

The Abductive Art of Discovery: Insights From a Qualitative Study on Unaffected Women Managing Genetic Risk of Breast and Ovarian Cancer

International Journal of Qualitative Methods
Volume 17: 1–11
© The Author(s) 2018
Reprints and permissions:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/1609406917750973
journals.sagepub.com/home/ijq
 SAGE

Maria Caiata-Zufferey¹

Abstract

Qualitative analysis requires intuition, imagination, sensitivity, the creative linking of ideas, and a certain degree of luck. Interpreting and making sense of qualitative data have thus often been seen more as an art than a systematic activity. Because of its unstandardized character, the process of interpreting qualitative data has remained insufficiently described. This article looks retrospectively at the interpretation procedures that were used in a recent qualitative study, with the aim of identifying recurring mechanisms and basic conditions of discovery. The study was designed according to the grounded theory approach and dealt with the way unaffected women manage their genetic risk of breast and ovarian cancer. Specifically, this article offers various examples of the analytical reasoning that led to the transformation of observations into intelligible accounts. Based on these examples, the article concludes by identifying and illustrating five key moments in the process of knowledge construction: making a surprising observation, adopting a general principle of meaning, formulating hypotheses, verifying hypotheses, and constructing plausible explanations. These moments are not necessarily sequential but are instead intermingled in a typically abductive way. The complex process of discovery described may provide guidance to qualitative researchers in approaching their data and help them make their interpretative reasoning explicit, thus improving the transparency and credibility of qualitative reports.

Keywords

data interpretation, discovery, abduction, genetic risk, cancer

What Is Already Known?

Discovery in qualitative research requires the transformation of a significant amount of data from a limited number of cases into an abstract, intelligible account. Because of its unstandardized character, discovery has often been understood as an eclectic process and its procedures as complex and mysterious.

What This Paper Add?

This article contributes to the exploration of the process of discovery in qualitative research by identifying a set of recurring activities for knowledge construction starting from empirical data, namely, making a surprising observation, adopting a general principle of meaning, formulating hypotheses, verifying hypotheses, and constructing plausible explanations. These five activities do not occur sequentially, but iteratively throughout the process of discovery, following the logic of abductive reasoning.

Introduction

According to Becker (1998), the objective of social science is to develop theories or explanations about how groups of people and certain kinds of events come to be the way they are.¹ He defines these theories or explanations as “stories.” To be considered scientific, these stories must have two main features: They must be *plausible*, that is, they must be constructed in a way that makes sense and can be accepted as reasonable by the reader; and they must be *congruent with the data* collected in the field. When findings in social research conform to these

¹ University of Applied Sciences and Arts of Southern Switzerland, Manno, Switzerland

Corresponding Author:

Maria Caiata-Zufferey, University of Applied Sciences and Arts of Southern Switzerland, Via Violino, 6928 Manno, Switzerland.
Email: maria.caiata@supsi.ch



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (<http://www.creativecommons.org/licenses/by-nc/4.0/>) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

criteria, they may be considered scientific stories, intended as well-founded hypotheses.

This way of tackling social research evokes the *evidential paradigm* described by the Italian historian Carlo Ginzburg (1989). Ginzburg suggests that the aim of disciplines such as history, and of the social sciences in general, is to study individual cases and situations. These cases and situations cannot be investigated directly in an experimental manner, as in the natural sciences, but have to be reconstructed based on traces and clues. In other words, the social sciences produce a kind of knowledge derived from the interpretation of data as signs of a blurred reality. As a consequence, this knowledge is “indirect, presumptive, conjectural” (Ginzburg, 1989, p. 106).

In the case of qualitative research, constructing a scientific story based on the interpretation of relevant signs presents some specific challenges. First, the story *is developed from a limited number of cases but aims to go far beyond them*. If we assume that people’s lives and the course of world history must be understood together (Wright Mills, 1959), the researcher has to move from individual circumstances to the wider social and historical forces in which they are enmeshed. Second, the story *is elicited starting from a large amount of data*. Although few cases are taken into account, they are explored according to a holistic approach (Creswell, 2007). The qualitative researcher may thus be overwhelmed by the richness of the material collected. Third, the story *is built without a preconceived principle of organization*. Its structure emerges as it evolves. The researcher deals with the mass of qualitative data without knowing from the beginning what is important and what is trivial, or what comes before and what comes after. Of course, sensitizing concepts may be adopted and built in as a basic framework to guide the analysis, but they do not enable the qualitative researcher to move directly to the instance itself and its relevant content (Blumer, 1954). It is not clear, therefore, which data have to be considered clues to another reality and which, on the contrary, are just incidental. Fourth, the story *is based upon words whose meaning may be multiple and changing*. In interview-based research, for example, each account requires at least three decoding levels: information about the world, information about the point of view of the interviewee with respect to the world, and information about the communicative structure of the interview itself (Olivier de Sardan, 2008). Therefore, words may be interpreted at different levels and may indicate different realities: They may refer to factual reality, evoke a retrospective reconstruction, or even be the product of the interaction between the participant and the researcher.

Because of these particular challenges, developing a scientific story through qualitative inquiry is a labor-intensive undertaking in which the subjectivity of the researcher necessarily plays a crucial role. Transforming complex data into clues and hypotheses is an eclectic process (Creswell, 2002) that requires intuition, imagination, sensitivity, and the creative linking of ideas (Patton, 1990). From this point of view, discovery in qualitative research seems more an art than a systematic endeavor. Even more, this process has been seen as

akin to serendipity, as it results from the analyst’s insight and a certain degree of luck (Fine & Deegan, 1996).

Because of the complex and unstandardized character of the procedures of data interpretation, qualitative researchers have often come across difficulties in explaining them (Boeije, 2002; Strauss, 1987). The literature does provide illustrations of how to break data down into manageable, logical, and judicious bites (Creswell, 2003; Ritchie, Spencer, & O’Connor, 2003; Ryan & Bernard, 2000). The coding process can indeed be highly systematized through the use of code lists, which are precious tools, especially when working in teams. There is less description of the way in which these bites are transformed into theory, however, and of the way, codes are combined to create a scientific story (Walker, Cooke, & McAllister, 2008). On this point, a variety of heuristics for stimulating creativity in the social sciences have been suggested, such as the use of meta-theoretical categories, checklists, metaphors, or quantification (Abbott, 2004; Langley, 1999; Miles & Huberman, 1984), but these heuristics are often simply mentioned without being embedded in a global strategy of interpretation. In some cases, systematic procedures for discovery have been described. This is particularly the case with the constant comparison method that is at the core of the grounded theory approach (Strauss & Corbin, 1990). Constant comparison consists of continuously comparing and contrasting the data to form categories, of establishing the boundaries of these categories, and of connecting them. In contrast to the orthodox form of the approach (Glaser & Strauss, 1967), some grounded theorists also suggest comparing the data with previous knowledge in order to confirm current theories or produce new ones (Goldkuhl & Cronholm, 2010). Now, comparison—whether between the data themselves or between the data and existing knowledge—has more to do with creative than analytical work (Strauss & Corbin, 1990) because it requires identifying relationships between categories. Ultimately, it requires generating hypotheses.

But how do these hypotheses emerge, and how are they treated until the development of the final plausible statements? Despite the contributions of the existing literature, the step of making meaning of qualitative data continues to be insufficiently discussed in papers presenting the results of qualitative studies (Boeije, 2002; Hunter, Lusardi, Zucker, Jacelon, & Chandler, 2002).

This article contributes to the exploration of the process of discovery in qualitative research, based on a reflexive examination of the procedures of analysis that have been used in a recent qualitative study to develop a theory or explanation—or, in Becker’s (1998) terms, to develop a scientific story.

The following pages first describe the study referred to in this article. Subsequently, five examples of discoveries are offered, as they emerged in this study. Through these examples, it is shown how raw data were transformed into clues, how these clues constituted new hypotheses that informed the rest of the analysis, and how plausible statements were developed at the end of this complex process. In the

conclusion, a crosscutting reading of the examples is proposed. In this way, the reasoning that underlies the reported examples is examined and the conditions that made discovery possible are made clear.

The Study

Context and objectives

The examples presented in this article are drawn from a recent study on how unaffected women who carry the genetic mutation that predisposes them to breast and ovarian cancer (*BRCA1/BRCA2* gene mutations) deal with genetic risk.

During the last two decades, genetic tests have allowed unaffected women with a family history of cancer to determine whether they are predisposed to developing breast and ovarian cancer due to *BRCA1/BRCA2* germline mutations. Women carrying a *BRCA1/BRCA2* mutation have a significant probability (as high as 75%) of developing breast or ovarian cancer within their lifetime (Antoniou et al., 2003; Chen & Parmigiani, 2007; Mavaddat et al., 2013). Based on international medical guidelines (Balmana, Diez, Rubio, & Cardoso, 2011), these women are encouraged to undergo intensive long-lasting surveillance to detect cancer as early as possible, and/or to reduce risk through prophylactic surgery (bilateral mastectomy, oophorectomy). The final decision on how to deal with genetic risk of cancer, however, is up to the woman herself. Self-determination is a central concept in current human genetics (Clarke, 1997; Lemke, 2013).

Despite the existence of international guidelines, making a decision on risk-management behavior is a difficult process. The suggested measures may be seen as unsuitable, because they tend to affect everyday life, making women continuously dependent on the medical system in the case of surveillance (Finkler, Skrzynia, & Evans, 2003) or requiring them to modify their bodies permanently in the case of surgery (Brandberg et al., 2008). These drawbacks may be seen as all the more difficult to accept as genetic testing provides only probabilistic information: Nobody knows whether the disease is going to develop, as a result of which measures to deal with genetic risk of cancer could be unnecessary. Additionally, early screening is crucial for the treatment of cancer, but it does not guarantee the best rate of survival among high-risk groups (Oei et al., 2006). Similarly, prophylactic surgery strongly reduces the risk that cancer will develop, but it does not eliminate it (Finch et al., 2006).

To sum up, at-risk women are confronted with the uncertain nature of genetic risk and the measures that are supposed to minimize it. This research examined how unaffected women manage their genetic risk in their everyday life over time. More specifically, it examined the ways in which genetically at-risk women deal with their risk, the social and institutional worlds that frame these activities and the various forms of legitimation the women adopt to give meaning to their actions. From a theoretical point of view, the study aimed to understand how people act under circumstances of uncertainty.

Methods and data collection

The research question was addressed by adopting a general grounded theory approach (Strauss & Corbin, 1990), which is typically used to build theory about psychosocial processes from a strong evidence base. Key features of grounded theory are an iterative study design, a sampling process based on the emergent theory (theoretical sampling) and a system of analysis based on the constant comparative method. Consistent with these specificities, data collection and analysis in the study were pursued purposefully and simultaneously until saturation was achieved, that is, until a consistency of responses was evident and no new ideas were introduced during subsequent interviews. Participants were progressively recruited and interviewed, and the interview grid was adapted based on the themes that emerged from the provisional analysis. Concerning the analysis itself, data were continuously compared and contrasted to form categories, establish their boundaries, and connect them to each other. The discovery process described in this article was embedded in this general analytical framework and makes explicit the procedures that were employed to develop hypotheses from the coded material.

Data for analysis were drawn from biographical interviews with 32 healthy women who had been identified as *BRCA1/BRCA2* mutation carriers at least 3 years earlier (after discussion with the genetic counselors, this period was considered adequate for these women to have developed sufficient experience in managing genetic risk over time). Participants were recruited through four genetic-counseling centers in the French- and Italian-speaking areas of Switzerland between 2011 and 2014. Genetic testing for breast/ovarian cancer has existed in Switzerland since 1995 and is usually done in genetic-counseling centers in hospitals, which are led by medical doctors (geneticists, oncologists) who work in close collaboration with genetic counselors (usually nurses trained in this field). Following the 2007 Law on Human Genetic Analysis, genetic tests can only be carried out by a medical doctor after the provision of sufficient information concerning the nature, meaning and consequences of the test, and only with the consent of the person concerned. Genetic-counseling centers were therefore considered the best intermediary through which to contact potential participants. After approval from local ethics committees, an invitation letter was sent to all eligible women.

Following informed consent, each participant was interviewed once or twice, depending on her availability and/or the need to meet again to explore her account in greater depth. Interviews were conducted at home or in a university office for a total of 3 hr on average, they were audio recorded and transcribed and the participants' identity was anonymized.

Some results have already been published (Caiata-Zufferey, 2014; 2015, 2016; Caiata-Zufferey et al., 2015).

Findings

The following pages describe the interpretation procedures that led to some discoveries as they emerged in the study.

Looking for What Is Missing

“Did I not tell you? Of course I had everything removed.” This is what one of the interviewees, Celesta (33 years old), said an hour into our discussion about her risk-management behaviors. With this sentence, it became clear that she had had her breasts and ovaries surgically removed—although they had been healthy—because of her genetic predisposition. By undergoing preventive surgery, Celesta was trying to minimize her risk with all the weapons at her disposal, and she chose the most radical ones. What is surprising about Celesta’s statement is that it took her 60 min to provide the researcher with this information, which was central to the theme of the interview. Other participants had made the same preventive decision, but they always announced it early on. How can one understand Celesta’s omission of this information in the initial part of the discussion?

The procedure of “looking for what is missing” assumes that there is an ideal-typical model of the situation that is being studied and that the empirical data do not fit it. In this specific case, information on preventive surgery would have been expected earlier, especially in the context of an open, friendly, and spontaneous interview, as the one with Celesta was. Comparing Celesta’s behavior with the ideal-typical model of the situation raised inconsistencies that required an explanation.

Celesta knew that the researcher did not have any clinical information about her situation. While some of Celesta’s sociodemographic data were collected during the recruitment process, information about her health trajectory and risk-management behaviors were only gathered during the interview. The genetic-counseling centers in charge of the recruitment were required to maintain confidentiality on this point. Before meeting her, the researcher only knew that Celesta had been identified as a *BRCA1/BRCA2* mutation carrier at least 3 years earlier and that she was healthy.

Two hypotheses were formulated to make sense of Celesta’s omission: First, she did not want to provide this information; second, she did not understand that it was important. In the first case, her behavior may have been due to a sense of modesty or embarrassment, in the sense that she may have considered it a difficult topic to broach; in the second, her behavior may suggest a lack of awareness regarding the exceptionality of her action.

Upon examination, there was no sound evidence for the first hypothesis: The nonverbal behavior of the participant (very comfortable) and the atmosphere of the interview (warm) did not seem compatible with embarrassment. On the contrary, the first part of the statement (Did I not tell you?) gave the impression that Celesta was providing this information “in passing,” as if her choice was an obvious one for women in her situation. Moreover, Celesta was willing to provide details on her surgery after the topic was introduced into the discussion. There were good reasons, then, to focus attention on the second hypothesis, that Celesta considered it normal to undergo prophylactic surgery. This hypothesis, however, raised other questions. Preventive surgery is far from being considered normal behavior both

socially and in the medical system. The scientific literature stresses the controversial nature of preventive surgery, which is sometimes accused of mutilating people based on probabilistic calculations in the name of an abstract ideal of “zero risk” (Nettleton, 1996). As well, the great majority of the other participants found the decision to undergo preventive surgery dramatic and difficult. Based on these considerations, a further hypothesis was formulated: Celesta may have gone through a “normalization” process with respect to this medical strategy; that is, something may have happened over time that had made her believe that preventive surgery was the normal thing to do in her situation. As a result of this chain of hypotheses, new questions arose. For instance, normalization evoked the concept of socialization. Was it therefore possible that Celesta had been socialized to the “zero risk” standard? In this case, who were the agents of the socialization process?

The hypothesis that Celesta was socialized to the “zero risk” standard led the researcher to attempt to understand how that socialization occurred, namely, through her vicarious experience of the disease and the medical institution responsible for her care. Concerning the vicarious experience, Celesta had seen several women in her family die of breast and ovarian cancer. In particular, she had closely followed the agony of her mother who had been hospitalized on numerous occasions. This experience convinced Celesta that *BRCA* was synonymous with disease and that disease was equal to death. Accordingly, she had no doubts when considering preventive surgery. It was therefore possible to assume that the “zero risk” socialization begins before the completion of the genetic test: It probably starts when the woman is still only a spectator in another person’s battle against the disease. As for the medical institution, it was observed that the at-risk women continued to internalize the “zero risk” standard during the period of medical care, through the influence of the health professionals who shared this philosophy.

Focusing on Anomalies

“It has not affected my life more than that.” Modeste (60 years old) had discovered that she carries the *BRCA* mutation 4 years earlier. In her opinion, this event was not a milestone in her life. It led her to decide to remove her ovaries and undertake regular breast check-ups, but the genetic risk of cancer did not threaten her everyday life or identity. Of note, Modeste’s statements contradict some opinions in the scientific literature, which present genetic diagnosis as disruptive of a woman’s life (Kenen, Ardern-Jones, & Eeles, 2003; Masson, 2006). Modeste’s case also contrasts strongly with those of other participants who stressed the shock of the diagnosis (even though they were not completely surprised) and the painful process involved in trying to rebuild their lives and their future projects. How then can one understand Modeste’s indifference with respect to her genetic status? Why did knowing that she was predisposed to developing cancer not affect her more strongly, while this same knowledge had dramatic consequences for others?

According to Becker (1998), actions are responses to particular situations, and the best way to explain differences in behaviors among individuals is therefore to concentrate on their activities and the situations in which these activities take place. Based on this assumption, it was possible to formulate a fruitful hypothesis regarding Modeste's detached reaction: Her expressed indifference was less a result of her specific personality than a way of responding to how she understood her situation.

Following this line of thought, the next step was to compare Modeste's situation with that of the other participants, for whom the impact of genetic risk was apparently far more devastating. What were the differences among the participants in terms of their life situations that could explain their different experiences?

These questions led to the conclusion that several factors influence the impact of genetic testing on the individual's everyday life. One of the most important has to do with the life stage of the woman at the moment of genetic testing. Managing risk strongly influences other life projects, especially those of maternity and femininity. For instance, finding out that one is at risk before being in a stable relationship and having children, or when one already has a child and is considering more, or after one is in a stable relationship and has already acted on one's decision to have or not have children—all of these situations raise challenges and produce all kinds of different reactions. The participants in the study were thus categorized into three groups, based on their life stages: those in their "early reproductive stage," those in their "late reproductive stage," and those in their "postreproductive stage." It was clear, then, that every life stage resulted in different challenges and experiences in managing genetic risk.

Questioning Regularities

In general, once the *BRCA1/BRCA2* mutations have been identified, at-risk women receive a recommended agenda for action based on international guidelines (Balmana et al., 2011). This agenda requires medical consultation every 6 months on average. It consists of semiannual breast examinations starting from the age of 25, annual mammograms and breast magnetic resonance imaging starting between ages 25 and 30, semiannual ovarian ultrasounds and blood tests starting from 30, and prophylactic oophorectomy before 40. Prophylactic mastectomy is also an option, but it has to be discussed on an individual basis. Indeed, from a medical point of view, this measure has an uncertain cost/benefit outcome: It reduces the possibility of developing breast cancer by more than 90% (Hartmann et al., 2001), but it is an irrevocable measure that can have serious consequences such as psychological distress, a negative impact on body image and sexual function (Brandberg et al., 2008), and potential surgical complications. Additionally, effective techniques for early detection do exist, which makes the invasive intervention not absolutely necessary (Grann et al., 2011). It is therefore not surprising that Metcalfe et al. (2008), in an international comparative study, observe that only a minority

of unaffected women carrying *BRCA1/BRCA2* mutations undergo mastectomy: The preventive mastectomy rate in the United States is 36%; European countries are less inclined to adopt this measure, as their mean is 16%, ranging from a low of 2.7% in Poland to a high of 32% in Holland. Having said that, the rate of prophylactic mastectomy is quite high in the study sample: Among the 32 participants, 10 had undergone prophylactic mastectomy and 8 planned to have the operation in the medium term. Of course, this sample is too small to be statistically relevant, and one cannot exclude the possibility that women who underwent mastectomy are overrepresented in it, for instance, because they were particularly willing to talk about their experiences. Reflection on the sample and its characteristics is crucial for data interpretation. However, these numbers also suggest that mastectomy may be more common than was reasonably expected.² If so, how can one understand the high rate of prophylactic mastectomy?

In sociology, the presence of regularities may be explained through the existence of social factors that shape and guide the repeated phenomenon. This view was described by the founding father of sociology, Durkheim (1897) who believed that suicide is explained by the patterns of society as a whole rather than simply being an individual's mean to an individual's end. In a similar vein, Becker (1998) suggests that social regularities are the product of society, which he likens to a machine: Through a certain number of mechanisms and sequences, society ends up producing the studied phenomenon. In this construction process, time is a crucial factor that needs to be taken into account.

Based on this view, it was hypothesized that prophylactic mastectomy—despite being an intimate and private choice—is somewhat shaped by social factors. It was also imagined that preventive surgery is not the result of a spontaneous and immediate decision, but rather the outcome of a long process: Over time, something happens that makes a significant number of genetically at-risk women consider prophylactic mastectomy the most reasonable option.

This hypothesis seemed particularly appropriate for the issue of mastectomy. Indeed, the majority of participants who underwent it said that they had not considered it at the time of the test. The idea of removing their breasts only came later and only gradually. From these assumptions, new questions arose. What are the factors involved in the development of the belief that mastectomy is the best option? What key moments does a person need to go through to come to that conclusion? Which actors are involved in the decision-making process?

In light of these questions, it was possible to identify four key moments in the choice of prophylactic mastectomy. These may be summarized as follows: The adhesion to the norms of proactivity and self-responsibility in terms of health strongly supported by the medical system; the construction of prophylactic mastectomy as a necessary and advantageous choice, especially in comparison with surveillance measures; the normalization of prophylactic surgery by the anticipated mourning of breast ablation—almost inevitable after years of surveillance, which exacerbates the dissociation of the body from oneself (Kavanagh & Broom, 1998)—and by the elimination

of the concept of mutilation; and the legitimization of prophylactic mastectomy within the family and the medical environment based on shared scientific, moral, and experiential arguments. Due to the social mechanisms in play, it was also possible to conclude with a provocative prediction: It is likely that over time a great number of genetically at-risk women will go through the four key moments described above and end up considering prophylactic mastectomy as the best option in their situation.

Using Metaphors

"...and the machine was launched." Anouch (40 years old) used these words to describe what happened 10 years earlier, when she discovered that she was genetically predisposed to breast and ovarian cancer. Once she received the results of the genetic test, she contacted her gynecologist to discuss surveillance and prevention measures. From then on, Anouch had the feeling that she was involved in an overwhelming process. She shared her impressions by using the metaphor of a machine. What kind of process was she involved in? In what way should one understand the metaphor?

According to Miles and Huberman (1984), the use of metaphors can be very helpful when interpreting qualitative data. Using an image to describe what is going on may convey much more than a concept. For instance, defining a classroom as an oasis suggests several meanings. Of course, the strength of the metaphor can also be a weakness. The researcher may be led to develop ambiguous representations. An oasis may be associated with ideas that suggest a disorganized path, such as that found in a desert, with camels, camel riders, sandstorms, water, palm trees, and so on. But while metaphors can be equivocal, they can also allow the researcher to gain a critical distance from the data, thus allowing them a sense of creativity and helping them integrate diverse pieces of data.

Often, the researchers themselves provide the metaphor. In this case, it was the interviewee who suggested it. The phrase "the machine was launched" gives some implicit information about the way Anouch managed her risk. To better understand her sentence, it is possible to refer to experiential knowledge of what a machine is. For example, a machine is an assembly of parts that are linked together; once it is started, it automatically executes tasks and will work until someone does something to make it stop or the initial impetus is exhausted; and it is built to produce something for someone for a specific purpose. A machine also evokes a lack of human relations and a person being treated as an object.

By applying this experiential knowledge to the trajectory of risk management, it was possible to draw some hypotheses. For instance, it was supposed that from the moment Anouch acquired the status of being genetically at-risk, she was somewhat "forced" to follow a path with a preestablished destination. From this hypothesis, many other questions arose and needed to be considered in order to verify the validity of the interpretation. What does the machine produce? Who is behind it? How does the machine work? What are its mechanisms?

Based on these questions, the data analysis led the researcher to argue that the machine Anouch was talking about was the medical institution. It is a solid and strong machine whose aim is to "produce" individuals who are able to take responsibility for their health and thus act proactively. It was possible to stress that the medical system exerts strong normative pressure on women at risk. Some participants internalized this pressure. Others, like Anouch, were more critical and had the feeling they had been trapped in a risk-management trajectory they were not always keen to follow. It was also observed that this machine is not always well oiled: Its various parts (the medical specialists in charge of the person) often disagree regarding the issue of risk (they do not agree on the way the medical machinery should work); additionally, they are not always well connected with each other (the information flow is bad). This causes at-risk women to navigate within a strong but often inconsistent medical environment.

Risking Analogies

When a woman discovers that she is genetically predisposed to developing breast and ovarian cancer, she theoretically has four choices: Do nothing, opt for a healthier lifestyle, undergo intensive long-term surveillance to detect cancer as early as possible, and reduce risk through prophylactic surgery aimed at removing organs—breasts and ovaries—that may one day be affected. International medical guidelines exist to assist at-risk women in making decisions. However, they only provide recommendations and do not eliminate the burden of making the decision. In fact, all actions regarding genetic risk management are questionable for at least three reasons: They involve many disadvantages for women (Brandberg et al., 2008; Finkler et al., 2003), they do not guarantee effective protection against the disease (Finch et al., 2006; Oei et al., 2006), and they may be unnecessary, since the disease may not develop. Genetically, at-risk women thus have to make a decision and act in the face of great uncertainty. This challenge reminds of a series of other situations that, though they are less dramatic, also require acting in a context of uncertainty: looking for a destination for unexpected holidays, buying a new car after the old one suddenly breaks down, booking a restaurant for an unplanned family dinner, and so on. Of course, these analogies have very different implications than the management of genetic risk of cancer. However, and without wanting to be disrespectful, they can be considered to have some similarities with the latter in terms of decision-making in a context of uncertainty. How should one understand these analogies that, in their own context, deal with some degree of risk? What are the common mechanisms in these different situations?

Establishing analogies with other situations and developing questions and interpretations from the analogous context can be revealing in terms of analysis. This may be all the more so if the situations appear very different from each other, as in this case. The approach to analyzing analogies is based on the idea—discussed by Becker (1998) and already mentioned—that the relationships between situations and activities are consistent

and permit generalization. So instead of focusing on phenomenon A—which is enigmatic and unusual—it is possible to examine phenomenon A²—which is more accessible and more familiar—in order to unwrap transferable characteristics and mechanisms. For example, when choosing a holiday destination, the decision is made through a series of processes, such as calculating the cost/benefit ratio, projecting oneself in different destinations, and finding an agreement with one's significant other. Through these processes, one develops benchmarks for action and gradually narrows down the options.

If this experiential knowledge is applied in the context of genetic risk management, one may assume that at-risk women engage in similar types of activities to choose among the different options for managing their genetic risk: They develop benchmarks for action based on acceptable arguments and validate them with their significant others.

The analogy between choosing how to manage the risk of cancer and choosing a holiday destination may, of course, be risky, but if this analogy is limited to the framework of acting in a context of uncertainty, the hypothesis may not be so far-fetched. From there, other questions need to be explored to test the validity of this hypothesis and broaden it. How is the cost/benefit ratio calculated? Who are the significant others?

Three major processes that allow at-risk women to develop benchmarks for action were identified. All are ways of making sense of their risk-management behavior before they decide on a course of action and after they have implemented it. The first process is “objectivation,” that is, distancing oneself to observe one's body—as if the body were an object—to better calculate the pros and cons of all options. Within the framework of objectivation, at-risk women mention many scientific or the so-called scientific theories to assess the risks and explain their risk-management behavior. Then, there is what may be called “subjectivation,” that is, a kind of introspective journey that leads the woman at risk to look inside herself and clarify her values and wishes, thus reevaluating what is important to her. As part of “subjectivation,” self-projection appears fundamental: The person enters a kind of “small cinema” (Kaufmann, 2001), that is, she develops a fictional activity, a conscious dream, in which she plays different roles. In this way, she projects herself into a virtual world in which she can experience various unfamiliar social contexts. She can thus evaluate the difficulties, risks, and benefits of living a new situation and make sense of her risk-management behavior as the most appropriate in light of her unique personality. The third process can be referred to as “socialization.” It is not about choosing her way on the basis of scientific arguments (objectivation) or experiential reasoning (subjectivation), but about adopting the beliefs and norms of action of a person, or a group of persons, surrounding her. Socialization usually refers to the internalization of the values and norms of a given social group. In this case, the social group often consists of a single person whom the at-risk woman considers trustworthy enough to embrace their ideas. Trust is thus an important factor in this process of socialization: It is because the woman recognizes someone as an expert that she embraces her point of view about risk-

management behaviors. The expert may be a health professional (i.e., a physician who is particularly authoritative) or a layperson (often a family member who has already experienced the status of being a person with a genetic predisposition to cancer and who, as a result, has become a kind of precursor on this path). Trust is usually granted based on specific characteristics of the expert, such as certified skills (i.e., diplomas), social reputation, or personal experience. But whether they are a health professional or a layperson, the expert transmits to the at-risk woman not only their personal point of view about risk-management behaviors but also the perspective of the social worlds they have traversed and internalized.

Discussion and Conclusion

The examples that have been given provide an illustration of how it was possible to progressively discover something about the process of managing genetic risk. It was necessary to start out with a large amount of information and try to bring order to and make sense of the collected data. In the course of the analysis, the subjectivity of the researcher played a fundamental role: She is the one who selected the data; worked on it to discover the enigma it contained; produced an interpretation based on her experience, knowledge, and intuition; and decided what path to follow to test her interpretations.

Nonetheless, the examples also show that some of the researcher's activities in the process of data interpretation were recurrent. If the examples are analyzed cross-sectionally, it is possible to highlight five main procedures that were employed repeatedly.

1. The starting point of the described interpretative work was an enigma. Whether it was on the basis of a strange absence, a striking anomaly, an unexpected regularity, a forced metaphor, or a risky analogy, hypotheses were activated by something that was unclear or unusual. Ultimately, what triggered the data interpretation was a contradiction: The data contradicted the literature, common sense, or in some cases even itself. This suggests that the researcher must be astonished when facing the data. From there on, the researcher must ask the questions that will trace relevant paths. Merton (1968) describes this step in the process of discovery as the “surprising observation.” Making a surprising observation may thus be considered the starting point for discovery. At the same time, this step may also be an end point. Making a surprising observation requires one to be able to identify the enigma within data that, at a first sight, may appear mundane. As Timmermans and Tavory (2012) argue, unanticipated and surprising observations “depend on a theoretically sensitized observer who recognizes their potential relevance” (p. 173). The researcher must thus demonstrate critical thinking to “read” the data and highlight the inconsistencies concealed in it. Looking for what is missing, examining anomalies and regularities and building metaphors and

analogies may therefore be useful when it comes to defining an enigma and questioning data.

2. The second recurrent activity in the interpretative work was adopting a general principle of meaning that made it possible to explain the surprising fact that had been observed. This principle was sought in theories (e.g., the importance of the context in the genesis of an individual's action) or experience (e.g., the representation of what a machine is). It was on the basis of this theoretical and experiential knowledge that the puzzle was interpreted. Strauss (1987) argues that any kind of knowledge is useful if it provides researchers with new questions or new ways of seeing the world. Timmermans and Tavory (2012) go even further and argue that the researcher's theoretical breadth is not only useful but also crucial when entering the field. Reading the data in light of such theories allows researchers to formulate new hypotheses and consequently new questions. The creativity and culture of researchers are particularly important in this second stage of the discovery process: Researchers must call on their theoretical or experiential knowledge to try to build a plausible interpretation. This use of previous knowledge is far from the orthodox form of grounded theory, which prescribes a strictly inductive way of generating categories from empirical data (Glaser & Strauss, 1967).
3. The third process was formulating hypotheses from the principle adopted in the second stage. Multiple interpretations of the same phenomenon were often possible, and it was important to treat them all as important and pursue them simultaneously to avoid excluding a particular interpretation. This moment is characterized by a particular sense of anxiety because the researcher does not know at the beginning which direction is worth taking. It is important to take risks and to dare to formulate hypotheses off the beaten track. Dumez (2012) provides good observations on this point by stressing that good hypotheses are those that are strongly explanatory, falsifiable, and easy to formulate and test. The formulation of hypotheses requires the researcher to employ strategic and logical reasoning.
4. The fourth process was verifying the hypothesis by asking new questions and searching for other clues. It is useful to proceed in two ways: Either comparing the hypothesis with the empirical data that has already been collected or looking for new data that could challenge the original hypothesis. Soulet (2006) refers to this way of verifying hypotheses as "logical experimentation" because it aims to test them empirically. In the present case, negative cases were used to check the explanation and set new paths for further interpretations. This is the time for rigor and discipline: The scientific activity here becomes methodical and systematic in order to consider any objections.
5. The culmination of the process of discovery lies in the act of constructing plausible explanations that are

compatible with the collected data and either consistent with the literature or defensibly contradictory to it. This step was only outlined in the examples seen above. The purpose of this article is not to communicate the results of the research on genetic risk management, but to highlight the processes that led to these results. It is, however, worth saying that montage and collage are essential at this stage: Just as in filmmaking, a series of images and texts must be edited and condensed into a narrative sequence (Denzin & Lincoln, 2000). Concepts must be employed and tied together in a logical and aesthetic manner. The idea here is to find the relationship between the different discoveries, establish a consistent global history, and present them in a fluid and balanced manner. This history may provide a completely new understanding of a specific phenomenon, but it may also strengthen current theories, thus allowing for the integration of preexisting and novel knowledge (Goldkuhl & Cronholm, 2010).

Making surprising observations, adopting a general principle of meaning, formulating hypotheses, verifying them, and constructing plausible explanations: All these processes underlie the art of discovery. These activities do not occur sequentially; they alternate as the process evolves. In the present case, a number of conditions needed to be met and tools needed to be employed for them to result in success: critical thinking; broad, available, and shared knowledge; logic and strategic reasoning; rigor and discipline; and montage and collage.

This complex process of discovery may profit from a team approach. Collaborative analysis of qualitative data can enhance the possibility of gaining creative insight into the phenomenon under investigation and correcting misinterpretations (Hunter et al., 2002). At the same time, to produce an agreed interpretation and explanation, some conditions must be met including time, open-mindedness, intense communication, and explicit working procedures. In this study, the research was realized by a single person (the author of the article). Nonetheless, the researcher benefited from a kind of "peer review process" that took three different forms: continuous informal interactions with other researchers (usually colleagues), the presentation of the research activities in scientific meetings (especially peer-reviewed conferences), and the regular presentation of the data interpretation to experts in the field of the study (in this case, the health professionals involved in the recruitment process). Although the researcher was formally a single person, it is important to acknowledge the countless inputs and contributions provided by many qualified interlocutors who were involved in the study. Indeed, "research is not a solitary exercise; instead it is a collective achievement" (Van De Ven, 2007, p. 10), where "collective" may include individuals outside the research team.

The conceptualization of discovery presented in this article fits well with the grounded theory approach: The procedures described take place in the context of the iterative movement between data collection and data analysis, and they rely on a

theoretical sampling strategy developed to facilitate the constant comparison of cases and identify sources of variation.

What is specific to the procedures described in this article is the broad conception of the constant comparison process and the type of reasoning that goes with it. Glaser's dictum "all is data" (Glaser, 1998) expresses the flexibility of grounded theory in utilizing all types and sources of data. In the presented examples, comparison does not only concern all information that emerged in the research scene; data may also be compared to the broad scientific literature and even to ordinary knowledge drawn from personal experiences, provided that this comparison makes it possible to make surprising observations that require an explanation. As for the type of reasoning involved, it can be referred to as abductive. According to Peirce (1958), abduction is the process of facing an unexpected fact, applying some rules and, as a result, creating an explanatory hypothesis. Abductive reasoning has been found to play a crucial role in scientific discoveries. Recently, a few authors have also recognized its importance in qualitative research (Locke, Golden-Biddle, & Feldman, 2008; Soulet, 2006) and specifically in grounded theory (Charmaz, 2009; Timmermans & Tavory, 2012). This study confirms this view: Throughout the entire research process, abductive reasoning helped develop hypotheses from empirical data and hinted at paths for questions and verifications. Discovery in qualitative research thus extends far beyond the logic of induction, which is traditionally associated with the process of knowledge construction.

In trying to elucidate the process of interpreting qualitative data, this article has not considered important procedures that arise immediately before or immediately after interpretation such as data coding (before) and data selection for presentation (after). This choice was consciously made in order to specifically focus attention on the process of interpretation. It is clear, however, that data coding and data selection for presentation are crucial steps of qualitative analysis and that they therefore deserve further investigation.

In conclusion, this article has described the process of comparison and the abductive reasoning that made it possible to make surprising observations and develop plausible propositions from data, in the context of an empirical study of managing genetic risk of breast and ovarian cancer. The hope is that this detailed description may provide guidance to qualitative researchers in approaching their data and help them in making explicit their interpretation process, thus improving the transparency and credibility of qualitative reports.

Acknowledgments

We are deeply grateful to the health professionals in the genetic-counseling centers in Geneva, Lausanne, Sion, and Lugano for their support and to all participants for sharing their experiences with us.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the Swiss National Science Foundation, Switzerland (Grant number PZ00P1_132633/1).

ORCID iD

Maria Caiata-Zufferey  <http://orcid.org/0000-0003-4197-8913>

Notes

1. An earlier French version of this paper was published in *Sociologies* in 2013 (Caiata-Zufferey, 2013).
2. On May 14, 2013, the American actress Angelina Jolie wrote in the *New York Times* that she had undergone a double mastectomy because she carried the *BRCA1* gene mutation. Rates of prophylactic mastectomy have increased following her announcement. However, the participants' decision to undergo prophylactic surgery was not influenced by her announcement. Only seven women were interviewed after May 14, 2013. Among them, one had already undergone prophylactic surgery and one already had a long-term plan to do so later in life. The other women did not consider prophylactic surgery as an option and argued that Jolie's experience had not influenced them to act differently.

References

- Abbott, A. (2004). *Methods of discovery: Heuristics for the social sciences*. New York, NY: W.W. Norton.
- Antoniou, A., Pharoah, P. D. P., Narod, S., Risch, H. A., Eyfjord, J. E., Hopper, J. L., . . . Easton, D. F. (2003). Average risks of breast and ovarian cancer associated with *BRCA1* or *BRCA2* mutations detected in case series unselected for family history: A combined analysis of 22 studies. *American Journal of Human Genetics*, 72, 1117–1130.
- Balmana, J., Diez, O., Rubio, I., & Cardoso, F. (2011). *BRCA* in breast cancer: ESMO clinical practice guidelines. *Annals of Oncology*, 22, vi31–vi34.
- Becker, H. S. (1998). *Tricks of the trade: How to think about your research while you're doing it*. Chicago, IL: University of Chicago Press.
- Blumer, H. (1954). What is wrong with social theory? *American Sociological Review*, 18, 3–10.
- Boeije, H. (2002). A purposeful approach to the constant comparative method in the analysis of qualitative interviews. *Quality & Quantity*, 36, 391–409.
- Brandberg, Y., Sandelin, K., Erikson, S., Jurell, G., Liljegren, A., Lindblom, A., . . . Arver, B. (2008). Psychological reactions, quality of life, and body image after bilateral prophylactic mastectomy in women at high risk for breast cancer: A prospective 1-year follow-up study. *Journal of Clinical Oncology*, 26, 3943–3949.
- Caiata-Zufferey, M. (2013). Des données aux indices. A propos des procédures de découverte dans le cadre d'une recherche sur la gestion du risque génétique de cancer. *SociologieS [En ligne]*, Dossiers, Pourquoi parle-t-on de sérendipité aujourd'hui ? published online on Novembre 19, URL : <http://sociologies.revues.org/450>.

- Caiata-Zufferey, M. (2014). Droits, devoirs et dilemmes des femmes à risque génétique de cancer. *Socio-Anthropologie*, 29, 53–70.
- Caiata-Zufferey, M. (2015). Genetically at-risk status and individual agency. A qualitative study on asymptomatic women living with genetic risk of breast/ovarian cancer. *Social Science & Medicine*, 132, 141–148.
- Caiata-Zufferey, M. (2016). L'aderenza delle donne alle linee guida in caso di predisposizione genetica al tumore al seno e alle ovaie: Uno studio qualitativo sul ruolo dei medici coinvolti nel follow-up. *Ricerca & Pratica*, 32, 54–63.
- Caiata-Zufferey, M., Pagani, O., Cina, V., et al. (2015). Challenges in managing genetic cancer risk: A long-term qualitative study of unaffected women carrying *BRCA1/BRCA2* mutations. *Genetics in Medicine*, 17, 726–32.
- Charmaz, K. (2009). Shifting the grounds: Constructivist grounded theory methods. In J. M. Morse, P. N. Stern, J. Corbin, B. Bowers, K. Charmaz, & A. Clarke (Eds.), *Developing grounded theory: The second generation* (pp. 127–155). Walnut Creek, CA: Left Coast Press.
- Chen, S., & Parmigiani, G. (2007). Meta-analysis of *BRCA1* and *BRCA2* penetrance. *Journal of Clinical Oncology*, 25, 1329–1333.
- Clarke, A. (1997). The process of genetic counselling. In P. Harper & A. Clarke (Eds.), *Genetics, society and clinical practice* (pp. 179–200). Oxford, England: BIOS Scientific.
- Creswell, J. W. (2002). *Educational research: Planning, conducting and evaluating quantitative and qualitative research*. Boston, MA: Pearson.
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage.
- Creswell, J. W. (2007). *Qualitative inquiry and research design*. Thousand Oaks, CA: Sage.
- Denzin, N. K., & Lincoln, Y. S. (2000). *Handbook of qualitative research*. Thousand Oaks, CA: Sage.
- Dumez, H. (2012). Qu'est-ce que l'abduction, et en quoi peut-elle avoir un rapport avec la recherche qualitative? *Le Libellio d' AEGIS*, 8, 3–9.
- Durkheim, E. (1897). *Le Suicide: Etude de Sociologie* [Suicide: A study in sociology]. Paris, France: Félix Alcan.
- Finch, A., Beiner, M., Lubinski, J., Lynch, H. T., Moller, P., Rosen, B., ... Hereditary Ovarian Cancer Clinical Study Group. (2006). Salpingo-oophorectomy and the risk of ovarian, fallopian tube, and peritoneal cancers in women with a *BRCA1* or *BRCA2* mutation. *Journal of the American Medical Association*, 296, 185–192.
- Fine, G. A., & Deegan, J. G. (1996). Three principles of serendip: Insight, chance, and discovery in qualitative research. *International Journal of Qualitative Studies in Education*, 9, 434–447.
- Finkler, K., Skrzynia, C., & Evans, J. P. (2003). The new genetics and its consequences for family, kinship, medicine and medical genetics. *Social Science & Medicine*, 57, 403–412.
- Ginzburg, C. (1989). Clues: Roots of an evidential paradigm. In C. Ginzburg (Ed.), *Clues, myths, and the historical method* (pp. 96–125). Baltimore, MD: Johns Hopkins University Press.
- Glaser, B. G. (1998). *Doing grounded theory: Issues and discussions*. Mill Valley, CA: Sociology Press.
- Glaser, B. G., & Strauss, A. (1967). *The discovery of grounded theory*. New York, NY: Aldine.
- Goldkuhl, G., & Cronholm, S. (2010). Adding theoretical grounding to grounded theory: Toward multi-grounded theory. *International Journal of Qualitative Methods*, 9, 187–205.
- Grann, V. R., Patel, P. R., Jacobson, J. S., Warner, E., Heitjan, D. F., Ashby-Thompson, M., ... Neugut, A. I. (2011). Comparative effectiveness of screening and prevention strategies among *BRCA1/2*-affected mutation carriers. *Breast Cancer Research and Treatment*, 125, 837–847.
- Hartmann, L. C., Sellers, T. A., Schaid, D. J., Frank, T. S., Soderberg, C. L., Sitta, D. L., ... Jenkins, R. B. (2001). Efficacy of bilateral prophylactic mastectomy in *BRCA1* and *BRCA2* gene mutation carriers. *Journal of the National Cancer Institute*, 93, 1633–1637.
- Hunter, A., Lusardi, P., Zucker, D., Jacelon, C., & Chandler, G. (2002). Making meaning: The creative component in qualitative research. *Qualitative Health Research*, 12, 388–398.
- Kaufmann, J. C. (2001). *Ego. Pour une sociologie de l'individu. Une autre vision de l'homme et de la construction du sujet*. Paris, France: Editions Nathan.
- Kavanagh, A. M., & Broom, D. H. (1998). Embodied risk: My body, myself? *Social Science & Medicine*, 46, 437–444.
- Kenen, R., Arden-Jones, A., & Eeles, R. (2003). Living with chronic risk: Healthy women with a family history of breast/ovarian cancer. *Health Risk & Society*, 5, 315–331.
- Langley, A. (1999). Strategies for theorizing from process data. *Academy of Management Review*, 24, 691–710.
- Lemke, T. (Ed). (2013). *Perspectives on genetic discrimination*. New York, NY: Taylor & Francis.
- Locke, K. D., Golden-Biddle, K., & Feldman, M. (2008). Making doubt generative: Rethinking the role of doubt in the research process. *Organization Science*, 19, 907–918.
- Masson, A. (2006). Le risque génétique comme nouveau paradigme de la pensée médicale: Enjeux épistémologiques et éthiques de l'oncogénétique [Genetic risk as a new paradigm of medical thought. Epistemological and ethical issues of oncogenetics]. *Revue Francophone de Psycho-Oncologie*, 5, 19–26.
- Mavaddat, N., Peock, S., Frost, D., Ellis, S., Platte, R., Fineberg, E., ... EMBRACE. (2013) Cancer risks for *BRCA1* and *BRCA2* mutation carriers: Results from prospective analysis of EMBRACE. *Journal of the National Cancer Institute*, 105, 812–825.
- Merton, R. K. (1968). *Social theory and social structure*. New York, NY: Free Press.
- Metcalfe, K. A., Birenbaum-Carmeli, D., Lubinski, J., Gronwald, J., Lynch, H., Moller, P., ... the Hereditary Breast Cancer Clinical Study Group. (2008). International variation in rates of uptake of preventive options in *BRCA1* and *BRCA2* mutation carriers. *International Journal of Cancer*, 122, 2017–2022.
- Miles, M. B., & Huberman, M. A. (1984). *Qualitative data analysis: A sourcebook of methods*. Beverly Hills, CA: Sage.
- Nettleton, S. (1996). Women and the new paradigm of health and medicine. *Critical Social Policy*, 16, 33–53.

- Oei, A. L., Massuger, L. F., Bulten, J., Ligtenberg, M. J., Hoogerbrugge, N., & de Hullu, J. A. (2006). Surveillance of women at high risk for hereditary ovarian cancer is inefficient. *British Journal of Cancer*, 94, 814–819.
- Olivier De Sardan, J. P. (2008). *La Rigueur du qualitatif. Les contraintes empiriques de l'interprétation socio-anthropologique*. Louvain-La-Neuve, Belgium: Academia-Bruylant.
- Patton, M. (1990). *Qualitative research and evaluation method*. London, England: Sage.
- Peirce, C. S. (1958). *The collected papers of Charles Sanders Peirce*. Harvard, MA: Harvard University Press.
- Ritchie, J., Spencer, L., & O'Connor, W. (2003). Carrying out qualitative analysis. In J. Ritchie & J. Lewis (Eds.), *Qualitative research practice* (pp. 219–262). London, England: Sage.
- Ryan, G., & Bernard, R. (2000). Data management and analysis methods. In N. Denzin & Y. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed., pp. 769–802). Thousand Oaks, CA: Sage.
- Soulet, M. H. (2006). Traces et intuition raisonnée. Le paradigme indiciaire et la logique de la découverte en sciences sociales [Clues and reasoned intuition. The evidential paradigm and the logic of discovery in social sciences]. In P. Paillé (Ed.), *La Méthodologie qualitative. Posture de recherche et travail de terrain* (pp. 125–149). Paris, France: Editions Armand Colin.
- Strauss, A. (1987). *Qualitative analysis for social scientists*. Cambridge, MA: Cambridge University Press.
- Strauss, A., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage.
- Timmermans, S., & Tavory, I. (2012). Theory construction in qualitative research: From grounded theory to abductive analysis. *Sociological Theory*, 30, 167–186.
- Van De Ven, A. H. (2007). *Engaged scholarship: A guide to organizational and social research*. Oxford, England: Oxford University Press.
- Walker, R., Cooke, M., & McAllister, M. (2008). A neophyte's journey through qualitative analysis using Morse's cognitive processes of analysis. *International Journal of Qualitative Methods*, 7, 81–93.
- Wright Mills, C. (1959). *The sociological imagination*. New York, NY: Oxford University Press.