor interpretation as building the “bones in the concourse” (p. 158). As she applies Stephenson’s (1983) presentation of understanding the concourse through the “life” (p. 81), the deep meaning and appreciation for the factor scores go beyond repeating the statements or reporting only distinguishing statements. A holistic view with “coherence across the statements” (p. 158) provides the feelings of the sorters who define the factor. This level of deep understanding allows conversations to occur between and among resultant factor viewpoints, and careful thought is developed for the sorters, “examined on its own terms” (Brown, 1989, p. 95).

The role of the researcher is to keep an open mind and allow the data to influence understanding of the information (Brown, 1989; Stephenson, 1983). Ambiguity is to be tolerated, and evidence of unseen phenomena is impossible to separate from the data. The surface information is translated to reveal the deeper meaning. Good (2014), in his role as editor of *Operant Subjectivity* (OS), introduced an article published in OS as having “the necessity of both close-grained and holistic factor interpretation” (p. 1). Yet, it still may be tempting for the researcher to assign factor names from one’s own perspective of the anticipated theoretical response.

Various strategies have been promoted to help foster the expertise and understanding in interpreting data. Watts and Stenner (2012) introduce the notion of a

crib sheet to ensure that each item is fully considered in the resulting factor arrays. They encourage the Q researcher to create a story that explains the whole viewpoint. The crib sheet can be used to consider all statement scores, highest positive and negative factor scores and lower scores in the middle. Watts and Stenner (2012) highlight the fact that researchers should think about each item and try to figure out why the item ended up with the rank that it did. If the researchers cannot come up with a solid reason, it is recommended they at least propose a hypothesis based on the information found.

Some Q researchers advocate the use of multiple sources of data from the defining sorters to demonstrate factor interpretation and understanding (Hutson & Montgomery, 2011). Interviews with people whose sorts achieve high and pure loadings is referred to as member checking in qualitative research (Bloomberg & Volpe, 2012). The researcher recognizes that the data (arrays, interviews, field notes, demographics) represent a composite of several people and not an exact match to the participant informant, so the qualitative information is added to the profiles (Brown, 1980; Watts & Stenner, 2012) to be taken as support to the quantitative scores of statements.

With these broad suggestions for adequate, professional and meaningful interpretation, novice Q researchers often need additional practice, assistance and mentorship. Our team recognized this quandary, met frequently to discuss the differences between results and findings and offer here the lessons we learned.

Our Guide to Learning

Materials to assist new Q researchers in factor interpretation had been used in the coursework we previously encountered (See Appendix A). Designed according to the hierarchy of thinking skills and knowledge developed by Bruner (1961) and Taba (1967), the systematic examination of all data presented as factor profiles is suggested as a holistic mechanism to support the process of interpretation in three stages. Bruner (1961) organized knowledge as inactive, iconic and then symbolic. Similarly, Hilda Taba (O'Neill, 1972; Taba, 1967) constructed teaching strategies that promoted independent and productive thought development through a sophisticated process of questioning. Her work was based on three levels of thought and knowledge development. Conceptual understanding is formulated from facts, and subsequently concepts combine to produce generalizations (facts to concepts to generalization). Facts obtained in Q studies primarily include factor arrays of z-scores, with the support of field notes, demographic information, post-sort interview of exemplars and researcher intuition about the sorters. Concepts are the many ways that these data combine to show patterns, themes or a conceptual understanding of the topic of research. The generalization level of knowledge involves capturing the conceptual understanding with the factor name. Using this system allows novice Q researchers to stay close to the data sources; yet, finding congruent conceptual themes will support the ways that the factor profiles might differ in perspective. Having the profile as a visual representation of the entire factor encourages the use of all the statements in the array positions, taking into account the distinguishing items and other data. In other words, looking for meaning within the factor and across factors provides the story of methodology going beyond the numerical results of the method (Brown, 1980).

Our Process of Data Interpretation

Our research team consisted of a senior Q researcher and educational psychology professor (now emerita), two doctoral students who had conducted their own Q studies in a research doctoral class focused exclusively on Q method, and a master's student applying to the educational psychology doctoral program. The team met approximately every two weeks to conceptualize the study and construct the concourse for about a year. The final work of the group consisted of the sampling of the concourse and applying to the Institutional Review Board (IRB), the agency at the university that assures the rights of human subjects. At the time of data collection, the master's student was accepted into the doctoral program and took the doctoral Q research class. At the time of final writing of this manuscript, the other doctoral students have graduated, one accepting an assistant professor position. All of us continue to use Q methodology in our research.

Our study proceeded as all other Q studies. Our research question concerned the values of friendships among adolescents. Data were collected according to IRB standards. As participants were minors, parental consent and student assent was secured before participation. Each participant sorted statements onto a form board and completed a demographic survey. Data were entered into PQMethod and rotated using centroid or principal components followed by varimax rotation. The result was a three-factor solution for each of our trials.

Getting Started

One of the challenges that novice researchers face is extracting meaning from the approximately 30 pages of the report that is generated by the software package employed, in our case, PQMethod. The approach by this team was to set up the profiles (Appendix A). Rather than proceeding by reading the list of statements provided in the results report, the first step in our analysis was to arrange the statements according to their array position (determined by the standard score) on the form board that was used for sorting, one for each factor for the visual representation of the statements (Figure 1). Data from additional sources, such as field notes, demographics and interviews from the defining sorters, were added to the array page. This way, all data for each factor is on one page. Then the researcher is able to focus on exemplars, which are the participants whose sorts had high loadings on just one of the factors. We called the loading a high and pure load, and in other studies we attempted a follow-up to use the exemplars to test out the initial conceptualizing of the factor meaning.

In the beginning stages of understanding our Q data, we studied our factor arrays and began to connect similar ideas and develop conceptual themes. Connecting field notes, interview data and demographic information about the defining sorters starts to provide a picture or story line. We first focused on the highest array positions, both positive and negative, to determine trends for each factor (Table 1), with special attention to the distinguishing items, marked in bold (Brown, 1980).

Table 1: Highest Positive and Negative Array Positions for Factor 3.

	Willing to get in trouble with me	**Has my back and stands up for me	
	Acts morally upright	Compliments me often	
Shows compassion to people from different backgrounds	Thinks of really fun things to do together	** Has the same interests as me	Comforts and supports me through tough times
Takes life seriously	Would stay my friend even if we didn't see each other all the time	Keeps my secrets no matter what	** Includes me often
-4	-3	3	4

Note: Bold indicates distinguishing statements.

** Statements supporting the theme of trust in friendship (“besties”).

Items that are closely located on the factor array are similarly valued by the defining sorters. Therefore, these items have similar meaning and are positioned close to each other on the factor array, both on the most alike and most unlike sides, and support concepts or themes. For example, in the third factor, participants indicated that they like to have friends who involve them, care about them and spend time with them. Supporting statements to this theme of trust (“besties”) are *Has the same interests as me*, *Includes me often*, and *Has my back and stands up for me* as, indicated in Table 1. Themes began to emerge from the factor arrays through analysis and interpretation of the meaning. Once several themes had emerged from the factor arrays, overarching concepts tied the themes together under a single factor name and definition. After analysis of the data led to themes and then factor definitions, we were able to apply our newly acquired knowledge to our work. This process took several iterations as we studied the data within the factor, and then across the factors, multiple times.

First Iteration

Although all team members assisted with the final data collection and interpretation, the student researcher enrolled in the class conducted the initial analysis of a limited number of sorts (eight sorters) and interpretation of data as she learned more about the philosophy and research foundations of Q methodology. With this initial information, the original factor names and themes were represented by a favorite television series, *Friends*. Inspiration for generalizations about the factor names increased by watching more episodes of *Friends*. One might see this novice process as theoretical verification of interpretation. This was the thought process behind the first iteration as noted by the student researcher in her research journal:

When the process of researching and analyzing data began, I had the opportunity to participate in an introductory Q methodology course. The team had started

gathering data, but only had a few sorts during this time. Utilizing what was learned in class, I made a presentation regarding the methodology, the factor names, and themes that I had discovered. As I was working on this presentation, I was watching my favorite show, *Friends*, and noticed some parallels between our data and the show. It was at this point that I thought more in depth about the characters in the show both on an individual level and also in pairs and as a group. The dynamics of each individual were important to consider because individual qualities are important in friendship pairings and groups. As with friendships in real life, the pairings in the show were based on different qualities and highlighted different strengths and weaknesses that complimented each other.

This knowledge of the television series was used to help label the factors and understand the themes or concepts supported by the data. *The Rachel and Ross*, *The Joey*, and *The Chandler* were the names used to describe what had been found in this initial analysis. The emerging theme within *The Rachel and Ross* factor was the idea of friends as soul mates. The second factor was *The Joey*, because Joey is the ultimate fun-loving and lighthearted friend in the group. The third factor was *The Chandler*, because Chandler has a certain wit and humor that the other characters cannot quite match. It became evident that this novice researcher, a master's level student taking a Q methodology class, relied on the generalizations garnered through the television show when an understanding of each of the statements within the array was unaccounted for conceptually. We noticed that it was easy to generalize based on our own experiences and cultural bias.

Second Iteration

It was at this point that the team was engaged in the collection of additional relevant data (P-set =16) and required to conduct interpretation as a group. Once again, the team organized statements and all other data related to the defining sorters on three factor arrays, as described in the first step and began the process with the complete set of data. Due to researchers being in different locations throughout the summer, they began analyzing and meeting frequently via Skype. Following the guidelines for developing data profiles (Appendix A), distinguishing and consensus statements were marked for each array. At this time, the researchers renamed the factors and began extracting the deeper meaning of the themes of each factor. Once the researchers were back on campus, they began having weekly face-to-face meetings in order to gain a clearer understanding of the factors and themes. During these meetings, each of the team members contributed by offering input on each of the factors. The team examined the demographic information on the profiles closely in an attempt to gain an understanding of differences among participants in each array profile. As the team continued their journey of analyzing multiple sources of data, they evolved to become more in tune with the participants. This process of abduction, or finding evidence for ideas not originally expected, led us to a deeper meaning of the arrays (Hobbs, Stickel, Appelt & Martin, 1993).

Third Iteration

The research team tried out names for the conceptual themes and the generalizations of factor array names based on the second iteration of work. Based on the revised interpretations, they renamed the three factor arrays: (1) The Individualists, (2) The Buddies, and (3) The Posse. It appeared that *The Individualists* chose nonconformity;

being part of a group was not important to these participants. In addition, they enjoyed having fun friends, seemed to be all about themselves and overall wanted friends who were compassionate and served as a good influence. In contrast, *The Buddies* valued friends who had the same values as them and friends who went with the flow. *The Posse* sought deeper relationships, valued positivity in friends and enjoyed having close friends.

Final Analysis

The final step in the interpretation process honed in on appropriate factor names as generalizations. Such names needed to clearly define the data within the factor in addition to enabling comparisons between factor profiles. Comparisons were considered between consensus statements for each factor, as well as for distinguishing statements. A consensus statement does not have a z-score that distinguishes it from other factors, while a distinguishing statement has a z-score that is statistically significant in its difference from other factors (van Exel & Graff, 2005). For example, statement 12 ("Provides me with constructive criticism") had similar z-scores across all factors, making it a consensus statement; yet, it had a different meaning for each of the interpreted factor arrays. *The Individualists* placed statement 12 in the -3 column, as constructive criticism takes away from their ability to be themselves. *The Buddies* placed statement 12 in the -4 column, because constructive criticism is not what a positive friend does. *The Posse* placed statement 12 in the -2 column, because such criticism indicates a less deep relationship. By contrast, statement 19 ("Includes me often") had a statistically significant difference in the standard score across all three factors, making it a distinguishing statement. *The Individualists* placed statement 19 in the neutral column, not feeling strongly either positively or negatively about inclusion. *The Buddies* placed the statement in the positive 3 column, which means they value inclusion by their friends. *The Posse* placed the statement in the positive 4 column, indicating they highly value inclusion by their friends. Upon completion of these steps, the team finalized generalizations by renaming the arrays one last time. Unfortunately, as there were no post-sort interviews with the participants whose sorts achieved high and pure loads, follow-up interviews did not contribute to the factor interpretation.

In order for the profiles to appear consistent, the team named the arrays as (1) The Individuality Seekers, (2) The Positivity Seekers, and (3) The Relationship Seekers. While the themes stayed somewhat consistent within each of the iterations, they evolved in depth and understanding from the time of initial interpretation to the final analysis. During this final analysis, the factor data and the statements that defined the arrays did not change, only the names changed in order to better represent the viewpoints and to align the focus of the conceptual theme represented by all of the information. At this point, we situated our findings in the literature, comparing them with those of other studies (Buhrmester, 1996; Furman & Bierman, 1984; Mathur & Berndt, 2006; Mendelson & Aboud, 1999; Smollar & Youniss, 1982; Zarbatany, Ghesquiere & Mohr, 1992). We resisted the temptation to interpret our results using literature or the abundance of theory on adolescent friendships. However, another Q study of friendship among adolescent girls (Brown & Parsons, 2006) assisted in our discussion.

The Individuality Seekers were nonconformists, valued friends being fun with a sense of humor, appreciated personal support from friends and valued friends that set a good example for others. *The Positivity Seekers* valued a sense of togetherness between themselves and their friends, liked when friends went with the flow rather than made a

plan and valued friends who did not conform to the rest of the population. *The Relationship Seekers* valued close relationships and would rather have had a small group of close friends rather than a big group of friends. For the purposes of this article, we further describe our analysis using the *Relationship Seekers* as an example.

The Relationship Seekers

This factor array was defined by adolescents who attended public school. There were three males and one female, aged 11 to 14 years. Members of this group were younger, 11 and 12 years old, except for sorter 9, a male aged 14 years, whose sort had a negative significant loading making this factor bipolar. This sort represented a viewpoint that was more in opposition from the other perspectives represented (Watts & Stenner, 2012). Observed themes in this factor array were how they *sought deeper relationships*, they viewed themselves as *positive toward friends*, and wanted *friends who were supportive*.

Adolescents with this viewpoint valued friendships that went deeper than the surface level. They were not interested in friendships that were only about having fun and making jokes. These adolescents wanted friends who were there for them on a more personal level, who were willing to talk about problems they might be experiencing. They were interested in finding friends who would be a rock for them when life got tough; they wanted friends they knew they could depend on when things went awry. They valued solid friendships that were deep and meaningful on a personal level.

Statements supporting the conceptual theme of *seek deeper relationships* were as follows:

- #3 Has a comical personality (-1, -.3)
- #4 Is easy going, can take a joke (-2, .29)
- #5 Likes to play jokes on others (-2, -.8)
- #7 Listens to my problems (2, .64)
- #8 Comforts and supports me through tough times (4, 1.49)
- #29 Thinks of really fun things to do together (-3, -1.3)

Adolescents with this viewpoint expressed a desire for friends that had a positive outlook on life. This was different from those who were comical or good at being funny. They wanted friends who had a good outlook on life and saw the positive side of situations, who were a good influence and encouraged others to be positive. Along with being positive, these adolescents sought friends who were able to voice their positivity and gave each other compliments and worked to lift each other's spirits. These adolescents wanted friends who made them feel good and happy about life.

Statements supporting the conceptual theme of *positivity towards friends* were as follows:

- #9 Compliments me often (3, 1.09)
- #13 Lifts my spirit; makes me feel happy (1, .33)
- #14 Is optimistic (2, .753)
- #21 Is a good influence (2, .624)

Adolescents with this viewpoint needed deep, positive, long-lasting relationships with friends. These adolescents wanted a friend or friends who were there for them no matter what the situation. These were the friends they wanted to do everything with, who shared similar interests, who were positive people, who knew how to cheer up

their friends and who were willing to stand up for their friends and defend them whenever necessary. These friends were the “go-to” friends for all of life’s twists and turns.

Statements supporting the conceptual theme of *friends who are supportive* were as follows:

- #6 Brings me up when I am down (1, .309)
- #11 Has my back and stands up for me (3, 1.053)
- #18 Has the same interests as me (3, 1.23)
- #19 Includes me often (4, 2.421)

In summary, *The Relationship Seekers* preferred their relationships to be deeper. They valued time with their friends that supported the sharing of problems and the mutual support of their peers. They were not interested in joking around or just spending time having fun. They wanted friends who would not only listen to their problems but would lift their spirits too. While they did not value the light-hearted, joking atmosphere of other groups, they did value positivity. They wanted to be included with the group in activities. They wanted friends who shared their interest and had their back. One participant in this factor had an opposite view. While he was older than the rest of the group, in all other ways he appeared to be very similar to the rest. However, on the demographic survey, he specifically noted that he had friends who were members of other religious groups.

Discussion

There were many lessons learned in this project. We learned the value of team interpretation. Many eyes looking at the same data can bring in unique ideas related to interpretation. Our interpretation process involved meeting multiple times and having multiple people look at the data to bridge perspectives to understand the data profiles.

We learned that it takes time to develop a deep understanding of, or story about, the findings. The meaning-making (Wolf, 2004) aspect of the iterative process contributed to both understanding friendship values for adolescents and increased our personal understanding of the research methodology. As novice researchers, we learned to take the data, develop the profile to understand the results and tell the story of our discovered viewpoints. The holistic meaning of the profile emerged as we took all of the data into consideration for each viewpoint. Strategies to find the holistic meaning included consideration of multiple sources of data.

We learned the importance of mentorship. The addition of a veteran Q researcher consistently provided a deeper understanding of the methodology, direction towards relevant readings in Q methodology, the importance of the research process and the necessity of intuition and discernment in interpretation. This demonstrated the interactive nature of research training, the importance of which cannot be underestimated.

We learned what abduction means by looking for and trying out various understandings of the data. Each iteration led us to a deeper understanding of what friendship meant for adolescents and the complexities of relationships. Through this process of abduction, we learned the value of revisiting the data with a fresh perspective, allowing the information to incubate as we developed the themes and generalizations further.

We learned the importance of acting in the role of the hypothetical person of the theoretical array with all of the available information from the profile. It was too easy to slip into the theoretical literature or into our own biased feelings about the topic of friendships instead of honoring the data presented to us from the perspective of the defining sorters. Adding our own sorts may have provided a vehicle to reveal our bias toward one array interpretation; however, when a struggle occurs in understanding, our own bias might be one barrier. Working as a team allowed us to discuss our own viewpoints and minimize the effects of researcher bias.

We learned strategies to overcome our status as novice Q researchers. Using the conceptual stage of interpretation for looking for themes and patterns among all of the data prevented us from reporting only the highest positive and negative statements or the distinguishing items for each array. Developing the full profile encouraged the telling of the whole story. We learned to proceed by calling the theoretical arrays something other than factors as the factor portion ended in the statistical method. The confusion for novice researchers using Q methodology or R methods can be avoided with a focus on the statements within the factor, calling it an array rather than the factor. This practice assisted in understanding the difference between statistical method and methodology (Brown, 1980).

We learned that the PQMethod report listing the ordered statements for each factor did not constitute the findings of our research. Rather, the interpretation process begins by looking for conceptual themes with other supporting information from field notes, exemplar interviews and demographic details of defining sorters. The conceptual themes relate to each other within a factor array to yield generalizations or the names that help identify the differences across the viewpoints.

We learned the importance of considering all data recorded on the profiles. We learned the necessity of gathering multiple sources for interpretation. All data contribute to the best understanding of the entire profile of data on the array and all statements should support the generalization. Finally, we learned how important it is to describe the process of interpretation in a Q methodological study, and we challenge other researchers to describe their thinking in the interpretation process.

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Appendix A

Montgomery Hints to Interpretation

Setting up the Profile

1. Post z-scores on the sorting form board.

Find the pages in the results report that post the z-scores for each factor. Post the statements onto the sorting form boards according to the ascending order provided in the findings. Make one for each factor array leaving room for other data to be entered. You might want to do this in paper form or start with an electronic file of data.

2. Look at the highest z-scores (both positive and negative).

Some researchers may take the first look at only those positive and negative z-scores that are 1.0 or above; some take any larger than a natural break; I like to take the top three or four columns.

3. Mark Distinguishing Statements and Consensus Statements for each Array.

Some researchers use a different code for the more restrictive p level (of .01 or less) from those that are calculated in the results report at $p < .05$. I usually mark only the ones that have an asterisk on the results report. Consensus statements with high positive or negative z-scores begin the interpretation of which statements all sorters agree with. Remember after a few more steps that the scores can be the same, but for different reasons or meaning attached to the statement.

Developing Conceptual Themes

4. Try out some Names based on Total Array Sense of Meaning; Start clustering data points for themes and patterns.

Naming the arrays is the generalization stage of understanding your results, so you must revisit the process; however, at the initial stage, you can get some comparisons that set you up for the other results report comparisons. Use the adjective and noun hint as a first step. (All of them are labeled with a noun with an adjective to differentiate; The Individuality Seekers, The Positivity Seekers, The Relationship Seekers.)

5. Compare Statements Across Arrays

Using the numerical list of statements with values on each array, examine statements of interest.

6. Compare Statement Discrepancy Between Arrays

Using the results report of differences between all factor combinations, use those statements that are most discrepant.

7. Evaluate Comments from Interview/Survey for Defining Sorts

Add the verbatim comments on the appropriate array profile (comments on each Array from people whose sorts define that factor array).

8. Evaluate Demographics for Defining Sorts

Add important demographic information about the sorters for only the defining sorts.

Developing Generalizations

9. Develop Concepts or THEMES with Data Support

Using a holistic approach to “seeing” the data, determine the concepts that several data sources support.

10. Conduct Interviews with High and Pure Loaders

Determine at least one or two sorters in each Array to assist you with understanding the broader concepts.

11. Rename Arrays to Represent Results

Think in terms of data leading to support of concepts leading to support of the generalizations (most relevant and important information to best understand meaning).