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Strengths and Limitations of Qualitative Approaches to Research in Occupational Health Psychology

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16

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Qualitative methods have a certain therapeutic value for researchers who contribute to occupational health psychology (OHP). These methods help researchers understand the lived experiences of people confronting problems at work, particularly problems that could adversely affect workers' health. Because OHP researchers sometimes get so intensely caught up in research design and data handling, they can lose sight of the purpose behind their research, which is, ultimately, to improve the health of workers. One can observe the value of qualitative observational methods in Peter Chen's (2007) short autobiographical piece. He wrote about a colleague who had just been laid off. Chen listened to the "colleague give voice to his frantic emotions and disbelief" while the two of them walked through the company parking lot on the day the colleague lost his job. Within 30 minutes, the colleague was experiencing a stomachache. Chen wrote, "I felt ashamed and guilty that evening because I just realized that I have been ignoring the true meaning behind the stress data that I have enjoyed analyzing and publishing!" (p. 1).

Most research in OHP involves the use of quantitative methods. OHP researchers are well trained in scale construction, survey development, and regression analysis, as reflected in the fact that the preponderance of research published in outlets such as the *Journal of Occupational Health Psychology* and *Work & Stress* use these methods. A literature search of the two journals, utilizing keywords related to qualitative research, revealed that of the 272 papers published between 2005 and 2009 only 15 reported qualitative elements. We also note that while we were able to locate a few qualitative studies on job stress, qualitative research in other areas of OHP (e.g., safety) has been extremely rare. Given the potential for rigorous qualitative research and the relatively small number of qualitative studies in the published literature, one purpose of this chapter is to inform the OHP community why qualitative methods are a valuable resource in both research and practice. We also suggest ways to utilize these methods.

Qualitative research encompasses two main categories of methods. The first includes methods in which workers report, either in writing or orally, on their work lives. These methods could include questionnaires containing open-ended questions (e.g., Abouserie, 1996; Schonfeld & Santiago, 1994), interviews (e.g., Arter, 2008; Kinman & Jones, 2005), and focus groups (e.g., Holmes & MacInnes, 2003; Kidd, Scharf, & Veazie, 1996), which are essentially group interviews. The second method category involves either of two types of observation. In one type, the investigator is positioned in a workplace, as unobtrusively as possible, to observe and record activities and conversations of workers (e.g., Ginsberg, Schwartz, Olson, & Bennett, 1987; Kainan, 1994). In the other type, the investigator works at the targeted job in order to observe the work role "from the inside" as well as the roles of coworkers (e.g., Molapo, 2001; Palmer, 1983). These kinds of observational methods have been particularly underutilized, despite their potential for uncovering an extremely rich vein of data.

In the next two sections, we outline several strengths and limitations associated with qualitative research methods and, in doing so, highlight for OHP researchers the tools needed to determine when qualitative methods are most appropriate and useful. Afterwards, we follow with a section highlighting how qualitative methods have been used in unique ways, how they could be used in OHP going forward, and specific challenges the qualitative researcher may encounter. While this chapter will provide some insight into how to conduct OHP-related qualitative research, it is not meant to review the specific steps in conducting qualitative studies. Instead, we direct the reader to recent books written as guides to qualitative research designs (e.g., Creswell, 2006).

Strengths

In this section, we outline seven strengths that qualitative methods offer OHP researchers and practitioners. These strengths include (a) help with item development for quantitative studies, (b) theory development and hypothesis generation, (c) the discovery of stressors and coping strategies that had previously been overlooked, (d) the development of explanations of difficult-to-interpret quantitative findings, (e) insight into why interventions succeed or fail, (f) dependable descriptions of working conditions, and (g) the accumulation of rich descriptions of workplaces that show the human interactions behind the quantitative findings.

Item Development

Qualitative methods are useful in item development for the purpose of scale construction, as well as the development of other types of instruments to be used in quantitative research. Motowidlo, Packard, and Manning (1986) conducted "group discussions" with hospital nurses and asked the nurses to write "brief descriptions of occasions when they felt stressed on the job" (p. 620). The nurses' writings were content-analyzed, and the categories emerging from the descriptions provided the foundation for the development of a scale to assess nursing stress in a study of job stress, support, affective reactions (e.g., depression), and job performance. Similarly, Dewe (1989), using open-ended interviews, examined sources of work stress in five supervisors and five managers who worked in sales offices. He also investigated the coping responses employed in response to the work stressors. Dewe used the results of the qualitative study to develop coping scales for a study of more than 200 sales supervisors and administrators.

In a health-related study, several adults with a variety of healthy and abnormal sleep habits were asked to describe what "good" and "poor" sleep was to them (Yi, Shin, & Shin, 2006). The responses helped in the creation of items for the Sleep Quality Scale. Similar qualitative methodological approaches could be used on a variety of other health and safety topics.

Schonfeld and Feinman (2012) employed qualitative methods to facilitate a different kind of quantitative study. The first author developed a critical incident (CI; Flanagan, 1954) interview, and tailored it

to teachers, the targeted occupational group. CIs are "stressful transactions" in terms of antecedents, context, responses provoked, and consequences (O'Driscoll & Cooper, 1994). The interview elicited teachers' descriptions of stressful work-related incidents and the ways in which they attempted to manage each stressful situation. The qualitative data obtained from the CI interview study were content-analyzed. The stressor and coping categories derived from this CI study served as the foundation for a Web-based diary study of stressors facing more than 250 teachers.

When utilizing qualitative methods with the idea of grouping or content-analyzing (Krippendorff, 1980) responses by higher-order themes, there are two main choices at the researcher's disposal. First, many researchers use raters (typically 2 to 4 people) to recognize and sort the responses into categories. When using this approach, it is important to let the responses guide what categories/themes emerge and avoid imposing preconceived notions. In the Schonfeld and Feinman (2012) study, two readers independently read verbatim transcripts of the interviews and categorized stressors and coping behaviors. Agreement between the readers was assessed with the coefficient *kappa* (Cohen, 1960). This technique allows investigators to assess the reliability of the emergent categories.

Alternatively, there are computer programs currently available that content-analyze data by searching for overarching themes. This type of analysis is relatively new to qualitative research and provides researchers with an alternative that can be less labor intensive than the multirater coding described above. Two commonly used programs, Nudist and Atlas/TI, were reviewed by Barry (1998). She found that both programs could expedite content analyses and comprehensively capture the theoretical ideas that emerge from the data.

Theory Development and Hypothesis Generation

Qualitative methods have long been associated with Glaser and Strauss's (1967) grounded theory. Glaser and Strauss emphasized the idea that researchers need to allow theoretically interesting categories and hypotheses to emerge from qualitative data, while approaching the data without preconceived ideas regarding what should emerge. Qualitative research can pave the way to a new theory or hypothesis (that may later be tested with quantitative methods) or can help to further

elaborate an existing theory. Schonfeld and Farrell (2010) advanced the view that certain uncontrolled, qualitative observations have played an important role in the history of science. For example, before Jenner discovered a vaccine for smallpox, ordinary people observed that inoculating individuals with small amounts of discharge from the pustules of infected individuals provided immunity from the disease (Hopkins, 1983). These early observations contributed to progress toward a theory of contagion, and helped challenge rival humoral theories of the disease (Miller, 1957).

As part of a longitudinal study (Schonfeld, 2001), novice teachers were given an opportunity to write, with no constraints, about their work experiences. Their descriptions were transcribed and read, and a set of thematic categories was allowed to emerge. The descriptions were reliably assigned to one (and sometimes more than one) of four categories: (a) interpersonal tensions among professionals and lack of support from colleagues and supervisors, (b) happiness with one's job, (c) violence and other safety problems, and (d) classroom management problems (Schonfeld & Santiago, 1994). The thematic categories of happiness with one's job and the presence of support were closely linked. Teachers who were happy with their job reported that their satisfaction was built on the rock of supportive colleagues and supervisors. By contrast, many new teachers were distressed when supervisors neglected their supervisory role either by *not* helping teachers or by being unfair and disrespectful (e.g., "The person who puts stress in my work is my supervisor. She used to walk into my classroom at any time during the first 3 weeks of school to observe me or to give me things.").

Schonfeld and Farrell (2010) augmented these qualitative data by examining others' qualitative research. Qualitative data from the United States (e.g., Blase, 1986; Farber, 1991; Smith & Smith, 2006; Steggerda, 2003) and Canada (Younghusband, 2008) suggest that many teachers are affected by high levels of disrespect and a dangerous level of violence. Based on all the qualitative data, Schonfeld and Farrell hypothesized that working conditions for many teachers are normatively stressful. They advanced the view that individuals entering the teaching profession with reasonably commonplace ideas about workplace courtesy, respect, and supervision are likely to be overtaken by the physically and psychologically draining working conditions found in many schools.

Discovery

Qualitative research has a role to play in the discovery of new phenomena, including stressors and coping behaviors. Kidd et al. (1996) observed that "qualitative methods are preferred to quantitative methods when there is little information known about a phenomenon, the applicability of what is known has not been examined, or when there is reason to doubt the accepted knowledge about a given phenomenon" (p. 225). Firth and Morrison (1986) gave medical students wide latitude by asking them to freely describe both good and bad aspects of their jobs, finding that one of the most stressful aspects of the students' medical work was talking to psychiatric patients. Fischer, Kumar, and Hatcher (2007), in their study of stress in psychiatrists, identified risk factors, such as lack of administrative support, commonly associated with burnout. However, they also discovered what amounted to a ramped-up version of the concept of lack of support in the form of "an aggressive administrative environment," an administrative environment that provoked feelings of vulnerability.

Keenan and Newton (1985) discovered that incidents involving time-wasting were serious workplace stressors for engineers, and that role stressors (e.g., role ambiguity), which many researchers had believed to be common occurrences, were reported less frequently. Polanyi and Tompa (2004) found that lack of meaning or ethics in work is a stressor that had been overlooked in previous research. Hutchinson (1987) identified unique coping responses in nurses, such as self-care activities. In cross-cultural research, Narayanan, Spector, and Menon (1999) found that lack of structure was a major stressor in their Indian sample, a stressor most Western research has not investigated.

Qualitative research can also be a source of discovery in research on safety in the work environment. Kidd et al. (1996) studied safety in farmers, an understudied group in OHP, and found that accident risk was not related to a lack of knowledge about hazards, suggesting that increasing farmers' knowledge about safe work practices would not affect risk. Kidd et al. discovered that farmers in their sample prioritized economic factors above safety concerns in decision making, suggesting that safety interventions need to highlight the economic consequences of accidents when making business decisions.

It is clear that qualitative research paradigms can be applied in under-developed areas of research on occupational health and safety and in understudied populations. In contrast, when qualitative methods are

employed in a well-explored area, it is likely that theoretical insights will connect with existing theories. Thus, while new discoveries may be made in established research areas, qualitative research has additional value in less developed areas. As new research avenues present themselves, researchers can utilize open-ended research paradigms to make discoveries that should lead to complementary quantitative research.

Interpreting Findings

The fourth strength of qualitative research is that it can help OHP researchers develop explanations of difficult-to-interpret findings. For example, Büssing and Glaser (1999) followed nurses working on wards that had been redesigned "holistically," enabling the nurses to have greater responsibility for fewer patients. The redesigning of work on the wards was intended to enhance the quality of the nurses' professional lives; one would expect the nurses in the redesigned wards to experience lower levels of stressors and strain. With regard to stressors, the nurses on the holistic wards, compared to control nurses who worked on traditional wards organized along Taylorist principles emphasizing highly segmented and repetitive tasks, experienced a significant reduction in three stressors: time pressure, contradictory task goals, and ergonomic stressors. The nurses on the holistic wards, however, experienced significantly higher levels of emotional exhaustion, an ostensibly anomalous finding. Qualitative data helped to make sense of the findings by revealing that the holistic nursing system intensified the nurses' emotional work and interactional stress. Unlike nurses on the traditional wards whose patient contact was more piecemeal, nurses on the holistic wards had no opportunity to withdraw from difficult patients.

In a very different application of qualitative methods for the purpose of better understanding stressful job conditions, Arter (2008) innovatively extended strain theory, Agnew's (1992) theory of antisocial conduct in youth, to working adults, specifically police officers. Although police are at comparatively higher risk for stress-related disorders, not all police assignments are equally stressful. In an excellent example of what Glazer and Strauss would call theoretical sampling, Arter recruited male police officers who worked undercover (the most stressful condition), formerly worked undercover, and never worked undercover, collecting qualitative data on the experiences of the officers, including episodes of deviant behavior (e.g., promiscuity, failure

to enforce certain laws). Consistent with strain theory, Arter found the highest levels of deviant behavior in the officers who currently worked undercover and the lowest levels in those who never worked undercover. Arter also tried to understand why not every officer who experienced significant stressors manifested deviant behavior. He found that adaptive coping behaviors (e.g., exercise, seeing family and friends) were related to reduced deviance and maladaptive coping behaviors (e.g., alcohol consumption) to increased deviance.

Finally, in Vinje and Mittelmark's (2007) study of 11 community nurses, qualitative interviews revealed that while job engagement promoted positive outcomes, it was, surprisingly, related to negative outcomes as well. On the positive end, nurses felt that through their engagement in a job that centered on helping people, their lives had greater meaning and they could live out their core values through their work. However, they also indicated a need to be always on top of things, be highly conscientious, live by high ethical standards, and strive hard for excellence in themselves and others. Coupled with the demanding nature of the nursing profession, these characteristics left nurses extremely susceptible to work overload and burnout.

As these examples suggest, it would be advantageous for researchers to collect qualitative data along with quantitative data in order to help explain or describe unusual or unexpected findings. Qualitative methods can add depth to the researcher's understanding of the experiences of workers and, because of the freedom those methods accord respondents, help overcome the researcher's preconceptions.

Insight into the Success or Failure of Interventions

Bunce (1997) underlined the need to understand factors that contribute to the success or failure of workplace interventions designed to promote the health and well-being of workers. In addition to simply implementing an intervention, the process of implementation, as reflected in variables such as the meaning of the intervention for workers and managers, project fatigue in managers, and the cultural maturity of the organization in question, is also important to success and failure (Nytrø, Saksvik, Mikkelsen, Bohle, & Quinlan, 2000).

Although many researchers who study process have used quantitative methods, Saksvik, Nytrø, Gensen, and Mikkelsen (2002) employed qualitative methods in attempting to understand process factors that

contributed to the success or failure of seven workplace health interventions in Norway. Qualitative data provided insight into the competence of participating organizations to carry out an intervention and shed light on concealed and informal behaviors that could undermine implementation. Saksvik et al., for example, reported that the "negative" culture at 3 of the 26 post offices studied was an obstacle to the success of the intervention in those 3 locations, with managers accusing employees of showing too little interest and postal workers accusing managers of not showing sufficient initiative.

Saksvik et al. recommended "combining qualitative and quantitative research techniques" to evaluate interventions (p. 53). Qualitative methods are helpful because it is improbable that the dominant natural-science (i.e., experimental) paradigm can solely bear the burden of explaining ongoing processes, particularly "microprocesses," that mediate the relation between an intervention and putative outcomes within the context of a complex, always-evolving work organization (Griffiths, 1999).

Dependability of Workers' Own Reports on Their Work Roles

Workers' descriptions of their work lives constitute an activity that is central to qualitative OHP research. These descriptions provide a dependable vantage point for understanding the stressors and safety problems that affect working people. Schonfeld and Farrell (2010), in keeping with the view of Kasl (1978), suggested that there is some question about the dependability of workers' descriptions of their own work experiences. Kasl (1978), citing research on fighter pilots (Aitken, 1969), police (Kroes, Margolis, & Hurrell, 1974), and air traffic controllers (Smith, 1973), suggested that workers' self-reports on the stressfulness of a work role may be less dependable than originally believed.

We advance the view that workers' descriptions of their jobs constitute a reliable source of information. Although Kasl wrote that RAF fighter pilots were more likely to identify "housing, wife, finances, and children" as sources of personal worry and emotional stress than the dangerousness of the job, the observation was not put into proper context. Aitken (1969) found that the men in the one RAF squadron that had previously experienced a series of fatalities expressed considerably more stress and worry about flying than did the men in the other squadrons, which did not have nearly the same accident experience,

a finding that highlights the realism of the men's perceptions. When police officers were asked what was "bothersome" about their jobs, they mentioned administrative hassles (Kroes et al., 1974). When asked about major stressors, they identified civilian deaths and the risk the job holds for themselves and their colleagues (Kirmeyer & Diamond, 1985).

Kasl also cited research on air traffic controllers (Smith, 1973) who, when asked to identify the most disliked aspects of their jobs, indicated job facets such as administration. The job's heavy responsibility and high mental workload were either mentioned infrequently as a disliked job facet or revealed to be an aspect of the job they liked. Smith advanced the view that perhaps high traffic is not a "noxious" condition. One shortcoming of both Kasl's and Smith's interpretation is that mentioning a job condition that a worker liked or disliked is not the same as a worker's being able to accurately describe the facets of the job. Moreover, high levels of traffic are associated with increased risk of hypertension, a more or less silent condition that would be difficult for an individual to subjectively link to immediately observed working conditions.

In research on stressors in factory work, Hugentobler, Israel, and Schurman (1992) observed convergence in their qualitative (individual interviews, focus groups) and quantitative (survey) findings (e.g., job insecurity). Holmes and MacInnes (2003) in a study of prison workers employed two different qualitative methods in identifying workplace stressors (e.g., inmate self-harm). The authors were concerned that among their focus-group participants, imitation could have affected reporting. The results of the individual interviews, however, dovetailed with the focus-group results. The studies by Hugentobler et al. and Holmes and MacInnes underline the realism of the workers' observations. The studies also suggest that multiple methods can be deployed in such a way that the strengths and weaknesses of individual methods can be balanced and, with the convergence of findings, confidence in research results enhanced (Hugentobler et al.).

Rich Description

A seventh strength of qualitative research is that it can provide rich descriptions of stressful workplace transactions that add depth to quantitative data. In concert with a quantitative study, Parkes (1985)

assembled qualitative responses of 206 student nurses, with each nurse asked to identify "a recent stressful episode occurring in the course of her work" (p. 946). While a content analysis uncovered six areas of stressful conditions (e.g., insecurity regarding one's professional skills), Parkes also obtained rich descriptions of stressful experiences. For example, nurses felt intense, but unrealistic self-blame after the death of a patient who had been subject to a "minor error or discourtesy."

In their study, Schonfeld and Farrell (2010) included the words of a new female teacher who described events on her job:

> My greatest problem is gaining and maintaining control of my students. Students are constantly getting out of their seats, calling out to each other and throwing paper in class. I admit I have lost control but I also believe that most students have very little respect for anyone.... I feel almost isolated and on most days I get home emotionally and physically drained.

These words underscore the distress of a teacher who has worked with little success to educate her students. Despite the importance of the sophisticated statistical methods required to analyze occupational stress data (Schonfeld & Rindskopf, 2007), qualitative findings clothe in flesh and blood the stressful transactions occurring at the workplace.

Safety researchers often measure the number of accidents, injuries, and deaths that occur in a workplace, but the meaning behind experiencing or witnessing an accident can get lost. Eklöf and Törner (2005) investigated these incidents in a sample of fishermen, an occupation with a high fatality rate (U.S. Bureau of Labor Statistics, 2008). When asked about managing such incidents, one fisherman said, "While it is happening, you are totally focused on sorting out the situation. Afterwards, you joke harshly about it to keep fear at a distance" (p. 366). The remark reveals the crew's unwillingness to take preventive action despite the repetitious nature of their accident experience. While the overall results showed that preventive measures can potentially reduce accident risk, the crew's rich descriptions of incidents added value to the research because the descriptions helped the investigators better understand the workers' experience.

Limitations

Despite the numerous strengths of qualitative methods, they are not without limitations, and here we enumerate five. These include (a) the problem of participant reactivity, (b) the potential to overidentify with

study participants, (c) the impracticality of the Glaser-Strauss idea that hypotheses arise from data unsullied by prior expectations, (d) inadequacy with regard to drawing cause–effect conclusions from qualitative data alone, and (e) the Baconian character of the qualitative research enterprise.

Reactivity

The first limitation is the problem of reactivity in the individuals who are observed. People who are observed sometimes change in response to the presence of an observer (Shai, 2002). Reactivity is a concern when a researcher attempts to gain the trust of the participant in order to get an accurate, complete, and rich set of responses, but reactivity has rarely been addressed in qualitative OHP research. Cohen (1989) briefly mentioned the potential for demand characteristics to affect the responses of the executive nurses in her qualitative study of stress and coping.

Since qualitative responses in interviews and questionnaires are often personal and detailed, it is the responsibility of the researcher to make the participant feel at ease. The researcher has to maintain a respectful and friendly relation but at the same time remain objective. The participant must not feel that he or she is being judged, and the confidential nature of the responses must be respected. The idea of maintaining respectful relations can be extended to research based on participant observation. Molapo (2001), in her study of work stress in Black South African gold miners, also addressed the problem of reactivity. Because she went underground regularly in the participant–observation component of her study, after a time her "presence did not really matter" and "everybody treated [her] as part of the crew" (p. 99).

Overidentifying with Study Participants

The second limitation concerns the potential for the researcher to overidentify with study participants, which could affect the investigator's interpretation of qualitative findings. The first author was once a mathematics teacher and was concerned about the potential for his overidentifying with the teachers whom he studied, fearing he might observe more villainy in students riding a teacher than is warranted and more

competence in a teacher experiencing classroom management problems than is justified.

Both participant reactivity and researcher overidentification can bias qualitative research results. There are several ways to avoid or check such biases, including the use of structured or semistructured interviews (e.g., Kinman & Jones, 2005), the deployment of multiple independent raters when coding results (e.g., Narayanan et al., 1999), and assessing interrater agreement. The burden is on the qualitative researcher to demonstrate to readers that the results and interpretations have a basis in reality despite the interpretative nature of qualitative research (see Schonfeld & Farrell, 2010). While such evidence could take many forms, some recommendations would include: (a) using probability sampling to ensure the representativeness of the sample, (b) creating sound surveys, interviews, and observations that have a basis in previous research and are planned as carefully as instruments used in quantitative research, and (c) training interviewers/observers/raters in similar techniques to minimize bias.

Theoretically Important Categories Emerging Naturally from Qualitative Data

Glaser and Strauss advanced the idea that qualitative researchers should let theoretically important categories and hypotheses emerge "naturally" from data, unguided by preconceptions. The idea is chimerical. The comparative psychologist David Katz (1937) wrote that "a hungry animal divides the environment into edible and inedible things. An animal in flight sees a road to escape and hiding places. Generally speaking, objects change ... according to the needs of the animal" (p. 143). Karl Popper (1957/1963), parrying the point made by Katz, wrote that "objects can be classified, and can become similar or dissimilar, only in this way—by being related to needs and interests. This rule applies not only to animals but also to scientists" (p. 47). Observation is always selective.

One of us faced such a limitation in his own research. As a supplement to a quantitative longitudinal study of new teachers, Schonfeld and Santiago (1994) attempted to keep an open mind and let theoretically important categories emerge from qualitative teacher data. The first author, however, was also aware of several theories of stress. In fact, we cannot imagine that anyone collecting qualitative data on job stress

is *not* aware of theories of stress. While trying to keep open minds, and let the categories emerge from the data, Schonfeld and Santiago inevitably coded categories that were consistent with categories that were already visible in the existing OHP literature. For example, one category involved support from coworkers and administrators; another included violence and its threat. Here is just one example of a teacher mentioning both of these factors:

> My supervisor was not helpful. She was daily informed of an insubordinate assistant teacher in my classroom. I was attacked by this person who is almost 100 lbs [heavier] than me and 10 inches taller than I am. The school is not standing behind me even though [administrators] told me this person is being put on probation due to insubordinate behavior in the classroom. (p. 119)

These categories have long been known to OHP researchers and are evident elsewhere in the qualitative stress literature bearing on teachers (Schonfeld & Farrell, 2010). Researchers should be well-versed in the area they are studying. However, it is important that new concepts or themes still be allowed to emerge. If they are not, and preconceived notions rigidly guide the categories, qualitative methods will be of limited value. To be sure, qualitative researchers must straddle a delicate line between awareness of the literature and imposing preconceptions on data.

Testing Causal Hypotheses

A study's capacity to help an investigator draw causal inferences rests more with the nature of a study's design than with the question of whether the data a study generates are quantitative or not. Although the temptation is often present, qualitative research designs are largely inadequate in testing causal hypotheses, especially when uncontrolled, raw qualitative responses are used exclusively. A cautionary example from the history of psychology illustrates the pitfalls of drawing such causal conclusions. Fromm-Reichmann (1948) used clinical case material from her work with a young man diagnosed with schizophrenia. Fromm-Reichmann, who bragged that psychoanalysts used their technique "with the utmost sensitive care and caution" (p. 265), noted that "the schizophrenic is painfully distrustful and resentful of other people, due to the severe warp and early rejection he encountered in important people in his infancy and childhood, as a rule, mainly in a

schizophrenogenic mother" (p. 265). Evidence from better controlled quantitative research has not supported the idea that a child's schizophrenia results from poor mothering (Tandon, Keshavan, & Nasrallah, 2008). Fromm-Reichmann did not entertain the hypothesis that the tension she observed in the mother–child relationship was the result, not the cause, of the son's schizophrenia.

With regard to OHP research, one of us (Schonfeld & Ruan, 1991) interviewed a biology teacher who had a great love for her subject. She obtained a job in the Bronx where she taught students who were defiant and verbally abusive, sometimes hurling sexually explicit epithets at each other and the teacher. There was fighting in her class. She tried to teach the subject she loved, but faced great opposition. At the end of the school day she was spent. She became clinically depressed and sought treatment from a psychiatrist. The events suggest that she suffered a reactive depression that developed in response to the great difficulties occurring in her classroom. Although it is tempting to use qualitative data to draw conclusions about causation, it is important to proceed with caution. Additional exploration of her life history indicated that she had suffered her first depressive episode several years before she became a teacher. She suffered a death in her family and a change of domicile the year before she became a New York City teacher, both stressful life events. In light of these additional findings, it would be difficult to conclude that she suffered a depression in reaction to her exposure to difficult classes. It is equally plausible that preexisting psychological distress compromised her effectiveness in managing the class.

Although the temptation for qualitative researchers to draw a cause-effect conclusion exists, such research should not replace appropriate quantitative methods of verification. Qualitative research is ill suited for hypothesis testing.[2]

Baconian Character

The fifth and final limitation is that the Glaser-Strauss idea of collecting qualitative observations is too Baconian in orientation. Glaser and Strauss attempted to address the question of whom and how many to

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2. There is an exception to the idea that qualitative research is ill suited for hypothesis testing; we refer to studies that employ mixed methodologies that combine qualitative and quantitative methods (Mazzola, Schonfeld, & Spector, 2011). See the section on "Future Directions."

sample in their discussion of theoretical sampling. The endpoint of this sampling, called *theoretical saturation*, is the point at which "no additional data are being found" and the investigator is ready to develop an understanding of the properties of the groups under study. Glaser and Strauss also elaborated the concept of the *depth* of theoretical sampling, which pertains to the amount of data to be collected within a theoretically important group.

The qualitative investigator does not have available power analyses and other statistical means to gauge when he or she has a sufficiently large and categorically diverse sample, which leads to an energetic pursuit of data that has no clearly definable stopping point. The result is an accumulation of facts (see Bacon, 1620/1960). Bertrand Russell (1945) noted that the Baconian idea that an "orderly arrangement of data would make the right hypothesis obvious" is seldom in evidence (p. 544). Russell maintained that without some provisional hypothesis to help guide the collection of facts, the sheer accumulation of facts is, in Russell's word, *baffling*.

With this limitation in mind, we suggest that OHP investigators take sensible precautions to ensure that the qualitative data collected provide a framework for improving investigators' opportunities to develop hypotheses. Although we earlier suggested that the idea of theoretical saturation is elusive, we believe that the idea of theoretical sampling is helpful for getting a fuller picture of what is happening at work. Glaser and Strauss (1967), in their extensive discussion of theoretical sampling, described the importance of "comparing different types of groups within different larger groups" for the purpose of discovering categories relevant to theory development (p. 52). Arter (2008), for example, helped us better understand stress in police officers by selecting officers in three different conditions that can reasonably be suspected to vary in their stressfulness. Another way to ensure that qualitative methods provide fertile ground for developing hypotheses is to have investigators inquire into both (a) satisfying and stressful conditions or (b) safe and unsafe conditions. In this way, work stress and work safety investigators can assess for disconfirming conditions.

Future Directions

Since OHP is a relatively new discipline, there are numerous topics that now or in the near future will fall under the OHP umbrella. As OHP researchers investigate new relationships that bear on work-related

safety, stress, and health, they should proceed with appropriate qualitative methods to survey the new territory, generate items for scales, and produce hypotheses that help to inform the design and implementation of quantitative research.

Additionally, qualitative and quantitative methods can be used in conjunction with one another. Researchers too often align themselves with one methodological camp or the other. However, the coordinate application of qualitative and quantitative methods has potential for ferreting out new knowledge. Qualitative and quantitative methods can be combined to inform research in health education (Steckler, McLeroy, Goodman, Bird, & McCormick, 1992). We suggest that OHP can benefit from the coordination of methods in a number of ways: (a) qualitative methods can be used to inform quantitative research (i.e., item generation and discoverability); (b) qualitative methods can help interpret quantitative findings (e.g., Büssing & Glaser, 1999; Vinje & Mittelmark, 2007); and (c) researchers who engage in qualitative research and who have an understanding of relevant quantitative findings, have guidance with regard to the research issues to pursue (e.g., novel extension of strain theory; Arter, 2008).

While qualitative methods have adherents among OHP investigators, there is a trend in OHP research that should be acknowledged. Some researchers have been uniting qualitative and quantitative methods within one study, particularly in stress research (Mazzola, Schonfeld, & Spector, 2011). Such research is especially valuable because the strengths of one method can help balance weaknesses of the other. The two methods can be used in a coordinated fashion to explain or describe a phenomenon (e.g., Mazzola, Jackson, Shockley, & Spector, 2011). In their study, Mazzola and colleagues employed a hybrid methodology that included quantitative and qualitative data on stressors. Liu, Spector, and Shi (2008) also measured stressors using qualitative and quantitative methods in an investigation of cross-national stressor differences.

Another advantage of employing a hybrid methodology is that the investigator can link stressors identified with the help of qualitative methods (but not found on standard scales) to important health and morale outcomes measured quantitatively. For example, Elfering et al. (2005), in a 7-day diary study involving employees at a counseling agency, applied qualitative methods to ascertain the daily incidence of episodically occurring job stressors. Situational well-being (measured quantitatively) in the aftermath of a daily stressor was inversely related

to the intensity of chronic stressors (measured quantitatively on the first day). Studies such as the one completed by Elfering et al. are valuable because of the way in which the investigators orchestrated qualitative and quantitative methods for the purpose of making inferences about job stress. We hope to see more such innovative studies in the future because we believe that design refinements that marry qualitative and quantitative methods will further advance the field of occupational health psychology.

Final Observations

At the beginning of this chapter we mentioned the therapeutic value of qualitative methods for OHP researchers. Qualitative findings show the psychological distress that physicians and nurses experience when they lose a patient, expose the suffering of a teacher who was attacked by a student, and describe the somatic symptoms experienced by the man who just lost his job. Qualitative methods help focus our vision on the goal of improving the lives of people who work.

The value of qualitative research also follows from what the philosopher of science Hans Reichenbach (1951) called the "context of discovery." Qualitative research can help OHP researchers engaged in the preliminary work of ascertaining workplace stressors or safety behaviors in order to develop items that can potentially populate structured surveys and interviews. Qualitative research can also help the developers of interventions designed to improve the health of workers discern process variables that may affect the chances of success. Such work constitutes efforts at discovery. Qualitative findings provide a basis for a researcher's intuitions regarding theory development and hypothesis formation.

Like all research methods, qualitative methods have limitations. With an understanding of these limitations (and how to minimize/balance them), OHP researchers can benefit from such methods. It is important to understand that qualitative findings do not establish generalizable cause–effect relations. However, qualitative methods can help a researcher develop a theory of causality and derive hypotheses related to the theory and, thus, motivate quantitative research designed to test the hypotheses. Thus, the challenge for the OHP researcher is to be mindful of what qualitative methods can and cannot do, and exploit their strengths for the benefit of the research enterprise.

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