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Playing Set® to Discover Qualitative Data Analysis

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Abstract

This article describes the use of an experiential classroom exercise using the card game Set® to introduce concepts related to qualitative approaches to research design and analysis, particularly those based in an interpretive framework. The multiple components of the game, which centers on visual pattern recognition, parallel the “organic” complexity of ethnographic investigation and demonstrate how strong interpretations can be supported with qualitative evidence. The first author adapted the exercise, originally developed by the second author for teaching undergraduate anthropology students, for use in workshops teaching qualitative research to mid - career professionals working on health - related projects in Bolivia. In the process the first author discovered that the game was also useful in team - building in a workshop setting, providing a base of shared experience to which participants could refer as they grappled with the intellectual and emotional issues that arose while designing their own research projects and discovering the system and rigor of qualitative data analysis. An unanticipated finding was the exercise’s usefulness in demonstrating the distinction between and complementarity of inductive and deductive approaches in qualitative research.

Keywords

Qualitative Research, Qualitative Data Analysis, Experiential Learning, Simulation Exercise, Teaching

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Playing Set® to Discover Qualitative Data Analysis

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This article describes the use of an experiential classroom exercise using the card game Set® to introduce concepts related to qualitative approaches to research design and analysis, particularly those based in an interpretive framework. The multiple components of the game, which centers on visual pattern recognition, parallel the “organic” complexity of ethnographic investigation and demonstrate how strong interpretations can be supported with qualitative evidence. The first author adapted the exercise, originally developed by the second author for teaching undergraduate anthropology students, for use in workshops teaching qualitative research to mid-career professionals working on health-related projects in Bolivia. In the process the first author discovered that the game was also useful in team-building in a workshop setting, providing a base of shared experience to which participants could refer as they grappled with the intellectual and emotional issues that arose while designing their own research projects and discovering the system and rigor of qualitative data analysis. An unanticipated finding was the exercise’s usefulness in demonstrating the distinction between and complementarity of inductive and deductive approaches in qualitative research. Keywords: Qualitative Research, Qualitative Data Analysis, Experiential Learning, Simulation Exercise, Teaching

Several years ago, second author Sarah Hautzinger, who teaches undergraduate courses in anthropology at a small liberal arts college, experienced an “aha” moment while playing the game Set®. Population geneticist Marsha Jean Falco created Set® from her experience analyzing results from a study investigating whether epilepsy in German Shepherds is inherited. Falco wrote data about the dogs in the study on file cards. “Because blocks of the information were the same on each file card, rather than writing the data, I drew a symbol to represent a block of data.” The different symbols also had different properties, e.g., color or shape, or whether they were solidly filled in or just outlines. Each property represented a different combination of genes. By spreading the cards out on a table, Falco and the other researchers on the team could more easily look for patterns in the range of dogs with different clusters of genetic traits. From this technique, Falco recognized the fun in discovering patterns in the array of cards and developed the card game of Set®, described in more detail below.¹

Hautzinger’s insight came when she realized that the sensory, intellectual, and emotional experiences generated by playing Set®, especially when first learning the game, are comparable to those experienced when doing ethnographic, interpretive research in the social sciences. Because the connection between finding patterns in data and the game is

¹ “Set®: The Family Game of Visual Perception” is a registered trademark of SET Enterprises, Inc. The game comes with instructions in English, Spanish, and French. A computer version is also available; however, for use in courses and workshops we recommend using the physical version of the game. For more information on the game and where to purchase it, visit www.setgame.com and <http://www.setgame.com/set/history.htm>.

inherent, Set®, as an analogy to fieldwork, also provides an interpretivist rejoinder to the positivist conceit that only experimentalism could produce strong claims and certain knowledge. The multiple components of the game parallel the “organic” complexity of ethnographic investigation, but if the inquiry is as relentlessly systematic as only fieldwork can be, uncontested “sets” or patterns emerge. From this insight Hautzinger developed a classroom exercise for introductory courses in anthropology, “Teaching Ethnographic Research Design Using the Game ‘Set’®” (Hautzinger, 2004). Inspired by Hautzinger’s work, first author Jean Scandlyn introduced it in her introductory anthropology courses, in class sessions on qualitative research for graduate students, and in the pre-departure classroom segment of a field school in rural Ecuador.

In 2006 Scandlyn interviewed directors of several Bolivian Non-governmental Organizations (NGOs) who identified the need for capacity building in qualitative research. In Bolivia Scandlyn partnered with PROCOSI (El Programa de Coordinación en Salud Integral), a network of 31 NGOs that undertake projects in health and development throughout Bolivia, who co-sponsored the workshops that took place in several Bolivian cities in 2010 and 2011.² The workshops had two aims: a) to assist personnel of the various agencies to develop research projects or components of research projects that use qualitative inquiry to explore a variety of topics in health and development directly related to their practice and b) to create a cooperative learning community of practitioners who could subsequently train and mentor one another and share their experiences with qualitative and interpretive approaches. Using the Set® game in this context led Scandlyn to deeper insights into how different individuals approach the interpretation and analysis of qualitative data and how to assist them in recognizing this.

This article builds upon and extends the exercise developed by Hautzinger (2004). Although the exercise has implications for understanding many aspects of qualitative inquiry, we focus here on its usefulness in understanding the process of analyzing qualitative data from an interpretive paradigm. Developed for use in introductory undergraduate courses in anthropology, Scandlyn found it equally and perhaps more valuable in leading workshops for professionals in health-related fields because it provided them with a common experience and practice with processes similar to those used in qualitative inquiry but in the relatively safe and supportive context of the workshop. They could then use this as a shared base on which to build new knowledge and skills during the workshop and subsequently as they engaged in their research projects. In working with professionals who might be novices with regard to qualitative inquiry but nonetheless had many years of clinical or field experience, the scope of the exercise expanded from the original learning objective of demonstrating the strength of interpretive analysis to include discovery of deductive and inductive approaches to interpretation. Workshop participants then related these to the generation of *a priori* and *in vivo* codes, the value of team-based data analysis, and appreciation for the time required for qualitative data analysis in designing research projects.

² Author Jean Scandlyn would like to thank Giomar Higuera Velarde, Specialist in Institutional Development, who worked tirelessly to organize the workshops in La Paz, Tarija and Sucre, and subsequent visits to various fields sites in Bolivia as well as correcting my Spanish in PowerPoint presentations and being a kindred spirit in appreciating the value of qualitative research in answering health-related questions. Her insights into group dynamics and leading discussions were invaluable. I also thank Wendy McFerrin, executive director of PROCOSI when I applied for the Fulbright fellowship for her support and Dr. José Carreño Ayala, the current executive director of PROCOSI for his support of the workshops. A Fulbright teaching fellowship program made the work in Bolivia possible.

Teaching Qualitative Inquiry

Most students who complete secondary education in countries where science education is based in western scientific traditions learn the basic principles of scientific method, experimental procedures, and quantitative methods of analysis, have spent some time in a laboratory, and have shared experiences working in that tradition.³ But few secondary school students learn even the basics of interpretive and humanistic approaches and qualitative methods of analysis used in anthropology, sociology, education, and other social science disciplines to study human behavior and experience. Whereas many students may learn about naturalistic observation in biology and ecology, there is little attempt to link this tradition of scientific research to the scientific study of human behavior or to other traditions in the social sciences such as phenomenology or ethnography. Even college and university students majoring in sociology and anthropology may have little experience collecting or analyzing qualitative data prior to graduate level study in those disciplines.

In the health sciences, survey research courses often present only one tradition of qualitative research, for example, ethnography or phenomenology or grounded theory (Colón, Taylor, & Willis, 2000), and there is often little discussion of the various theories that underlie different qualitative traditions and how these inform and guide methods of data collection and analysis (Eakin & Mykhalovskiy, 2005). Despite growing interest in applying qualitative inquiry to health issues, for busy professionals a week-long workshop is the most they may be able to devote to learning about these methods and represents a significant investment of valuable time and energy (Featherstone, Barbour, & Garner, 2007). Thus the leaders of workshops in qualitative research are faced with students with highly varied levels of exposure and practice with theory, design, methods of data collection and theory; a short period of time for mastering complex material and skills; and very little common experience on which to build new knowledge (Cook & Gordon, 2004; Porter, 2000).

Moreover, the marginalized position of qualitative inquiry in the health sciences often generates significant resistance to learning about these research traditions (Eakin & Mykhalovskiy, 2005). This occurs despite the consonance and similarity between good clinical practice and the qualitative traditions of ethnography and biography, e.g., careful listening to patient complaints and history, empathy, and sensitivity to factors affecting care. Even in contemporary biomedicine, with its emphasis on the double-blind, randomized clinical trial as the gold standard of evidence, diagnosis is often determined inductively from a variety of sources of data -- patient history and complaints, diagnostic tests, and physical examination -- much as in ethnography or case studies. Clinicians and researchers have identified many diseases, e.g., HIV/AIDS or Legionnaires' disease, and their causes by recognizing patterns across cases, which is similar to the process used in grounded theory. Consequently, exercises and discussions that demonstrate the strengths and sophistication of qualitative inquiry (Booker, 2009), while simultaneously understanding and acknowledging the power dynamics that underlie what types of knowledge production are valued (Herzog, 2008; Mason, 2002), are essential.

So how do instructors provide students or professionals with common experiences to which they can relate new knowledge and skills in qualitative research and analysis? Educators in the physical sciences and statistics achieve this through incorporating laboratory

³ We use "qualitative inquiry" to encompass the wide variety of research traditions that rely primarily, though not necessarily exclusively, on qualitative data to understand a given phenomenon (Creswell, 2003; Denzin & Lincoln, 2005). Qualitative inquiry incorporates not only methods of collecting information, but also the social science theories and philosophical assumptions that underlie these approaches and guide research design, data collection and analysis.

sections in their courses. The qualitative researcher commits to the primacy of experience, and to methods that admit unexpected facts, foci and interpretations. However, the biggest disadvantages behind participant observation as a method -- the most experientially based qualitative method of all -- are its time inefficiency and limited generalizability. These same two factors complicate the teaching of qualitative research: It is hard to replicate the long-term experience of ethnographic research in a classroom setting, and it is hard to work from a common foundation of “data” as fieldwork experiences draw from wildly variable foundations of knowledge (linguistic, local, historic, and so on).

There is a considerable body of literature on teaching qualitative research (Chenail, 2011a) with several recently published books devoted to the topic (Blank, 2004; Hurworth, 2008; Garner, Wagner, & Kawulich, 2009; Minichiello & Kottler, 2010) and web-based collections of syllabi (Chenail, 2011a). More recent works often focus on incorporating qualitative data analysis software into course and curricula (cf. special issue of *Qualitative Research Journal*, Singh, 2003; Este, Sieppert, & Barsky, 1998; Walsh, 2003). A major theme in the literature on teaching qualitative research and analysis is the importance and value of experiential learning (Delyser, 2008; Fontes & Piercy, 2000; Hopkinson and Hogg, 2004).

Drawing on Dewey, Piaget and Freire, Kolb (1984) observes that experiential learning models underline how “learning by in its very nature is a tension- and conflict-filled process” (p. 30); consequently learning requires reflection on concrete experience in order to form abstractions and eventually test these against additional experience, in a feedback loop (see also Zull, 2002). Winne and Hadwin (1998) and Pintrich and Zusho (2007) emphasize the significance of directly and intentionally engaging affect and motivation in guiding students to higher-order understandings in the learning process. Koro-Ljungberg advises instructors to “Consider assignments that deal with ambiguity, uncertainty, circularity, and lack of closure associated with many qualitative approaches” (2010, Slide 15). Cook and Gordon argue that analogies and metaphors can enhance learning by helping students find “creative and imaginative links between existing conceptual frameworks and those associated with new knowledge, thereby facilitating its assimilation” (2004, p. 649; Gerstl-Pepin & Patrizio 2009).

In addition, Eakin and Mykhalovskiy (2005) and McAllister and Rowe (2003) argue that the marginality of qualitative inquiry in the health sciences calls for creativity and flexibility in teaching qualitative data analysis. Both students and teachers state the value and importance of experiential learning in short-term workshops and semester long courses (Featherstone et al., 2007). Authors describe a variety of innovative and creative techniques for creating analogous experiences in the classroom setting: analyzing popular film, (Saldaña, 2008; Tan, 2004), television (Wright & Vigil, 1995), and poetry (Raingruber, 2009); computer-based learning objects (Chenail et al., 2006; Raddon, Raby, & Sharpe, 2009), YouTube videos (Chenail, 2011b), reflexive journals (Gerstl-Pepin & Patrizio, 2009), multimedia packages (Colón et al., 2000), sorting playing cards (Waite 2011) and practice using qualitative data analysis software (Blank, 2004). Whereas some authors use “real” field data, e.g., de-identified transcripts of interviews collected by students for the course or by faculty as part of other research projects (Blank, 2004; Walsh, 2003); others use publicly available texts and images (Clark & Lang, 2002; Raingruber, 2009; Saldaña, 2008; Wright & Vigil, 1995). A major theme of the conference on teaching qualitative research held in Germany in 2008 was the importance of the “co-construction of knowledge” based on a model of “cognitive apprenticeship” between teacher and student (Breuer & Schrier, 2007).

Through analogy, the Set® exercise creates a context for reflection on the experiential aspects of field research – apprehension, intimidation, dizziness from the complexity, despair at discovering patterns – that by definition take place over a longer term and at physical remove from classroom, workshop or advising learning contexts. Providing researchers with

a metacognitive, reflective vocabulary in anticipation of challenges faced over the course of fieldwork can equip them to learn more from facing research obstacles and surmount them more efficiently. This is especially challenging in a workshop format of one to five days. Thus preliminary experiences in the protected environment of the classroom can be a valuable preparation for field-based work outside the classroom or to provide a shared experience for groups of students with varied exposure to qualitative inquiry. Set® offers an opportunity to artificially stimulate, and allow researchers to reflect upon, the affective and cognitive challenges field-based research will inevitably present (Luttrell, 2005; Mitchell, Friesen, Friesen, & Rose, 2007) and overcome obstacles in teaching qualitative methods in ways directly consonant with experiential learning theory.

The Exercise: “Teaching Ethnographic Research Design Using the Game Set®

The exercise is described in detail in Hautzinger (2004) and the game’s written rules,³ so we will provide only a brief description here. The game involves recognizing visual patterns, i.e., identifying “sets” of three cards that meet specific criteria from a deck of specially designed playing cards. Each card has four attributes: symbol (ovals, squiggles, or diamonds), color (purple, green, or red), fill (striped, outlined, or solid color) and number (1, 2 or 3 symbols on a card). A set consists of three cards. Each attribute, taken on its own, must be *either* identical for all three cards in the set, *or* different for all three cards in the set.

In a class or workshop, we divide the students into groups of three or four and give each group a deck of cards. They are told to place 16 cards face up on the table in a four-by-four (4 x 4) grid. The rules specify a grid of 12 cards (3 x 4) grid, but we recommend 16 to facilitate learning the game more quickly. The object of the game is for each player, acting as an individual, to identify as many sets as possible. When a player finds a set, he or she removes the three cards from the grid and calls out “Set!” Any player can challenge whether a set of cards is indeed a set, and the player who called “Set!” must justify why it meets the criteria for being a set. If it does not meet the criteria, the cards are returned to the grid. As sets are identified the grid is replenished from the remaining cards in the deck. (For a video recorded demonstration of the game, please visit http://www.youtube.com/watch?v=_TsVbgo02Q8).

As noted by Hautzinger, a key aspect to using the game as a classroom exercise is not to provide participants with more information than the basic rules, which are simple, and then instruct them to begin playing, much as the woman in the video referenced above instructs players. “I ask them to not worry, for now, about *why* we are using this tool, but just to concentrate on grasping how the game works and, hopefully, to enjoy playing for a bit” (2004, p. 1). If there are individuals present who have played Set® previously, Hautzinger suggests moving them into a separate group of experienced players, or, if there are only one or two experienced players, asking them to observe play in one of the groups of novices.

We allow play to continue for 15-20 minutes, until participants have a beginning mastery of the game and are forming sets fairly quickly. We visit each of the tables to provide assistance if a group is really stuck, but generally we observe their interactions and conversation and say as little as possible. Once we call “Time!” to end the game, we then lead students in a debriefing exercise.

Debriefing: What Participants Learn

The Workshops

Note: The following analysis is based on the first author's experience using the exercise in the workshops on qualitative research that she led in Bolivia in the spring of 2010 and summer of 2011. She conducted all of the workshops in Spanish: remarks placed in quotation marks are taken from her journal in which she recorded impressions and observations in English following a day of teaching with the purpose of planning for the following day and to improve future workshops. She has also included responses from written evaluations of the exercise in 2011 and translated all material from Spanish.

The first workshop was held over a five-day period at PROCOSI's offices in La Paz. The primary objective of the workshop was that participants would create a preliminary research design to present to the group on the final day. The other two workshops were one-day sessions designed to introduce qualitative inquiry with the objective of generating interest and enthusiasm for further capacity building and consultation on individual projects. The majority of participants in all of the workshops were mid-career professionals with degrees in nursing, medicine, psychology, and public health. None of the participants had played the game previously, which meant that everyone began at the same level.

The Experience

As Hautzinger advises (2004), Scandlyn began the post-game debriefing by asking them about their experience playing the game. Most of the participants started by saying how much they enjoyed playing the game and learning something new, but these statements were quickly followed by acknowledging how frustrating it had been to be such a beginner, to not know what to look for, to not be certain that a set was truly a set, and how they felt overwhelmed and could spend minutes just staring at the grid of cards without seeing any sets at all. They also expressed frustration with the instructor not explaining the rules in more detail or showing them more examples of sets before starting to play the game.

Scandlyn continued by asking them how their experience changed as they continued to play the game. Many participants noted that as they started identifying sets their frustration transformed into enjoyment, and they began to see sets more readily. As a participant in 2011 said, "I felt different emotions. I was confused, then enthusiastic. As I advanced I felt more secure and then amazed by the discoveries of the other participants. I felt more motivated, eager to finish the game and use all of the cards." Some participants said that they just stared at the grid until a set "jumped out at them," while others decided what kind of set they were looking for, "one like the example you gave with the instructions." These individuals observed that they found many fewer sets than others in their group and so began to expand the kinds of sets they were looking for, which enabled them to identify other types of sets more readily. Several participants began by identifying any set they could, but as they mastered this, they created challenges for themselves by looking for specific kinds of sets. For example, one participant reported that he looked for sets in which all three cards were the same for each of the four characteristics or sets where all three cards were different for each of the four characteristics. He viewed the latter as the most challenging. Several of the groups said that it was much easier to work together as a team, and they had quickly abandoned the idea of working as individuals to work together to identify sets. "At first we were uncertain what to do, but little by little we became more involved in the game, and tried to work as a group."

Scandlyn then shifted the discussion to the purpose of the exercise as a way to learn something about the experience of doing qualitative data analysis. Most of the participants quickly grasped the analogy of the game to the previous day's assignment to observe human interactions in a public setting. From that experience, they spoke of not knowing what to look at or look for, of feeling awkward and uncomfortable observing something that seemed so ordinary and trivial. One participant said that as she watched people walking down a crowded city sidewalk she realized that whereas men frequently carried nothing, women, almost without exception, carried some object: a purse, tote bag or backpack. She dismissed this as not a very important observation, but nonetheless a pattern that she had never thought about or "seen" before. Another participant compared the experience to learning a language, where only slowly do the patterns emerge to make sense out of what you hear. Scandlyn explained that the initial frustration and sense of being overwhelmed was inherent to qualitative data collection and analysis: a relatively short interview or casual encounter with a research participant in the field could yield a large amount of information to be analyzed and interpreted and that the interpretation or identification of patterns might only emerge after a long period of time reviewing and working with the material.

Scandlyn concluded the debriefing by asking about the strength of claims that could be made about the meaning of patterns in qualitative data. Again, the participants quickly saw the analogy with qualitative data analysis. "It was a process in which we learned to have more trust in our arguments. The group agreed on their validity and we were more confident in our results." Several participants observed that the cards were like your interviews and that you could use your interviews to justify or show the pattern that you had found. As with a set, you had to use the material or data you collected to make a strong case. This challenged their idea that this kind of research was anecdotal or haphazard, but the result of applying selection criteria systematically. One participant raised the question of conceptual models, which led to a discussion of how those models could guide the patterns or sets you identified in your analysis.

As the group finished the exercise and went their separate ways for the mid-day break, Scandlyn was pleased at how quickly the participants had embraced the game as a metaphor for qualitative data analysis and extended that metaphor to aspects of the process that undergraduate students, with their relative lack of practical experience, often could not. But over the next few days of the five-day workshop and later that spring as she worked with different teams as they began to analyze their data, Scandlyn also realized that the value of the exercise lay not so much in the initial "aha" of recognizing it as an analogy for qualitative analysis, but in how it subsequently served as a basis for new learning as participants became more immersed in doing qualitative data analysis – coding, combing, pattern recognition, theme construction, constant comparison, structuring, and theorizing.

On the second day of the workshop the group completed an exercise in which participants divided themselves into groups of two or three people who were from different research teams and interviewed each other for ten minutes on the topic of "pastimes" in Bolivia. They then wrote up their notes from the interview to serve as a data set for three types of qualitative analysis. While coding the data for themes, the participants constantly made reference to the game Set® – how looking for common themes across the interviews was "just like finding a set," or how taking a code that they had created from a previous interview and seeing if it applied to another interview was like "looking for the solid green squiggle that would complete the set." This provided the opportunity to discuss the difference between *in vivo* and *a priori* codes. Just as in the game, in research sometimes you looked for a pattern you had reason to believe would be there (*a priori* code), while at other times you discovered or observed that the same theme appeared across several interviews (*in vivo* code). We could then discuss how both could be used in analyzing a given data set depending

on the research question and the phenomenon you were studying. Thus the exercise provided a mnemonic – “Remember when we were playing Set®” – that served as a shortcut to describing and relating new experiences and knowledge to a complex process they now all shared.

On the last day of the workshop, as the group discussed how to present the results of their research in journal articles and reports, Scandlyn was able to refer to the exercise to illustrate how they could build strong arguments for their interpretations by linking them to the relevant data and the criteria they used to group them into related categories. “How do you know it’s a set?” became the question they must answer for their readers. Although several of the participants were daunted by the amount of writing required during qualitative data analysis, they could appreciate why it was important to document the process through which they arrived at their conclusions, much as they would keep track of data runs in SPSS.

Observations and Reflections

When Scandlyn included the exercise in the qualitative workshops, she was unsure how professionals who had made a significant commitment of time and energy to attend the workshops would receive it. In reflecting on the results at the end of the first and subsequent workshops, she made several observations and discoveries.

As An Analogy for Qualitative Data Analysis

The game, although very much an entertaining card game, serves as an excellent metaphor for qualitative analysis in at least two respects. First, participants must enter into a different emotional and intellectual space from the usual classroom or workshop setting, an arena of serious play that engages not only their intellects and verbal skills, but their creativity, intuition, and skills in pattern recognition in ways analogous to analyzing qualitative information that may come in the form of texts, audio recordings, video or still images, artifacts or the built environment. This takes many participants out of their comfort zone, which can generate frustration, anxiety, and embarrassment, as these participants shared, but also deep satisfaction as uncertainty and ambiguity yield gradually to order and meaning. When Scandlyn asked them about their experience when they discovered that a set was not in fact a set, one participant observed that although he had been embarrassed at “getting it wrong,” by having his error identified he was able to more quickly learn to identify sets accurately. We could then discuss the value of “errors” as a means of disproving initial hypotheses, forcing a re-examination of the material, and remaining open to discovering new patterns. Grasping that there are clear standards one can fall short of, challenges stereotypes that neophyte researchers may harbor about the lack of a systematic approach and rigor in qualitative research. By experiencing frustration at their initial lack of skill in mastering the game and their increasing ability to identify sets and justify them to their fellow players, participants gained new appreciation for the skill involved in qualitative analysis. By analogy, they also could appreciate how qualitative analysis might help them to see the everyday world around them in new ways, with new insights and awareness. Several participants made comments that showed that after playing the game they had a more nuanced assessment of the similarities and differences, strengths and weakness, and complementarity of these different approaches to understanding health behavior. One workshop participant, an architect, shared the results of home visits following an intervention to improve the quality of houses in rural, semi-tropical areas of Bolivia to prevent the transmission of Chagas’ disease. When they visited the new homes, the old houses with thatched roofs (infested with the insect that carries the parasite that causes Chagas’ disease) were still in use, sometimes as

storehouses, but equally often, as housing for senior members of the extended family. When asked why they had not torn down the old house, the project's participants replied that it was the house they had built on first settling the land; it was their home. More probing revealed that beyond sentimental attachment to the structure was reluctance on the part of farmers, who had few financial resources, to destroy a building they viewed as still usable despite the health risks it contained. She said that without visiting participants, observing their use of buildings on their property, and then asking them to explain their behavior, they would not have adequately evaluated the intervention.

Second, the stimulation of emotional responses, discussed in the debriefing that follows the game, can focus attention to optimize learning and serve as a basis for reassurance when similar feelings emerge in the course of a research project. Mason (2002) states that teachers of qualitative research methods should be aware of the ethical implications of challenging students' epistemological assumptions. Whereas the authors agree that careful debriefing is essential to assist students in exploring their reactions, providing students with the opportunity to explore alternative traditions of generating knowledge in a way that highlights their strengths and rigor can enhance critical thinking and improve the quality of positivist, hypothesis-testing research as well (Booker, 2009).

As a Team-building Exercise

An added benefit of the exercise in the workshops was that it forced participants who did not know each other well to work together. Although they were instructed to play the game as individuals, unlike in classrooms in the U.S. where the competition within groups can be quite intense, in each of the workshops in Bolivia, almost immediately the members of the groups began working together to identify sets. When sets were identified, instead of placing them in piles beside the player who had identified them, they more typically generated one large pile of "used" cards. At the end of the game, they often could not say who had won the game. It would be easy to attribute this to cultural differences, assigning a less individualistic and competitive approach to Bolivian culture, but it could just as easily have resulted from their experience in working in health care and development that is often based around interdisciplinary teams. This remains an empirical question.

More importantly, when participants worked in small groups to code the interview transcripts the next day, they quickly grasped the importance of reviewing each other's coding and discussing and revising the definitions for codes. Although they were initially uncomfortable with the idea that there may be no "one right way" to identify themes and code their material, they began to realize that some ways better explained and analyzed the data and that in-group agreement and consistency through normalizing codes provided an important source of reliability and validity. As a participant said, "If in the group we have accepted criteria [for analysis] then we can affirm whether those criteria work or not. That provides confidence and security in our research process."

As a Way to Link Various Themes Related to Qualitative Inquiry

One aspect of the exercise that Scandlyn had not anticipated was how it served to integrate ideas about research design with theory. During these workshops she observed for the first time that individuals and even entire groups approached the problem of identifying sets either inductively or deductively. Scandlyn distinctly remembers one participant who would scan the grid, pick up three cards, declare "Set!" and then claim that she didn't know why it was a set, "It just is." This participant never failed to identify a correct set and, when challenged to defend it, could do so if encouraged. Each of her sets was quite different. She

said that she was never looking for anything in particular, just three cards that could be a set. In contrast, in another workshop there was a participant who selected a kind of set that he was looking for and would patiently wait until he found it. In one of the one-day workshops, one of the groups decided to sort all of the cards by color, shape and fill first and then create sets by systematically pulling cards from each group. While clearly outside the stated rules of the game, it was nonetheless a strongly deductive approach. Several other participants began using one approach and then, when they had mastered it, changed to the other approach to increase the challenge.

This aspect of the game was valuable in two ways. First, Scandlyn could suggest to participants that both deductive and inductive approaches were appropriate ways of deriving valid interpretations of qualitative data and could add the concept of abduction, of moving back and forth between induction and deduction, the signal analytic approach of grounded theory. When they were looking for any group of cards that fit the criteria of a set, the set was analogous to an *in vivo* code, one that arose from the data inductively. When they looked for a set with predetermined characteristics, this was analogous to applying *a priori* codes that might be derived from the literature or from theory or from conceptual models. This has implications for the kinds of information you will collect and how, e.g., relatively more structured or less structured interview schedules. Second, playing the game permitted participants to become aware of how they usually approach pattern recognition and incorporate that into their research designs. With more time, we could extend the discussion to the role that deductive and inductive approaches play in the creation and testing of theory in interpretive and positivist research traditions.

Two additional themes arose during the five-day workshop that Scandlyn had not anticipated. One of the participants in the five-day workshop asked about the connection between codes and conceptual frameworks. She asked, "Where do codes come from? In Set, they come from the rule sheet, but how about in a real research setting?" This led to a discussion of conceptual frameworks and theories and their relationship to interpreting qualitative texts and images. The second was making a connection between the time it took to master Set® at a basic level, which was relatively quick, (but felt like a long time), and the time required to analyze qualitative data. These are two themes that we will emphasize more in future workshops.

Conclusions

This exercise is just one of several that can be incorporated into a course or workshop to provide experiential learning related to selected aspects of qualitative inquiry. As an exercise, it necessarily has limitations and a few cautions. As noted previously, skepticism about the validity and value of qualitative approaches that most health care practitioners receive in their professional training and that is institutionalized in the funding and publication of health care research internationally, is not easily overcome by a few exercises no matter how well designed. Despite their satisfaction with the results of building consensus about codes by working in pairs or teams, workshop participants remained skeptical about the process itself and whether it was "contaminating" their data. They questioned how moving back and forth between data collection and analysis could be essential features of a rigorous study design and continued to see stories and excerpts from transcripts as less powerful in supporting an analysis than in the number of participants who stated a particular position or belief or reported a particular behavior.

Although the game serves a variety of purposes, from building rapport among students or workshop participants to generating self-awareness of one's approach to answering research questions, there is always the risk that using a game will perpetuate

misconceptions about qualitative research being easy or as simple as pulling out a few quotes from some interviews. Likewise, the game could mistakenly convey that qualitative research can be learned wholly improvisationally, through simply “doing it,” rather than also drawing on established traditions in research design and analysis that are equally as complex and sophisticated as bench science. Observing firsthand what shared experience doing research can bring, in a field school or the more limited but still valuable shared experience provided by playing Set®, we are more convinced than ever that we do our students a disservice by not teaching qualitative research traditions with the same attention and dedication that we devote to more positivist traditions.

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