

# Interviews and focus groups

# 8

## 8.1 INTRODUCTION

Direct feedback from interested individuals is fundamental to human-computer interaction (HCI) research. What should a new tool do? Ask the users. Does a proposed design do what it should do? If not, what should be changed or revised? Ask the users. As discussed in [Chapter 5](#), surveys can be very useful in this regard, particularly for reaching large numbers of people easily. Unfortunately, surveys are somewhat limiting: respondents only answer questions that are asked, and open-ended questions that invite long, written responses are likely to go largely unanswered. As a result, surveys often end up being broad but not deep.

An alternative approach is to go deep but not broad. Direct conversations with fewer participants can provide perspectives and useful data that surveys might miss. Conversation and interaction with the right people can be both a hugely important source of insight and a significant challenge. What you ask, how you ask it, and who you ask can determine the difference between novel insight and wasted time. Just as with so many other topics in computing, garbage in leads to garbage out.

Direct discussions with concerned participants usually take one of two forms: *interviews* with individuals and *focus groups* involving multiple users at one time. Interviews and focus groups have different strengths and challenges: determining which approach you should use is perhaps the first key question to be answered. Other questions address structure and timing. How formal do you want to be? Conversations can range from free-form unstructured interviews to semistructured and fully structured interviews. When should you conduct your interviews or focus groups? As with other data collection approaches, interviews and focus groups can be used for both formative and summative purposes.

Having answered these questions, you're ready to face the big challenge—actually conducting interviews or convening focus groups. Successful use of these approaches is an art in itself, requiring significant conversational and observational skills. Moving conversation along, eliciting meaningful responses, revising questions based on interview responses, interpreting subtle cues, and interpreting detailed responses all require practice and experience.

This chapter discusses these issues, with an eye towards preparing you for designing and conducting interviews and focus groups. The challenges are real, but the value is there. If you don't listen to your users, you might miss some of the most important feedback that you can get.

## 8.2 PROS AND CONS OF INTERVIEWS

The ability to “go deep” is perhaps the strongest argument in favor of interviewing. By asking questions that explore a wide range of concerns about a problem and giving interviewees the freedom to provide detailed responses, researchers can use interviews to gather data that would otherwise be very hard to capture. Given a chance to answer questions that encourage reflection and consideration, interviewees may go on at great length, generating ideas and sharing insights that would have been lost to surveys.

Like ethnography ([Chapter 9](#)) and other observational techniques, interviews can be open-ended and exploratory. Although almost all interviews have specific questions that must be asked, interviews can be extremely flexible. Based on interviewee responses, interviewers can choose to reorder questions or invent completely new lines of inquiry on the fly. Opportunistic interviewing—taking an interesting idea and running with it—can be particularly useful for increasing understanding.

The flip side of this compelling flexibility lies in the challenges of managing potentially unbounded discussions. Interviews are much more difficult to conduct than surveys. Interviewing is a skill that can take significant practice to develop. Furthermore, it's hard work. Sitting with one interviewee (or a dozen focus group participants) for an hour, listening carefully, taking notes, trying to decide which comments to pursue with further questions, and trying to understand nonverbal reactions all take substantial effort.

Higher effort requirements also limit interview-based studies to relatively small numbers of participants. Surveys can easily be sent to dozens, if not hundreds, of potential respondents who can complete them at their leisure. Interviews, however, are much more limiting. If each interview is one hour long, someone on your research staff team has to spend that hour with an interviewee. You're likely to find that your personnel resources are the limiting factor: don't be surprised if you find that you simply don't have the time to conduct all of the interviews that you were hoping for.

Analysis is also a major challenge. Transforming raw notes and recordings of open-ended responses to broad questions can take a great deal of time—as much as 10h for a single hour of audio recording ([Robson, 2002](#)). Deciding what is important and what is not—separating the good from the bad—can be a challenge.

Interviews share some inherent shortcomings with surveys. As both involve data collection that is separated from the task and context under consideration, they suffer from problems of recall. As participants report on their perceptions of needs or experiences, they are telling you what they remember. While this may provide some very useful data, it is, by definition, one step removed from reality. If you ask a software user which features they might need, the answers you get during an interview may be very different from the answers that same person might provide while sitting in front of a computer and actually using the tool in question.

To avoid these potential disconnects, you might consider combining your interviews with other techniques, such as observation—possibly during the interview session. These observations will help you understand the relationship between what

interviewees say and what they do. As some researchers have suggested, “look at behavior, listen to perceptions” (Miller and Crabtree, 1999).

One study of the habits of users of in-car navigation systems used both road trips and interviews. During the rides, researchers observed drivers as they used the navigation systems to find their way. Detailed questions were asked after the drive in separate interviews, as responding in-depth while driving may have been too distracting. Observations from the ride, audio recordings, and the interviews were studied to understand how drivers used the navigation system (Leshed et al., 2008). Responses identified a variety of intriguing ways in which navigation systems influenced interviewees' responses to their environment: some participants described how the navigation system gave them the freedom to make mistakes and take wrong turns, and others discussed the benefits of reduced needs to pay attention to where they were going. Navigation systems also influenced interactions between passengers and drivers, with some passengers taking charge and using the navigation system and others assuming that the driver was doing so (Leshed et al., 2008).

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## 8.3 APPLICATIONS OF INTERVIEWS IN HCI RESEARCH

HCI researchers use interviews and focus groups to help build an understanding of the needs, practices, concerns, preferences, and attitudes of the people who might interact with a current or future computer system. In their focus and breadth, interviews share strengths with several other research techniques. Like usability studies and surveys, interviews often include quantitative results. At the same time, interviews are subjective and more open-ended, often providing deeper insights similar to those associated with ethnographies and case studies.

HCI researchers can use interviews in almost any phase of a project, from initial exploration to requirements gathering, evaluation of prototypes, and summative evaluation of completed products.

### 8.3.1 INITIAL EXPLORATION

Imagine that you've just been asked to investigate new possibilities for helping people to manage digital artifacts of their lives (pictures and videos). You've got a strong feeling that the current tools are insufficient but you'd like to develop a better understanding of what people are doing and what they'd like to do. Ideally, this understanding would help you generate some ideas for developing a tool that will be the next great sensation.

When you're embarking on a new project involving the design of novel tools for unfamiliar users and needs, interviews and focus groups can be vital tools. You might sit down with various potential users to understand their goals and needs. What would they like to do with their pictures and videos? How do these artifacts play into their daily lives? Where and when are they most likely to reach for a picture or video? How do they use these records to tell stories about their lives? You might

ask about existing technology practices, but your primary goal is to understand user needs and goals, so you might want to focus on asking high-level questions about types of functionality that are and aren't available, as opposed to specific details of design that may be troublesome.

Asking these broader questions in an interview or focus group can help you generate a deeper and more nuanced understanding of the problem. You might ask the following exploratory questions to understand how people use these media:

- What sort of recordings do you make of personal events? Pictures? Videos?  
Audio Recordings?
- How do you view these recordings? On a computer? On a TV?
- Where do you view them? Any particular rooms in the house? Outside the house?
- Who do you show them to? On what sort of occasions?
- How do you organize recordings?
- Do you ever make multiple records of a single event? How do you keep them together?
- Do you share these artifacts with friends or family? If so, how?
- Have you ever lost track of any particularly valuable photo or video?
- Do you edit photos or video?
- Do you distinguish between recordings that you've made and those that were made by family members or others?
- Have you found yourself interested in doing something with your recordings that your tools did not support? If so, what?

Note that interviews at this stage are not focused on specific questions of functionality and design. The goal is to understand the needs and challenges presented by a particular situation. Once those needs are well understood, you can move on to specific details that would lead to a concrete design.

Exploratory interviews share much in common with case studies ([Chapter 7](#)) and ethnography ([Chapter 9](#)), as they are all intended to provide an understanding of a complex and multifaceted situation. Interviews and focus groups have the advantage of being relatively easy and inexpensive to conduct: a series of four or five focus groups in different neighborhoods, each containing 5–10 individuals, could be used to collect a broad range of data in a matter of weeks, where case studies and ethnography might take months.

One study used this approach to understand why and when people replace cell phones, in the hopes of finding possibilities for designing phones and practices that would be more sustainable ([Huang and Truong, 2008](#)). Researchers combined web surveys with follow-on telephone interviews with a small number of participants. Analysis of over 700 items from the surveys and the interviews led to an understanding of why people replace phones (e.g., incentives to renew contracts or phone malfunctions) and what they do with old phones (give them to friends, donate to charities, hold on to them, or throw them out). These and other insights led to design suggestions, including the possibility of using contact lists to automatically identify friends who might need a new phone, modular designs that might

allow for easy upgrading of appearance and features, and repurposing phones for other purposes, such as museum guides.

The Finding and Reminding and Green Living Interviews sidebars provide in-depth descriptions of two examples of the use of exploratory interviews for improving understanding of user needs, in the interest of building tools to meet these needs.

### FINDING AND REMINDING

In the early 1980s, desktop information systems were relatively new and understanding of how people should organize information was incomplete at best. The desktop model (with files, folders, and other items that might be found on an office desk) was gaining popularity at this time. Thomas Malone, a researcher at Xerox's Palo Alto Research Center, noticed that although desktop interfaces claimed to mimic how people worked at their desks, this argument was not supported by research. None of the proposed desktop systems had any basis in research into how people actually organized information (Malone, 1983).

To address this shortcoming, Malone interviewed 10 workers in their offices. At the start of each interview, the interviewee would describe the layout of their office, indicating where information was stored and why. The interviewer did not ask any structured questions during this tour, but he did ask for clarifications. At the end of the interviews, some interviewees were asked to find documents (suggested by coworkers who believed that those documents would be in that office). All participants were asked the following set of questions about their practices:

1. How well organized would you say your office is on a scale from 1 to 5?  
[1 = not very well organized, 3 = about average, and 5 = very well organized]
2. What would you say are the biggest problems you have with the way your office is organized?
3. Do you keep lists of things to do?
4. Do you keep a calendar of appointments?
5. How often are you unable to find something you are looking for in your office? [Number of times per week or month]
6. How often do you forget to do something you were supposed to do?  
[Number of times per week or month]

The analysis of the data took several forms. Two participants—one with a “neat” office and another with a “messy” office—were described in detail to illustrate very different approaches. Malone divided participants into these categories based on his observations and used the answer to the question 1 as validation: the people he rated as “messy” all had low scores, while the “neat” people had high scores. Photographs were used to verify that the messy people had more piles.

*(Continued)*

**FINDING AND REMINDING—CONT'D**

Malone used his observation of the workers and their offices to note that people used structured, named *files* alongside unnamed, unorganized *piles*. This led him to suggest that information systems should support the creation of unnamed collections of information. Piles appeared to play the special role of *reminders* of work that had to be done: fully two-thirds of the piles were piles of things to do. Malone also noted that respondents often left information unclassified because they weren't quite sure how to organize it.

These observations led to several suggestions for better information environments. According to Malone, information systems should support the creation of hierarchies that would allow multiple classifications for any artifact. However, information systems should also allow for deferred classification—essentially giving the user the ability to create an electronic pile that might not be named until much later (if ever). Automatic classification—perhaps based on when information was accessed—might help as well. Powerful search facilities would be helpful, as would graphical aids for indicating the priority of various items on the to-do list.

More than 30 years later, Malone's investigation of information management practices are still relevant and several of his suggestions remain absent from desktop operating environments. His methods, questions, and analysis illustrate how well-conducted interviews can inform and guide HCI research.

**GREEN LIVING INTERVIEWS**

Environmental concerns have led to an interest in applying HCI techniques and practices to the development of tools and systems that encourage people to make environmentally responsible choices. To understand more concretely what this would mean, a group of researchers conducted a qualitative study with people in the United States who had made substantial commitment to the use of environmentally responsible systems or construction in their homes (Woodruff et al., 2008). These criteria were used because people who were willing to take the time and money to install solar panels or use salvaged materials to renovate their home were presumed to be deeply concerned about environmental matters. The researchers used green movements, green-home tours, and email lists to find appropriate participants, which led to a diverse group of 56 individuals living in 35 homes in several locations in California, New Mexico, and Oregon.

Home visits were used to conduct the bulk of the data collection. Each of the visits included a semistructured interview, a tour of the house, and other activities aimed at understanding user needs and perspectives, typically over the course of two to three hours. The visits were video recorded and photographed. These visits generated a substantial amount of data. Verbatim transcripts of all

visits totaling around 3000 pages were analyzed by affinity clustering (Beyer and Holtzblatt, 1998). The roughly 5000 photos taken during the visit were analyzed as well.

This analysis led to a detailed understanding of participants' motivation, practices, and choices. Motivations ranged from concerns about stewardship of the earth to self-reliant tendencies and a desire to be sustainability trend-setters. Participants tended to be very thoughtful about their choices, which frequently involved an ongoing and gradual process. Many spoke of the continuing effort required to maintain the systems and tools that they used, comparing the effort to living on a ship. Participants were generally highly independent, valuing uniqueness, but they also saw a value in teaching and providing an example to others.

The research team used these perspectives to identify a number of implications for design in support of sustainable behavior. Detailed, “in-depth” learning opportunities, mentoring, and interactive tools that aid in the exploration of the impact of various alternatives might help people make decisions regarding the adoption of green tools. Social networking tools might also be used to help people establish appealing green identities. Noting that broader adoption of sustainable practices might require making these choices more approachable to a broader population, the authors suggest the development of tools that would support broader social change. Interactive technologies in support of digital democracy aimed at changing environmental policy, sharing and distribution of environmental data, and even construction of opportunities for social protest might prove constructive in this effort (Woodruff et al., 2008).

### 8.3.2 REQUIREMENTS GATHERING

During the process of gathering requirements for the design of a new tool, interviews can be invaluable for understanding user needs and concerns. Interviews conducted at this early stage in the process are likely to be fairly broad. What are the user's goals? How are they being met by current tools (if any are available)? What do users want to do that they are currently unable to do? What are the frustrations? Are the tasks associated with a given problem flexible enough to communicate with tools that solve different, but related problems?

Interviewing in search of requirements requires an appropriately broad and open-ended view of the possibilities. A focus on narrow questions or existing tools might be too limiting. Instead, you might want to ask broader questions about current—possibly noncomputer—practices, future goals, frustrations and concerns. You might even ask your participants to try to describe things that they'd like to do, regardless of the ideas' feasibility with current software: “If you could describe the perfect system for solving your problem, what would it look like?”

Returning to the example of managing digital artifacts (Section 8.3.1), suppose your initial interviews led to the idea of building a tool that would allow users to

create digital scrapbooks combining photos, audio, video, text, and other multimedia. You would like your tool to support “one-stop shopping”—letting users do all of the necessary steps in one application without having to move data between multiple tools. To make this work effectively, you would need to understand the sorts of things people currently do to construct these scrapbooks, so that you might understand how to build a tool that would meet user needs.

Asking users how they lay out photos in a page-layout or web-page-creation system may be at too low a level of detail. In response to this question, an interviewee might talk about very specific tools for managing page content. As interesting and relevant as this may be—and it could be very interesting indeed—this line of inquiry might fail to uncover some insights that could be much more intriguing. If you instead were to ask the interviewee what he wanted to communicate with the scrapbooks and who the audience would be, you might get the inspiration for a new product or set of features aimed at completing similar tasks—insights that you would never have had with the simpler interview questions. The following list of questions might be asked to gather requirements for this scrapbook creation activity:

- What sort of scrapbook are you creating? Will it cover one event or many? Is it for family, friends, coworkers, or all of the above?
- How do you create traditional scrapbooks? What do you put into them? What do they look like? Can you show me a scrapbook that you've made?
- What sort of things do you want to put in the scrapbook? Pictures, music, movies, artwork? Anything else?
- How do you want to arrange things? Do you want to have individual pages like a traditional scrapbook, or should the layout be more open-ended, as if you were working on a large canvas?
- How would people read your scrapbook? Do you want them to have a set start-to-finish order or should readers be free to explore any way that they like?
- How many items would you want to put in a scrapbook?
- How and where would people read the scrapbook? Do you want to project it on a wall? Send it via email? View it on TV or on a phone? Post it on a web page?
- Do you want to give users tools to make comments and notes on your scrapbook?
- How would your scrapbook relate to others? Would you create links between scrapbooks posted on your own web pages or on social networking sites?

Note how little these questions have to do with the specific tools being used.

Although this approach to interviewing may help you get started, you may find that you need more information to truly understand user needs. Contextual inquiry—in-depth interviews involving demonstrations of how participants complete key tasks (see [Section 8.5.2](#))—is a widely used technique for developing a deeper understanding of how work is done. Ethnographic techniques, including observation and participation in a group or workplace (see [Chapter 9](#)) can provide still richer insights.

Both contextual inquiry and ethnographic techniques have been used extensively by HCI researchers.

Low-level questions about how tasks are completed may be more appropriate if you are trying to improve interaction and process details for specific tools. You might ask how users accomplish various goals, which approaches they use (e.g., menu selections or keyboard shortcuts), what problems they face, which options work well, and which don't, and what sorts of functionality they'd like to add to their current software.

To really understand how someone uses current tools, you might ask them to demonstrate how they complete typical tasks. As they go about their tasks, you might ask questions aimed at helping you understand what they are doing and why. This approach may blur the line between interviewing and observation. Effectively, the tool acts as a “probe”—an external aid that encourages interviewees to provide more detail and explanation. The following list gives examples of questions relating to the use of available tools for the scrapbook example:

- Which tools do you use for scrapbook creation? What purpose do you use each of them for?
- What types of data do you use in your current tools for scrapbook creation?
- Do you have to make frequent use of multiple tools? Do you often move data between tools?
- How do you enter or organize the data values?
- Which calculations do you make? How do you make them?
- Can you preview your output?
- Do you print your scrapbooks on paper?
- What do your tools *not* do that you would like to be able to do?
- If you could change or improve this process, what would you do?
- Please show me how you create a scrapbook. Please explain which steps you take and why.

### 8.3.3 EVALUATION AND SUBJECTIVE REACTIONS

Interviews can also be very useful during the development process. As prototypes are developed, interviews can capture the reactions of various users. Early user feedback on information flow, location of controls, use of language, and other aspects can help designers validate their approach and identify areas in need of revision. Interviews at these stages focus on specific questions aimed at eliciting reactions to various design elements. Similarly, interviews can provide useful input for summative evaluations of completed products. A broader focus in such interviews may be productive, as the summative reactions to a completed tool can inform the process of designing the next revision. Interview questions for evaluating the design of proposed interfaces for the scrapbook tool may include:

- Do you find this interface easy to use?
- Do you understand the menus, icons, and language?

- Are you able to complete the comparisons that you want to do? If not, where do you have trouble?
- Are any parts of the interface particularly useful or helpful?
- How does this interface compare to your current tool?
- What (if anything) would you like to change about this tool?

Additional questions for understanding user reactions to interface designs might be based on existing usability questionnaires, such as the Questionnaire for User Interface Satisfaction (QUIS) ([Chin et al., 1988](#)); the System Usability Scale ([Brooke, 1996](#)); the User Metric for User Experience (UMUX) ([Finstad, 2010](#)); UMUX-Lite ([James et al., 2013](#)), or one of the others listed in [Chapter 5](#).

The strengths and weaknesses of interviewing make it a strong complement to several other techniques. For understanding a problem during requirements gathering, a broad-based survey might be combined with a small number of in-depth interviews. Complementary questions in the two formats would allow researchers to combine a deep understanding of user needs and challenges (from the interviews) with an appreciation of how well those concerns generalize to a larger set of potential users.

For evaluation of an existing interface, you might combine usability tests or empirical studies aimed at understanding specific details of interface usability with interviews that ask about general reactions. These interviews can help you understand user perceptions, likes, and dislikes. This combination of results from different approaches can be informative and perplexing: don't be surprised if the usability or empirical studies are completely at odds with your interviews. This seemingly inconsistent state of affairs may arise if you're comparing two alternative designs: interviewees may prefer design A over design B, even though your studies indicated that design B was somehow superior (perhaps faster or less error prone) to A. These results present an opportunity for you to dig deeper in search of insights that might help you reconcile the contradiction. If you can find out why they preferred A, despite B's superior performance, you might use that information to develop a design C that combines the best elements of A and B.

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## 8.4 WHO TO INTERVIEW

Who should you interview? When you are running usability studies, empirical tests, or observations, the question of participant selection starts from an obvious point: current or potential users of your proposed system or alternatives. If your interviews are aimed at trying to understand the pros and cons of specific features of a proposed interface, users might be appropriate interviewees. In either case, you might find that there are different categories of users who have differing views. Including representatives of each type of user will help ensure that you are not missing important perspectives. For investigations of broader concerns,

such as system requirements or overall evaluation of system operation, a broader pool of interviewees drawn from all categories of *stakeholders* might be more informative.

A stakeholder is anyone who is affected by the use of a system. Relatively simple applications, such as games or Internet chat clients, might have only one type of user that you would want to interview. Then again, simplicity might be illusory—novice game players may have different perspectives from experts. Enterprise information systems, such as university course registration and management tools may have multiple types of users (or stakeholders), ranging from administrators who approve purchases of the tool and rely upon it for high-level reports, faculty who use it to manage course enrollment and grades, and students who must register for courses and pay tuition. In some cases, stakeholders may not be users at all: patients and their families may have valuable insights regarding hospital information systems, even if they never use them directly. For any reasonably complex system, you can expect that different groups of stakeholders will have very different perspectives on requirements, necessary functionality, and usability. Interviews with representatives of all of the stakeholder groups—or, at least, as many as possible—will provide a more complete picture of the situation.

Particularly when you are involved in an ongoing, long-term project with an organization or a group of users, you may find that there are certain individuals who are particularly good sources of information. These people may be particularly knowledgeable about how relevant work is done, they may play pivotal roles in the organization in question, or they may simply be unusually forthcoming. These individuals may play the role of *key informants*: individuals who are repeatedly called upon to provide important insights, usually over an extended period of time. Key informants can provide invaluable perspectives, if your interactions and relationship are well managed. Key informants must be selected carefully and their insights must be validated by external confirmation from other sources. A disgruntled employee with an axe to grind would not make a good key informant. Particularly in a workplace situation, you should take care not to abuse any information that might be used against the informant (Gilchrist and Williams, 1999). Working with key informants is closely related to—and, indeed, can be the first step in—ethnographic research, a topic discussed in detail in [Chapter 9](#).

As with any other research, interviews should be conducted in a manner that respects the participants (see [Chapter 14](#)). For studies that involve populations of participants facing special needs or challenges, this may require extra care in planning and execution. Le Dantec and Edwards' study of the information practices of homeless people illustrates some of these challenges. Noting that simply looking for homeless people on the street could be problematic, they worked with outreach groups who provided feedback and acted as mediators between the researchers and the homeless interviewees. In consultation with caseworkers, they offered participants a choice of store gift cards or public transportation cards as incentives. Staff at the centers worked with the researchers to identify appropriate

participants. Subjects were given disposable cameras and asked to take pictures of daily activities, places where they needed help, and things that they use. Subsequent interviews used the photos that the participants took to guide discussions about their use of phones, Internet, transportation, and other technology. The researchers found that their respondents made substantial use of voicemail and mobile phones, while relatively few used computers or the Internet. These observations formed the basis for a detailed discussion of the challenges of both meeting the needs of, and continuing to work with, this challenging population (Le Dantec and Edwards, 2008).

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## 8.5 INTERVIEW STRATEGIES

### 8.5.1 HOW MUCH STRUCTURE?

*Fully structured* interviews use a rigid script to present questions in a well-defined order. Although some questions may be skipped, based on answers to previous questions, there is no room for asking questions out of order or for adding questions not found in the predefined interview script. You might think of a fully structured interview as a survey administered by a researcher, with some important differences. It's easier to answer an interview question than it is to write an answer to the same question in a survey. An interview question might yield an extensive answer to a question that would generate only a few words in a survey response.

Fully structured interviews also have the advantage of being relatively easy to analyze. If each subject is asked the same questions in the same order, and related topics are grouped together in the ordering, interviewees are likely to comment on similar topics at similar points. Analyzing these responses may be as easy as collecting all answers to each question in a single place.

The framework provided by a fully structured interview can be a curse as well as a blessing. In a fully structured interview, you must follow the script. If the interviewee makes some comments that you'd like to follow up on or if you think of some unanticipated question that you'd like to ask, you're out of luck. Requests for clarification or additional questions are inappropriate, as they interfere with the primary motivation for using a fully structured interview: ensuring that each interviewee is asked the same questions.

If you want some room to ask for clarification, add questions, or follow interviewee comments wherever they may take you, a *semistructured* interview may be more appropriate. These discussions generally start with a set of questions, which may be similar (if not identical) to questions that might be used in a fully structured interview. However, in a semistructured interview, you can feel free to let the conversation go where it may. If your interviewee mentions something of interest, you can say "tell me more about that..." After she clarifies, you might inquire "how does this relate to..." or perhaps ask a question from further

down on your list. Your goal should be to dig through the interviewee's comments, opportunistically looking for possibilities to gain additional insight and understanding.

*Unstructured* interviews take this idea to its logical extreme. An unstructured interview may simply be based on a list of topics or questions known as an interview guide (Robson, 2002). To conduct an unstructured interview, you would start off with an initial question for your interviewee, and then you would listen, letting the interviewee respond as she sees fit, discussing topics of her choosing. If conversation slows or stalls, you might introduce another topic or question from your interview guide. As the main benefit of using unstructured interviews lies in letting your interviewees focus on the topics and concerns that they find important, you should avoid imposing too much structure.

Semistructured and unstructured interviews open up the possibility of exploring topics in a depth and breadth that may be harder to achieve with fully structured interviews. As interviewee comments lead you to ask questions that you hadn't thought of and as they discuss issues that you had overlooked, your understanding of their concerns and perspectives will broaden in directions that you might have missed with a fully structured interview.

Of course, there is no such thing as a free lunch: interviews with less structure require more skill to conduct. When do you dig deeper in response to a comment? When do you back off and move on to something else? How do you keep interviewees on track or deal with those who answer in monosyllables? Effectively managing these challenges requires a fair amount of skill, which may come only with experience.

Less structure also means more challenges in interpretation. Semistructured or unstructured interviews may go all over the map, with related topics discussed in multiple places throughout the interview. You may need to collect comments made at very different points, searching through your notes, recordings, or transcripts, to find closely related topics.

These different types of interview can also be distinguished by considering who's in charge. As they are controlled largely by the interviewer, fully structured and semistructured interviews are often described as *respondent* interviews. In unstructured interviews, the interviewee's comments direct the course of the interview, with the interviewer following along and responding as necessary. As the interviewee is in control, these interviews are also described as *informant* or *nondirective* interviews. These names help remind us that the comments of the interviewee may be very structured, even if the interviewer does not impose any structure on the conversation: the perceived presence or absence of structure depends upon the viewpoint that is being considered (Robson, 2002).

How should you choose between these different styles? Fully structured interviews are most appropriate when you hope to compare responses across individuals. All interviewees are asked the same questions, so comparison should be straightforward. These comparisons are often most useful for evaluations aimed at understanding user responses to designs or systems.

Unstructured and semistructured interviews can be most appropriate when you are looking to dig deeper, in search of critical comments, design requirements, and other insights. These approaches can be particularly helpful when you are unfamiliar with a problem domain or set of users—when you don't even know which questions to ask. In these cases, semistructured or unstructured interviews give participants the chance to educate you. The understanding that you gain from their comments can help you understand their needs and, potentially, generate appropriate questions for subsequent structured interviews. Follow-up structured interviews can be particularly helpful for validating the results of your initial semistructured or unstructured attempts: if a second round of interviews elicits comments that are generally consistent with feedback from the first group, you might comfortably conclude that those comments apply generally to a broad range of users. The Green Living Interviews sidebar describes a research project that made extensive use of semistructured interviews and other complementary techniques to understand the practices of a very specific group of people, in the hopes of identifying possibilities for the design of new tools.

Greater ease of both conducting the interviews and analyzing the results makes fully structured interviews appropriate for your first effort. When all of your questions are explicitly spelled out, conducting an interview can be relatively straightforward. You simply ask a question, note the answer, and move on to the next question. Semistructured and unstructured interviews can require significantly more effort, as you will find yourself trying to decide when and how much to manage the interview process. When do you let the interviewee digress to seemingly unrelated topics? When should you let the interviewee talk and when should you direct the conversation? If you are working with someone who is not at all talkative, how can you get them to open up? Given these and other challenges, you might want to stay away from less-structured techniques until you've had some experience in interviewing.

### 8.5.2 FOCUSED AND CONTEXTUAL INTERVIEWS

Interviews in HCI research often revolve around the specific context of a problem or technology. We might be interested in how people use an existing system or how they solve a problem that might be addressed by software that has not yet been built. In circumstances such as these, an interview might go beyond simply asking questions; it might ask for demonstrations and more in-depth explorations. By asking interviewees to *demonstrate* how they solve a problem, instead of *explaining* how they do it, these interviews have the potential to illustrate aspects of the problem that might have been forgotten in a strictly verbal interview. Thomas Malone's classic work on office organization (see the Finding and Reminding sidebar) provides an example of this approach. To understand how people organize information, Malone asked people to show him around their offices, indicating where they store things (Malone, 1983). Hugh Beyer and Karen Holtzblatt expand upon this approach, providing a detailed inquiry model in their book on Contextual Design (Beyer and Holtzblatt, 1998) (see Contextual Inquiry sidebar).

## CONTEXTUAL INQUIRY

Many HCI researchers and practitioners have found that simply asking people about their practices is not sufficient for developing a complete understanding of user requirements. If you ask someone who regularly makes scrapbooks how they go about doing it, they may share certain interesting details that demonstrate their *explicit* understanding—those parts of the process that they can think of and easily describe to you. If you watch that same person complete the task, you might find many *implicit* practices that are crucial for success, even if they aren't stated directly.

A popular exercise used in HCI and other computing classes provides a nice demonstration of the notion of implicit knowledge. The challenge involves sandwich construction. Students are asked to describe how to make a peanut butter and jelly sandwich, assuming one is given a loaf of bread and new jars of peanut butter and jelly. Participants invariably find that seemingly simple tasks—such as getting a knife full of peanut butter to be spread on the sandwich—are complicated by challenges that may not be remembered explicitly—in this case, removing the foil seal that might be found under the lid of the unopened jar of peanut butter (Davis and Rebelsky, 2007). If you limit your investigations to direct interviews, you might never come across interviewees who remember this crucial step. If you instead choose to observe someone in action, your first participant's attempts to remove the foil point to the need to include it in your process.

*Contextual inquiry* techniques for conducting interviews (Beyer and Holtzblatt, 1998) are specifically designed to uncover implicit knowledge about work processes. Contextual inquiry starts from observation at workplaces, with a focus on specific details rather than generalizations.

The simplest form of contextual inquiry is the contextual interview that consists primarily of a few hours of observation as the user completes his or her work. The goal is to form a partnership in search of a shared understanding of work. The preferred approach to this is to have the researcher and the interviewee work together in a manner similar to a master-apprentice relationship, with the participant describing what she is doing and why as she progresses through the various steps involved in completing her work. Researchers conducting contextual interviews are generally much more talkative than traditional apprentices, leading to a conversational partnership.

This collaboration extends into interpreting the data: the researcher begins to build a model of how the interviewee is working and asks if it reflects the user's understanding. If the interpretation is incorrect, the interviewee is likely to clarify: “No, that's not quite right.” This discussion takes place in the context of a focus on the project as a whole, as opposed to any smaller components, such as the software that you might eventually design (Beyer and Holtzblatt, 1998).

(Continued)

### CONTEXTUAL INQUIRY—CONT'D

Beyer and Holtzblatt's classic 1998 book presents a design approach that extends far beyond the interview. Their detailed and practical discussion details how analysis of interview results can be used to generate a series of informative graphical models describing key aspects of workflows under discussion. Flow models describe the sharing of information among individuals in a workplace; sequence models outline the steps in completing a task; artifact models collect the structure of information or other byproducts of work processes; cultural models describe the backgrounds and assumptions of the context in which the work is done; and physical models describe relevant physical and logistical constraints (Beyer and Holtzblatt, 1998). Explicit understanding of attitudes that users might have towards systems (cultural models) and of the environments in which a system is used (physical models) can be crucial for success.

In Beyer and Holtzblatt's model, individual interview sessions are analyzed in interpretation sessions, in which team members discuss each interview in detail. Notes from these sessions are organized into *affinity diagrams*—hierarchical groupings of structures and themes, built from the bottom up (Figure 8.1). Groupings are given names, and groups are brought into larger,

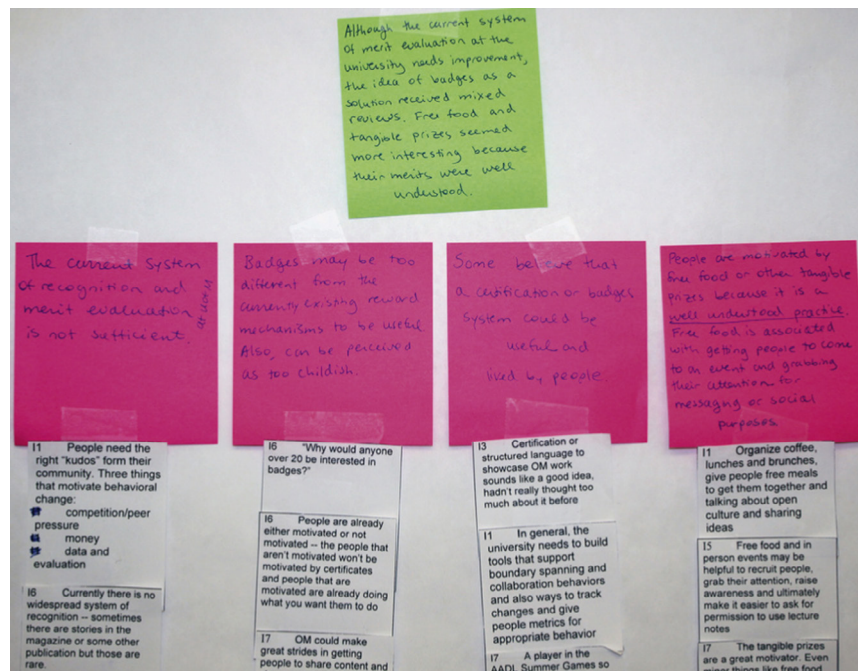


FIGURE 8.1

An affinity diagram, illustrating groupings of individual observations into higher level categories.

From <https://www.flickr.com/photos/openmichigan/6266766746>.

collective groups. Affinity diagrams are often constructed with sticky notes, using different colors to represent layers in the hierarchy (Beyer and Holtzblatt, 1998). Collecting notes from a series of contextual interviews into a single diagram leads to a “map” of the problem “terrain”, with hierarchies providing guidance for understanding the relationships of various concerns that fall under the topics and subtopics. In the course of analyzing a large set of notes (perhaps around 1500), members of a research team can build a shared understanding of a challenging work process (Beyer and Holtzblatt, 1998).

Although the content of their 1998 book is still as relevant as ever, Holtzblatt and Beyer updated their models with a 2014 revision entitled *Contextual Design Evolved* (Holtzblatt and Beyer, 2014). Noting the importance of interface design for daily life activities conducted on mobile devices, this revised model adds new criteria including “Cool Concepts” designed to address factors relevant to this new class of applications, including accomplishment, connection and sensation (Holtzblatt and Beyer, 2014). This content, together with expanded examples and guidance on interview analysis methods, makes *Contextual Design Evolved* a must-read companion to the original book.

Other interviews aimed at understanding how technologies are currently used might include technology tours, which ask participants to show researchers how they use technology at home (Petersen and Baillie, 2001) or other familiar space. Technology biographies build upon this approach, asking participants to discuss past uses of technology and to speculate about desirable future scenarios (Blythe et al., 2002).

One alternative perspective on interview strategies relies upon artifacts and context provided by the researcher, not by the subject. External aids aimed at eliciting feedback or reactions relevant to the subject at hand are known as “probes” (Gaver et al., 1999). As the goal of a probe is to promote engagement, it need not be technological: an interviewer interested in understanding user needs for organizing photos might ask interviewees to organize a small set of pictures on a table top. Observations of this process may prove to be significantly informative than a strictly verbal interview.

Software prototypes can also be used to focus interviews. Technology probes are simple prototypes that demonstrate new ideas (Hutchinson et al., 2003). Although they may be interesting as tools, technology probes are primarily designed to explore possibilities and understand needs and practices regarding technology use. A study of everyday technologies in family life used two forms of technology probe—a zoomable space for digital notes on a writable LCD tablet and a tool for capturing short, shareable videos—to understand how unfamiliar technologies might be used by family members (Hutchinson et al., 2003).

Interviews aimed at evaluating proposed designs for software tools often go one step further, asking users to comment on proposed interface designs, either on paper or as more-or-less functional prototypes. As prototypes become more fully

functional, these interviews might even ask users to complete sample tasks. Although this feedback can be very useful—particularly early in the design process—such interviews must be conducted carefully. If participants are aware that they are evaluating a tool that you have designed, they may be overly favorable in their responses. When conducting an interview like this, you might want to discount favorable responses and give more credence to critical remarks.

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## 8.6 INTERVIEWS VS FOCUS GROUPS

Interviewing is a powerful, but labor-intensive, data collection technique. To gather input from 20 individuals, an interviewer must meet with each person individually, perhaps for an hour or more. An attractive alternative might be to meet with several participants in *focus groups*. These group discussions provide a reasonably effective and inexpensive tool for easily gathering a broad range of opinions. Although opinions differ on optimal sizes, focus groups are generally not large. Some suggest between eight and 12 people (Robson, 2002), while others argue that smaller groups of five to seven participants might be more appropriate for an in-depth conversation (Krueger, 1994). A series of as many as five focus groups (Brown, 1999) could be used to engage up to 60 people in a few hours. Relying on a single focus group session is discouraged, as any single group could be unresponsive or unrepresentative. Two or more groups will increase your chances of success (Krueger, 1994).

The participation of several individuals in a focus group provides the possibility of a broad range of viewpoints and insights. Discussions can reveal similarities and differences between opinions. Limited doses of disagreement and debate can be very informative, as varying viewpoints can lead to a broader understanding than you would gain from a number of people who were in complete agreement. These conflicting perspectives might also lead you to new areas for further study (Brown, 1999). Perhaps you can develop a model or system that will handle all perspectives well.

The conversations that can arise in a focus group can help overcome many of the shortcomings of interviews. In a one-to-one setting the interviewer and interviewee are left to fend for themselves. If the interviewee is not talkative, or if an awkward dynamic stifles the discussion, the interview may fail. Group discussions support interactivity, with participants ideally balancing each other. Participants can encourage each other to speak up, either in support of or opposition to earlier statements. This highly dynamic situation can stimulate participants to raise issues that they might not have identified in one-to-one interviews.

As the rigidity of a fully structured interview is ill suited for group settings, focus groups are generally semistructured or unstructured. A fully structured focus group would require asking each question to each individual in order, without any room for interaction between participants. A fully structured focus group would essentially be equivalent to multiple individual interviews conducted simultaneously.

Interactive focus groups present researchers with several logistical and management challenges. As conversation takes time, focus groups might be limited to a relatively small number of questions—fewer than you would cover in comparable interviews. Conflicts may arise, particularly in focus groups involving controversial topics. Participants may be unwilling to discuss topics involving potentially sensitive information—perhaps relating to health care or finances—in a group setting. Individual interviews might be more appropriate for discussion of these topics.

Particularly talkative and opinionated participants can monopolize conversations, crowding out other viewpoints. If this happens, you will need to find a diplomatic way to ask chatterboxes to yield the floor. Simply cutting them off brusquely may give offense and discourage further participation. Disrespectful conduct can cause similar problems. When conducting a focus group, you must be careful to avoid power struggles or other confrontations with participants, as such battles can sabotage the whole process (Brown, 1999).

Group dynamics can impose certain limits on the extent to which you can generalize from focus group results. Although you'll know when people disagree strongly enough to speak up, you may not know how to interpret silence. Participants who sit quietly may agree with expressed opinions or they may simply be opting out of the conversation.

Extracting useful data from a focus group requires skillful facilitation. You need to manage personality conflicts, encourage participation from all participants, keep the conversation going, monitor the clock, and work through your list of questions, all the while collecting the data that is at the heart of your effort. With a roomful of participants to manage, this can be quite a challenge. Fortunately, this need not fall on only one person's shoulders. A focus group might have two moderators: someone who is skilled in running such groups can work alongside an HCI researcher who is familiar with the problem at hand (Brown, 1999). Together, these collaborators can work together to ensure successful data collection.

The selection of focus group participants can be an art in itself. Should your participants represent multiple backgrounds and perspectives, or would a more homogenous group be appropriate? What about familiarity—do you want participants who are unknown to each other or groups consisting of friends or colleagues? Participants in homogenous groups have common backgrounds and experiences that may help promote discussion and exchange, giving you viewpoints that represent this shared context. In some cases, you may not be able to find a broadly diverse group of participants. If you are developing a system for use by a narrowly defined group of experts—such as brain surgeons or HCI researchers—your groups are likely to be largely homogenous, at least in the relevant respects.<sup>1</sup> Homogenous groups have the disadvantage of narrowing the range of perspectives. For projects that aim to support

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<sup>1</sup> There may be significant racial, ethnic, gender, and age diversity in any group of brain surgeons or HCI researchers. However, from the perspective of tools designed to support their professional activities, their shared training and experiences are likely to be much more important than any demographic diversity.

a broad range of users—for example, systems aimed at meeting the needs of all patrons in a large metropolitan library—broadly based focus groups representing multiple viewpoints may be more helpful. Groups that are too diverse may pose a different set of problems, as a lack of any common ground or shared perspectives may make conversation difficult (Krueger, 1994). In any case, participants in focus groups should have an interest in the topic at hand and they should be willing to participate constructively (Brown, 1999).

Focus groups may be inappropriate for addressing sensitive or controversial topics. Many participants may be reluctant to discuss deeply personal issues in a group setting. Controversial topics may lead to arguments and bitterness that could destroy the group's effectiveness (Krueger, 1994). Although such concerns may seem unrelated to much HCI work, group discussions can take on a life of their own, possibly bringing you unanticipated difficulties. If you have any concerns at hand about difficult issues, you may decide to use one-to-one interviews instead.

Although most focus groups are at least somewhat unstructured, structured focus group techniques can be useful for building group consensus on topics of common interest. The Nominal Group Technique (NGT) (Delbecq and Van de Ven, 1971) asks users to answer a specific question. Participants start by writing individual responses to the question, which are then provided to a moderator and discussed with the group. Participants then prioritize their “top 5” responses, and a ranked tally is generated to identify the most important consensus responses to the question at hand (Centers for Disease Control, 2006). An NGT inquiry into the information needs of home-care nurses and their unmet information needs in dealing with geriatric patients after hospital discharge asked participants “In your experience, what information-related problems have your elderly patients experienced that contributed to hospital readmissions?” Respondents identified 28 different needs in six different categories, including medication, disease/condition, nonmedication care, functional limitations, and communication problems (Romagnoli et al., 2013).

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## 8.7 TYPES OF QUESTIONS

As seemingly small differences in the phrasing and form of interview questions can lead to big differences in responses, you should pay careful attention to what you ask your interviewees and how you ask the questions. Although writing these questions is more of an art than a science, there are some guidelines that should help you get started in the right direction.

One of the first considerations in the construction of any interview question involves the degree of structure. Structured, closed questions limit users to a small number of predefined choices. Examples include yes-no questions, multiple choice, true-false, and Likert-scale questions, asking for ratings on a scale of 3, 5, 7, or more possibilities (Robson, 2002). These questions have the advantage of being easy to analyze, as responses can be tabulated across all participants, and statistical methods can be used to describe the distribution of responses. However, giving your interviewees a

small set of predefined responses might discourage elaboration and further comments. If you ask someone “Did you like the design of the home page?,” they might just say “yes” or “no.” However, if you ask “what do you think about this home page?,” interviewees may be more inclined to elaborate, describing their reactions in more detail.

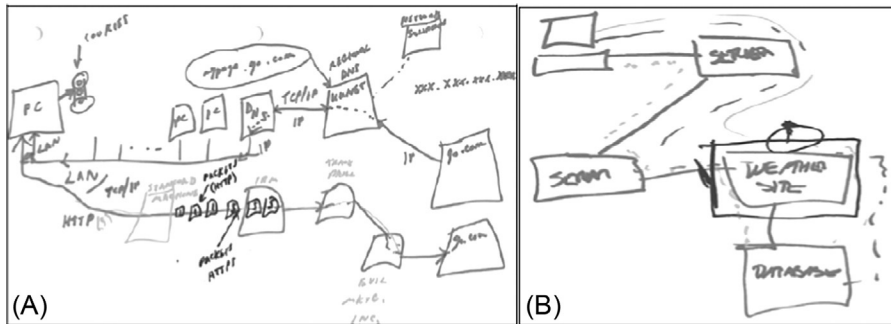
This second example—asking “what do you think about...?”—is an *open-ended* question. These questions ask for responses, opinions, or other feedback, without imposing any external constraints on the responses. This freedom invites the respondent to answer in depth, exploring any aspect of the issue that may be of interest. Such answers can often stimulate conversation and generate insights that closed questions might not reveal. Increased difficulty in analysis is the price that you pay for this insight. Instead of simply counting answers in different categories, you'll have to analyze the content of responses to open-ended questions, using techniques described in [Section 8.10](#).

Knowing how you will analyze answers may help you determine which kind of question to ask. If you want to divide participants into groups, a closed question asking them which group they belong to is ideal. If you want to understand the relationship between education level and reactions to a proposed community information system, you might ask people to state their highest level of education completed. This would clearly establish your categories of interest. In other circumstances, you might find it useful to divide interviewees into those that have unfavorable, favorable, or neutral reactions to an existing system. In this case, a closed question with three choices would be more helpful than an open-ended question that might lead to a more ambiguous response.

If you're not quite sure how you're going to use the data, you might be better off starting with the least restrictive approach. If you're not sure how you intend to use interviewee age, you might prefer to ask for exact ages rather than ranges (such as 20–29, 30–39, etc.). This will preserve the option of reporting age statistics and aggregating them into ranges for a histogram. If you start by asking for the ranges, you can't switch to numeric values later.

Other forms of interview “questions” are tasks or exercises that ask participants to provide useful information, without presenting a question as such. You might ask users to complete a sentence: “The task that I would most like to be able to complete with my word processor is....” ([Krueger, 1994](#)). This may not be all that different from asking a direct question, but it does add some variety to the interview process. Another possibility involves *conceptual mapping*: asking participants to draw pictures or graphical layouts that describe their understanding of a situation. ([Krueger, 1994](#)) For a study of perceptions of websites, you might provide a list of 20 sites, asking interviewees to organize the list into groups of similar sites. In one study of user perceptions of web security, interviewees were asked to draw diagrams depicting their understanding of how secure web connections work. These pictures provided concise and informative illustrations of how users understood—and misunderstood—web security ([Friedman et al., 2002](#)) (see [Figure 8.2](#)).

Interview questions should be as simple as possible, without any technical terms or jargon. You don't want your questions to be puzzles that confuse your interviewees. Compound questions with multiple parts may cause problems for some participants

**FIGURE 8.2**

Interview participants were asked to draw a secure web connection: a secure web connection is (A) correctly depicted as protecting information transmitted from the PC to the web server and (B) incorrectly depicted as secure data storage.

From Friedman, B., Hurley, D., Howe, D.C., Felten, E., Nissenbaum, H., 2002. Users' conceptions of web security: a comparative study. *CHI '02 Extended Abstracts on Human Factors in Computing Systems*, Minneapolis, MN. ACM, pp. 746–747; <https://doi.org/10.1145/506443.506510>.

(Robson, 2002). If you find yourself writing such a question, break it up into multiple simpler questions. Complex comparative questions may be particularly challenging in this respect. Instead of asking “What were the strengths and weaknesses of the menu layout and the toolbar?,” ask separate questions: “What did you think of the menu layout? What did you think of the toolbar? Which did you prefer?”

Your questions should be as unbiased and unjudgmental as possible. In particular, you should watch out for phrasing that might encourage your interviewee to give you the answer that they think you want to hear. This is another reason to prefer questions that ask “what do you think of...?” rather than “did you like...?” Particularly if you're talking about something that interviewees know you (or your team) have designed, asking if they like (or dislike) something or find it easy (or hard) to use, might influence responses. Questions that ask people “Why do you like this design?” (Robson, 2002) or “Don't you think this is hard to use?” are particularly troublesome in this regard. Some suggest avoiding questions with negative answers—simply ask “What did you think?” instead (Angrosino, 2005). You may find it hard to completely eliminate questions that have subtle potential for bias, but avoiding the worst pitfalls should not be too difficult.

You should construct questions that are appropriate for your audience. If your audience consists of well-educated professionals—similar to many HCI researchers—language that you are comfortable with may work well for your participants. Interviews or focus groups with participants with substantively different backgrounds from those of the researcher pose additional challenges—you have to learn to “speak their language.” For example, interviews or focus groups involving young children may fare better if appropriately designed questions and options for answers are used. Instead of using a Likert scale for a closed question regarding subjective reaction to a system, you might consider using the “smileyometer”

(a continuous and discrete rating scales based on a range from a deep frown to a broad smile), the “Fun Sorter” (a scale for ranking items in order of which was most fun), or the “Again-Again” scale, which asks children to indicate which activities they might like to repeat (Figure 8.3; Read and MacFarlane, 2006; Read et al., 2002). Although potentially useful, these tools might be difficult to use reliably



(A)

Name of child.....Age.....Boy / girl

	Best			Worst
Most fun				

(B)

Would you like to do it again?

	Yes	Maybe	No
 clock	✓		
 drive		✓	

Name of child.....Age.....Boy / girl

(C)

**FIGURE 8.3**

Questionnaire tools for assessing children's subjective responses to technology: (A) a smileyometer preference scale, (B) a Fun Sorter for relative preference between options, (C) an again-again scale for selecting which activities a child would like to repeat.

*From Read, J.C., MacFarlane, S., 2006. Using the fun toolkit and other survey methods to gather opinions in child computer interaction. Proceedings of the 2006 Conference on Interaction Design and Children, Tampere, Finland. ACM, pp. 81–88; <http://dx.doi.org/10.1145/1139073.1139096>.*

with younger children ([Read and MacFarlane, 2006](#)). In more complex cases, working with children or other groups with different backgrounds may require spending some time to understand the context before you design an interview—see [Chapter 9](#) for background on ethnographic observations.

When your interview is less than fully structured, you may be generating questions on the spot, in response to specific interviewee comments. On-the-fly phrasing of questions that are clear, simple, and free from jargon and bias is an art requiring practice and experience. This may be another reason to stick with more structure until you gain some experience, but all is not lost: the informal give-and-take of semistructured and unstructured interviews gives you some room for rephrasing and revisiting questions as needed.

Human nature being what it is, interviewee responses may be inconsistent. This is to be expected. Including questions that are slightly redundant may help you assess the degree of consistency in responses, but you should probably decide in advance how you will handle any inconsistency. Possibilities include reporting inconsistencies and discounting responses from interviewees who appear to be particularly inconsistent. The Finding and Reminding sidebar in [Section 8.3.1](#) discusses Thomas Malone's study of how people organize information in their offices—an example of a semistructured interview that generated some influential results.

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## 8.8 CONDUCTING AN INTERVIEW

### 8.8.1 PREPARATION

With all of the details that must be addressed, appropriate planning and preparation is obviously important. Pilot-testing your interview—both with research colleagues and participants—is always a good idea. In addition to helping you find questions that are hard to understand, pilot testing can give you some idea of the potential length of an interview. If your pilot test runs past the two-hour mark, you may want to ask yourself if there is anything that you might trim. Although pilot testing may be harder for a focus group, it is not impossible. One approach might be to use your colleagues as pilot focus group participants. Other possibilities include asking experts familiar with focus groups to review your questions and other materials. You might also consider your first group to be the pilot: if it goes well, great. If not, you can revise it and remove the results from further consideration in your analysis ([Krueger, 1994](#)).

A clear and concise interview guide can help you remember which steps to take and when. Guides are particularly helpful for focus groups ([Brown, 1999](#)) and for any situation where more than one researcher is acting as an interviewer or moderator.

Proper preparation includes appropriate backups. Assume that your computer will crash, your recorder won't work, and the power will fail. Can you conduct your interview in the dark on paper? That might be a bit extreme, but extra batteries, paper, and perhaps even a backup recording device will prepare you for almost any contingency.

### 8.8.2 RECORDING THE RESPONSES

Having chosen the format of your interview, identified your participants, and written your questions, you are ready to plan the details of conducting the interview. Written notes and audio or video recordings all have advantages and disadvantages. You'll probably always want to have a notebook on hand. If you have an interviewing partner, she might take notes with the computer while you write your thoughts on paper, but it's probably too distracting for the primary interviewer to be typing on the computer during the course of the interview session. In any case, you should have a paper notebook available as a backup.

Written notes can be useful for recording interviewee responses and interviewer comments. Even if you are using audio or video recording devices for your main records of participant comments, you should use written notes to document nonverbal cues or concerns (Brown, 1999). Do your interviewees seem bored, anxious, or tired? This can be particularly important for focus groups: you'll want to note if you see body language cues indicating disagreement with the current speaker, general frustration, or lack of interest.

Simply writing down interviewee responses is likely to be most effective for simple, closed questions. Answers to open-ended questions and comments made in free-flowing unstructured interviews may be hard to capture adequately in writing. Transcribing spoken text in real time is a cognitive challenge. If you are busy trying to write down what your interviewee said a few seconds ago, you might miss an interesting comment. Participants may find it distracting as well, particularly if you are so focused on writing that you appear not to be paying attention to them.

You should strongly consider summarizing and possibly rewriting your notes as soon as possible after each interview. This will give you a chance to clarify any comments, add details that will help you remember the context, and clarify in other ways that increase the likelihood of extracting useful data from the record, even after a gap of months or years.

Audio and video recordings capture every word of an interview, at the potential cost of difficulty of transcription and interpretation. Turning a single hour of recorded discussion into text may take several hours (Robson, 2002) and substantially sized projects can generate massive amounts of content (see the Green Living Interviews sidebar in Section 8.3.1). Digital recorders make recording inexpensive and easy enough that you might decide to record interviews before committing to transcribing them, but such recordings may go unheard.

If you are going to record, the choice between audio and video can be important. Video recording is logistically harder, usually requiring a tripod and some maneuvering that might be challenging if you are in a tight space. Some interviewees may initially be uncomfortable with the video camera, but most forget about it within a few minutes. In many cases, the additional details captured by a video recording can be quite informative. Interviews with professionals aimed at understanding work in context would benefit from video recordings of workspaces and offices. You might even use a video camera to capture the use of a current software tool, but you should

not count on using an inexpensive video camera to record screen output from a computer: such recordings generally don't work well. Screen-capture software operating directly on the computer would be a better bet. Audio recording is, of course, simpler and more straightforward. You might consider using audio recording along with still pictures from a digital camera. This will give you much of the benefit of video without the overhead.

Whatever approach you take to recording, you should be careful to respect the privacy and anonymity of your subjects. Written notes and recordings should be treated as identifying information which should be kept securely and treated as confidential.

You should have a consistent policy for dealing with comments made after you close your notebook or turn off the recording device. As you are wrapping up or even walking out by the door, some participants may make comments that are of interest. You can certainly pull your notebook back out or restart your audio recorder or camera, but you should deal with these comments consistently (Robson, 2002).

Paper notes, photos, and electronic recordings need not be the only records of your interview. If you ask users to complete a task on the computer, you might collect (with their permission) screen shots illustrating their tasks in progress. Any conceptual maps, drawings, or other outputs from tasks associated with your interview questions should be considered as part of the interview record and analyzed accordingly.

### 8.8.3 DURING THE INTERVIEW

#### 8.8.3.1 *Rapport*

From the start of the interview, you should strive to help your interviewees feel comfortable and at ease. If you can convey the impression of being a professional, friendly, and likable person, your interviewees will be more inclined to trust you with honest and useful feedback. You may find that interviewees who are more at ease will be more candid with responses, providing useful input instead of telling you what they think you want to hear.

Steps that you take to make your interviewees feel more comfortable may have the added benefit of making the experience more enjoyable for you as well. This can be particularly important for projects involving a large number of interviews: if you dread the thought of conducting the next interview, it may not lead to much in the way of useful data.

Creating an environment that encourages open conversation is easier said than done. The first few minutes of an interview are crucial (Kvale, 2007): if you establish good rapport quickly, the rest might flow easily. To make the all-important good first impression, you should be friendly and supportive. Listen carefully, sincerely, and respectfully (Kvale, 2007): after all, you've invited the interviewee to participate—if you cannot be concerned enough to be interested, why should they? Be respectful, straightforward, clear, and nonthreatening (Robson, 2002). Judgmental responses are inappropriate. Cringing or frowning when you hear a response that you don't like

won't encourage interviewees to share more with you. This is one area where some practice might help: you'll want to develop a poker face.

When you are conducting an interview or focus group, you are, to some extent, acting as a host. When appropriate, you might consider providing simple refreshments. A glass of water will help an interviewee or focus group participant feel comfortable enough to keep talking. Snacks may be nice, but should be chosen carefully to respect participants' cultural and dietary sensitivities. Loud, crunchy food is inadvisable, as it may distract participants and interfere with audio recordings (Barbour, 2007).

Finding some common ground of shared experience or perspective is a tried-and-true technique for building good relationships. Although this may be related to the topic of the interview, it need not necessarily be. If an interviewee comments on travel delays due to traffic or the need to leave early due to family obligations, you might respond with a short personal comment indicating your understanding of those challenges. Alternatively, you might include an initial interview question aimed at establishing some common ground. If it's at all relevant, you might consider asking interviewees to describe a notable technology failure: almost everyone will have a story to tell and you can commiserate with a story of your own. If you can focus this question on a specific technology relevant to your interview, so much the better.

As you work to establish rapport with your interviewees, be careful to avoid anything that gets too personal. As the interview is about you learning from the interviewee, you should be listening most of the time. Talking too much about your own experiences is inappropriate and may make some people uncomfortable. You might make brief comments about your own experiences or opinions whenever appropriate and then steer the conversation back to focusing on the interviewee.

### **8.8.3.2 The introduction**

Most interviews or focus groups follow the same general outline. You should start with an introduction, telling the interviewees about the research and your goals. If appropriate, this would also be a good time to complete any paperwork, including (when necessary) the informed consent form required to document the interviewee's agreement to participate (Chapter 15). You should also tell participants if you are recording the session and how. For focus groups, you might use the introduction as an opportunity to encourage differing viewpoints (Krueger, 1994).

You might want to keep the introduction to your research brief. You should not go into too much detail regarding your goals and aims (Kvale, 2007), as a detailed description of your aims and goals might encourage your participants to provide answers that they think you would want to hear. This is particularly a concern if you're asking about reactions to a system that you have built. You can provide more context after the session is over (see Section 8.8.3.5).

### **8.8.3.3 Getting down to business**

The interview proper will start with relatively easy questions, useful for building trust and preparing the interviewee for harder questions. Risky questions come towards the end, perhaps followed by some simpler questions aimed at defusing any

tension or anxiety. After your questions are complete, be sure to thank interviewees for their time (Robson, 2002).

During the interview, you must be on your best behavior. The first and most important rule is to remember that as the interviewer, your job is to *listen*. You are meeting with your interviewees to learn from them and you can't do that if you're doing all of the talking. After you introduce the interview and go over any administrative details, you should let the interviewee do most of the talking. You can certainly ask the questions, provide clarification if needed, and encourage further details, but that's about it—the interviewee should do the bulk of the talking. You'll have to give them time to speak—don't rush—and provide multiple opportunities to continue: “is there anything else you wanted to tell me?” or “take your time” are good ways to give your participants room to gather their thoughts without feeling pressured. Don't rush to move on to a new question until you are absolutely sure that the interviewee has finished answering the current question. Careful listening also involves paying attention to nonverbal cues: if the interviewee seems anxious or agitated, you may have interrupted her. If this happens, back up and give her a chance to continue.

Being adaptable and flexible is particularly important for semistructured or unstructured interviews. If you want to get the full benefits of ceding some control to your participants, you will have to be willing to go where they will lead you. This may mean reordering or eliminating certain questions and letting the conversation take some unexpected twists and turns. In some cases, you may be able to come back to those questions later, while other interviews may leave their original script and never return. As long as your interviewees don't go completely off-topic, you should try to follow them. If they digress into totally unrelated areas, you might want to gently nudge them back on track. Careful and early attention to conversational style can help you avoid irrelevant digressions. If you notice early on that you are talking with someone who is prone to wander off into unrelated topics, you can prepare yourself to repeatedly—but politely—interrupt and guide the conversation back on track.

Interviewees and focus group participants have their own need for clarity and continuity. You should take care to explain why you are asking each question, and how it relates both to the overall topic of the interview and to questions that you have previously asked. If participants aren't sure why you are asking a question, they might misunderstand it and provide an answer to what is, in effect, a different question.

Terminology, also introduces possibilities for misunderstanding. Provide definitions of any terms that might involve technical jargon or otherwise be unclear or ambiguous. If a participant introduces a term that may be problematic, ask for a clarification: “What exactly do you mean when you say...?” If the definition is not the one that you would tend to use, it's probably best to make a note of this difference and then to stick with it.

As the interview or focus group session progresses, you should try to distinguish between answers that the participants give because they are trying to please you and answers that genuinely reflect their opinions. The tendency of research participants to try to please researchers, particularly by providing information that would

be perceived as confirming a hypothesis, is well known (Orne, 1962). If you hear participants saying uniformly positive things about a system that you developed or a model that you suggested, you might be a bit cautious about over-interpreting those responses.

As with all research involving human subjects, interviews must be conducted in a manner that respects the rights and concerns of the participants (see Chapter 15). Be sure to clearly explain to your interviewees that they can decline to answer any question. This is particularly important if you are discussing potentially sensitive topics. When they do decline to answer, simply note their lack of response and move on to the next question. Participants should have the chance to take breaks, particularly if the interview is long. Interviews and focus groups should be kept to a reasonable length—probably less than 2 hours (Brown, 1999).

Focus groups present additional challenges. Listening is still paramount, but you may want to jump in to keep conversation on track. Focus groups can go badly wrong in many different ways: discussions can digress; participants might talk at length to the exclusion of others; disagreements might arise; or you might simply have a group that doesn't get along well. If you see any signs of trouble, you can jump in, gently urging participants to stay on topic, let others speak, be polite, and so on. You might try to be particularly sensitive to participants who seem to be quietly observing without saying much. Although some quiet folks might not have anything to say, others might be intimidated. Particularly if your quieter participants appear to be agitated or uncomfortable, you might address them directly, offering an opportunity to speak: “Joan, is there anything you'd care to say about...?” Having asked this question, you must be ready to accept “no, thanks” as an answer.

#### **8.8.3.4 Promoting discussion**

What if you hold an interview (or focus group) and nobody talks? Spending an hour in a room with someone who responds in monosyllables is both unproductive and unenjoyable. You certainly can't force anyone to talk in any detail, but you might be able to encourage them. If your interview is fully structured you may not have much wiggle room, but you can add questions to semistructured and unstructured interviews, in the hopes of eliciting comments. If you are asking about user reaction to a given tool, you might rephrase the question in various different ways—do they use the tool at home or at work? Have they had problems at home or at work? Is the spreadsheet tool good for personal finances and for taxes? In some cases, overly general questions might discourage responses: if you dig deeper into specifics, you might remind your interviewee of some specific incident or need that is relevant.

Physical props, note cards, and other probes can also stimulate feedback. In Section 8.3.2, our sample exploratory questions included asking participants how they currently arrange items in scrapbooks. Instead of simply asking this question, you might give your interviewee a small pile of photos and ask him to arrange them as if he was constructing a scrapbook, explaining the process as he went. This use of probes can be particularly helpful for revealing attitudes and practices that your participants may not have fully articulated: even though your interviewee knows

what he's doing and why, he may not have thought about it enough to put it into words. Probes also provide a potentially entertaining alternative to a steady stream of questions.

Some techniques for eliciting responses are specific to focus groups. If a participant's comment is followed by silence, you might specifically ask others to react: "does anyone have a different opinion?" A short pause can also provide an opening for someone who has been waiting for a chance to make a comment (Krueger, 1994).

### **8.8.3.5 Debriefing**

Set aside some time at the end of the interview or focus group for wrapping up and debriefing. When you have finished covering the questions or topics on your list, you might ask participants if they have anything else to add and, for their reactions to participating in the interview or focus group (Kvale, 2007). This will provide an opportunity for the sharing of thoughts that did not seem to fit earlier in the conversation.

Once your participants have finished answering questions, you might want to provide details about your research goals and the purpose of the interview, without the risk of biasing their responses. This additional detail can help interviewees feel that their time has been well spent and satisfying. Your debriefing might also include a brief summary of what you have learned during the session. This summary gives participants an opportunity to correct any misunderstandings.

Consider turning off any recording devices before you begin the debriefing: if participants are aware that you are no longer recording, they may share some comments that they would not have made earlier (Kvale, 2007).

After you have thanked your interviewee or focus group participants, try to take a few minutes to gather your thoughts, summarize the results, and otherwise reflect upon the session (Kvale, 2007). Even if you have recorded the session and taken detailed notes, your initial reactions may include insights that will be difficult, if not impossible, to reconstruct even a few hours later.

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## **8.9 ELECTRONICALLY MEDIATED INTERVIEWS AND FOCUS GROUPS**

Modern communication technologies present the attractive option of conducting interviews and focus groups electronically. Online chat, conference calls, and one-to-one phone calls can all be used to communicate directly with participants from the comfort of your own office. You can even conduct interviews by email, sending questions and answers back and forth in an ongoing dialog. In some cases, electronically mediated interviews may be your only possibility. If you are working with domain experts who are geographically distant, face-to-face conversations may simply be too expensive to arrange. Even when face-to-face meetings are possible, cost considerations may lead you to choose the convenience of telephone or online interviews.

### 8.9.1 TELEPHONE

Telephone interviewing seems straightforward enough: simply pick up the phone, call, and talk. Focus groups require conference call support, but numerous commercial and freely available services can provide these services easily. However, it would be a mistake to assume that the ease of initiating communication means that the rest is smooth sailing. Before conducting phone interviews, you may want to consider a few concerns that make these interviews qualitatively different from face-to-face discussion.

Your first practical decision may involve recording. Inexpensive tools for recording telephone calls are readily available, but they should only be used as appropriate. There may be local or national laws that dictate appropriate behavior for recording phone calls: for example, you might need to inform participants and get their explicit consent.

The dynamics of a telephone interview are likely to be somewhat different from what they would be if you were talking to the same person face-to-face. Phone conversations lack the nonverbal cues that inform in-person conversations: you may not be able to tell if someone is bored, tired, or distracted. In fact, you probably won't have any information about what the other person is doing: you might be conducting a phone interview with someone who is cooking dinner, doing dishes, or attending to other distractions instead of paying attention to what you are saying.

That said, the lack of direct face-to-face contact may, in some situations, prove advantageous. Particularly if the conversation involves sensitive topics, interviewees may be willing to make some comments over the phone that they would not make in person.

Conference calls for focus groups pose different problems. When you have multiple unfamiliar people on a call, it's hard to keep track of who is speaking. Asking participants to state their name before each comment may work, but it quickly gets tedious. As anyone who's participated in a conference call knows, simply getting a chance to speak can often be a big challenge.

### 8.9.2 ONLINE

Computer-mediated interviews are generally conducted via email, instant-messaging, chat, or online conferencing tools. An email interview might involve an extended exchange of messages, as interviewers send questions and interviewees respond. Instant-message or online conferencing interviews and focus groups are closer in spirit to traditional face-to-face interviews, with questions and respondents coming in near real time.

Recruiting challenges in online interviewing include the usual problems associated with online research: you may or may not know who you are talking with (see [Chapter 14](#)). Identifying suitable participants for non-face-to-face interviews may require some extra effort in building relationships with potential interviewees and externally validating their identities and suitability for your work. However, respondents can also be anonymous, which may be useful if you are discussing illegal or otherwise undesirable activities.

Online interviews and focus groups are often easy to record. Email programs save both sent and received messages, and instant-messaging programs generally record transcripts of all comments. These running logs can be quite helpful for reviewing and interpreting the conversation, even while it is still in progress. For example, the interviewer can review the conversation to verify that all appropriate topics have been covered. Another possibility would be to use the respondents' previous comments to ask for further clarification: "Earlier, you said..." Reviewing these comments can also help the interviewer ask repetitive questions. At the close of a discussion, you might ask the interviewee to review the logs to see if there are any final comments that she would like to add to the conversation (Volda et al., 2004).

Contextual feedback in email and chat interviews may be even more impoverished than with telephone interviews, as these text-only exchanges lack both the visual feedback of face-to-face meetings and the audio information generally available on telephone calls. Many participants may be multitasking and perhaps carrying on other instant-messaging conversations during the course of an online interview (Volda et al., 2004). Text-based interviews via chat or email may lead to very different types of responses, as some respondents will be more formal than they might be in person. This is particularly the case for email, as some might take time to carefully organize thoughts. Different expectations of pacing may also influence the content and quality of responses. In a face-to-face conversation, we rarely pause for 30s or one minute before responding to a question. Online chats, by contrast, frequently have delays of several minutes, and who among us hasn't let several days go by without responding to an email? This delay can be constructive in allowing for consideration of the question, but it might also contribute to distraction and half-hearted answers. Delays might indicate other potentially interesting behavior, including revision of initial responses. Many chat programs provide visual indicators of activity, such as a series of dots indicating that the person is typing. If a participant in an instant-messaging conversation provides a short answer after having been typing for quite some time, you might consider asking them to clarify their thinking (Volda et al., 2004).

Pacing in online interviews is also a challenge. Going too slowly might cause participants to lose focus and interest, but moving too quickly might prove unnerving. Expecting participants to respond to emailed interview questions within a matter of minutes is probably unrealistic. Online messaging need not always be instant. Given the breaks that seem to occur naturally in instant-messaging conversations, taking some time to rephrase a question or consider a response may be quite appropriate. On the other hand, cutting and pasting a question from an interview script into a messaging client may seem a bit too quick (Volda et al., 2004).

Online focus groups also lessen the presence of moderators—instead of being a powerful presence at the front of the room, the moderator is reduced to simply being another voice or line on the chat screen. This may reduce participant fear that the moderator may somehow disapprove of them or their comments (Walston and Lissitz, 2000).

In some studies, respondents using computer-based systems have reported a higher frequency of socially undesirable behavior, as compared to those participating

in traditional surveys, possibly because responding directly to a computer (without the presence of a human) encourages more openness in responses (Walston and Lissitz, 2000). In comparison, in one study of behavior relating to HIV/AIDS in sub-Saharan Africa, interviews were administered using both paper and computers. In both cases, interviewers asked the questions to the interviewees and recorded the answers on the paper or computer. Analysis of the results indicated that participants who were interviewed with the computers were more likely to provide socially desirable answers regarding risky behaviors. Although more study would be needed to understand these responses, the researchers conjectured that interviewers who used computers may have appeared to have been either affluent or outsiders. Participants may simply have been trying to impress the interviewers (Cheng et al., 2008).

Online conferencing tools provide additional context that can narrow the gap between online and in-person interviews. The combination of real-time audio, which is obviously necessary for a conversational flow, and video, which can restore some of the visual cues associated with face-to-face conversation, can be almost as good as being there. As capabilities vary across service providers, you might want to experiment with multiple tools to find those that work best. Screen sharing and recording tools are often useful for conducting contextual inquiries online, as they allow detailed exploration of the participants' use of systems, with recordings capturing each interaction with the system. Other tools may provide remote mouse and keyboard input, allowing users to interact with software running on your computer. Although perhaps not as personal as in-person interviews, such approaches, like all electronically mediated interviewing techniques, can be a cost effective means of reaching a broader range of participants.

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## 8.10 ANALYZING INTERVIEW DATA

Having conducted a series of interviews or focus groups, you'll find yourself faced with the daunting task of interpreting your data. Countless pages of written notes and hours of video or audio recordings pose a significant challenge—how do you make sense of it all? Your goal in analyzing interview data is to generate an accurate representation of interviewee responses. Usually, your analysis works towards a general, holistic understanding: the analysis of answers to individual questions are combined to form general models of user needs for a particular task, reactions to a proposed design, or other focus of the interview. This may not be possible—you may find that there are no consistent patterns. This is interesting as well.

Whichever techniques you choose to use, you should try to analyze your data as soon as possible. When the interview is fresh in your mind, you will be well-positioned to remember details and nuances that you may not have captured in your notes. As time passes, you will find it increasingly difficult to remember potentially important nonverbal cues or comments. Your notes will also become less useful over time, as hastily scribbled cryptic comments will be hard to interpret weeks or months later.

Effective analysis works to avoid bias and reliance on preconceived notions. The absence of “hard,” numeric data makes interview responses and similar qualitative data sources particularly susceptible to biased manipulation. An emphasis on data points that confirm your favorite hypothesis, at the expense of comments that argue against it—a practice known as “cherry picking”—is just one of the possible biases in the analysis of results. Biased consideration of responses from specific participants, or classes of participants, can be a problem for focus group data. If your analysis pays disproportionate attention to female participants relative to male participants (or vice versa), any resulting interpretation will be somewhat distorted. Your analysis activities should always strive to be inclusive and data driven.

Additional information about the use of qualitative data analysis methods can be found in [Chapter 11](#).

### 8.10.1 WHAT TO ANALYZE

Fully structured interviews consisting only of closed questions are the easiest to analyze. As all interviewees are asked the same questions and all answers are taken from a small set of possibilities, analysis is essentially a tabulation problem. You can tabulate the frequency of each answer and use straightforward statistical tests to determine when differences in response rates are meaningful (see [Chapter 4](#)). Quantitative results can also be used to group characteristics (see the Finding and Reminding sidebar in [Section 8.3.1](#) for an example).

Analysis gets harder as your questions become more open-ended and the interview becomes less structured. Open-ended questions can be answered in a different way by each interviewee. Two participants might answer any given question in entirely different ways, creating the challenge of identifying the common ground. Unstructured or semistructured interviews introduce the additional complication of questions and topics arising at very different stages in different interviews. Analysis of these interviews may require tying together comments made at very different times under very different contexts.

Should your analysis be based on written notes or on audio or video recordings? Unlike written notes, recordings provide complete and unfiltered access to everything that an interviewee said or did, even months after the fact. This record can be used to reconstruct details, focus in on specific comments, and share user feedback with colleagues. The disadvantage, of course, is the expense and challenge of wading through hours of video or audio data. You can analyze recordings by listening to comments piece by piece, repeatedly replaying pieces of interest until you gain an understanding, but this can be a slow, often tedious process. Verbatim transcriptions translate these hours of discussions into pages of written text that might be more amenable to analysis and editing via software, but transcribing can also be an expensive and unappealing process. Although it may be possible to use automated speech recognition techniques to generate a transcript, these tools are subject to recognition errors that might limit the quality of the output.

Notes written during the interview have the advantage of being relatively compact and easy to work with. Your written notes may omit some interesting details, but it's likely that the comments you managed to get down on paper were among the most

important made during the session. Even if you have to transcribe your handwritten notes into an electronic format, the amount of transcription required will be substantially less than that needed for a transcript of an audio recording of the same discussion.

These practical considerations play an important role in determining how you analyze the data. If time and money are particularly tight, you might be best served by an analysis of written records. Detailed examination of recordings is most appropriate for situations where you are interested in digging into the details as deep as possible and you are willing to commit the resources (time and money) to do this work.

### 8.10.2 HOW TO ANALYZE

After you decide whether to work from a recording (either directly or via a transcript) or interview notes, the next step is to decide how to approach the analysis. Interview analyses usually rely heavily on qualitative methods for coding data, either through emergent or a priori codes (Chapter 11). These methods attempt to find common structures and themes from qualitative data. In the case of interviews, your goal is to identify the important ideas that repeatedly arise during an interview.

One technique that is commonly used for analyzing interview data involves examination of the text of the interview for patterns of usage, including frequency of terms, cooccurrences, and other structural markers that may provide indications of the importance of various concepts and the relationships between them. This approach—known as *content analysis*—builds on the assumption that the structure of an interviewee's comments provides meaningful hints as to what he finds important and why (Robson, 2002). *Discourse analysis* goes beyond looking at discussions of words and contents to examine the structure of the conversation, in search of cues that might provide additional understanding (Preece et al., 2015). For example, do users say “we log out of the system when we are done” or do they say “the proper procedure is to log out when we are done”? The answer to this question might help you understand differences between what users actually do (the first option) and what IT managers might want them to do (the second option).

As interview and focus group research generally involves multiple participants, grouping of comments and resulting codes by participants can often prove useful as well, particularly if you can identify differences between participants that might be meaningful to the question at hand. You might find trends in responses that are associated with the age, educational level, and/or professional background of the participants. Even if response content does not correlate with demographic or other obvious variables, trends might indicate multiple “clusters” of users with similar perspectives. Counts of the frequency of mention of various terms, topics, or concerns (50% of participants over 65 years old expressed interest in the proposed design, while only 25% of those under 65 wanted to learn more...) might be one means of adding a quantitative perspective to otherwise qualitative interview data.

If these techniques sound too abstract and theoretical for your taste, you might want to try something simpler—an introductory approach is given in the Interview Analysis for Novices sidebar.

**INTERVIEW ANALYSIS FOR NOVICES**

Interview analysis can be somewhat intimidating. If you're feeling that you're in a bit over your head, don't panic. Although some analyses might best be done by an experienced collaborator, you don't need an advanced degree in the social sciences to get a basic understanding of interview data.

In school, many people have been taught to write notes on index cards—one idea per card—which can then be sorted and arranged as necessary. You can break responses to interview questions into individual thoughts or ideas, one per index card or one per line in a text document. Group lines with common ideas but don't restrict yourself to putting any idea into only one category. Feel free to place thoughts in multiple groups, as appropriate.

You might consider assigning categories to comments as they appear in the transcript. This can be done by annotating each line with a colored piece of text that names the category. Once you've done this, you can quickly search to find out all of the instances of a particular category. As the categories begin to grow, you may see connections between them. You can then put these categories into broader categories, forming a hierarchy of ideas.

How do you categorize each comment or concept? One approach would be to group things by the content words—nouns or verbs. You can use these words to understand the objects with which people work and the actions that they use with those objects. Organizing comments along these lines can help you understand the outlines of the problem domain.

As you dig through the interviews, you may begin to find relationships, information flows, sequences, or other patterns that repeatedly arise out of the comments. Pictures, sketches, outlines, or other representations of these interactions can help clarify your understanding.

Focus groups introduce the additional challenge of differing viewpoints. You might consider grouping comments by individual or by the individual's role. This might help you understand potentially important differences in perspectives.

In any case, if you are concerned about validity, enlist a colleague to work with you. You might each independently analyze the data and then compare your results, in the hopes of working towards a consensus analysis. Alternatively, you might work together, building agreement as you go along.

This informal analysis shares many characteristics with more rigorous established practices such as content analysis or discourse analysis. These approaches may differ in their level of attention to detail and their conformance to established practices but the goal is always the same: to help researchers move from an unordered and undifferentiated mess of interview data to a clear, structured understanding.

Informal techniques are often sufficient. If you are trying to build an initial understanding of a problem, gauge reaction to design proposals, or examine a problem without aspiring for generality and validity, this approach can be very productive. If you find that you need to add some rigor, you can always return to the data for a second, more rigorous analysis, perhaps with the help of a colleague with relevant experience.

Interviews and focus groups might also be examined for stories, responses, or comments that are particularly insightful, interesting, or otherwise important. Known as *critical-incident analysis*, this technique can be useful for identifying opportunities for digging deeper in search of useful information (Preece et al., 2015). In an interview, a critical incident might be a story that describes a notable failure of an existing system or a desired list of criteria for its replacement. As each critical incident becomes a case study—chosen not as a representative incident but rather as one that can provide useful information—techniques described in Chapter 7 can be applicable.

### 8.10.3 VALIDITY

Analyses based on the interpretation of texts often face questions of validity. Due to the necessarily subjective nature of the process of reading texts, any single analysis may be influenced in subtle (or not-so-subtle) ways by the viewpoints and biases of the individual analyst. If validity is a particular concern—as it might be when your goal is to make a general claim—you might want to have multiple researchers conduct independent analyses of your interviews. Ideally, their comments will be largely in agreement with each other. High value measures of *interrater reliability* can support your analysis (see Chapter 11).

Validity may not be a particular concern if your interviews are aimed at understanding user requirements. If you are working closely with users and customers, you will probably present your findings to them once your analysis is complete. If you have a good working relationship, they will let you know when your analysis has gone wrong. This feedback is very useful for refining your understanding.

### 8.10.4 REPORTING RESULTS

After you have conducted countless interviews and spent untold hours analyzing responses, you must report the results. Expectations vary among contexts; descriptions of a given set of results in an academic publication might differ significantly from how the same results would be presented in a corporate memo or presentation for a client. Despite these differences, some common principles apply.

Your presentation of interview results should be as clear and specific as possible. Tabulations of frequencies of responses can be used to give specific reports. Instead of saying “many users complained about...,” say “seven out of 10 interviewees who responded complained about...” Replacing terms such as “many,” “most,” “often,” “frequently,” “rarely,” and other vague quantifiers with concrete counts help users to understand not only the specific points but their relative importance.

You can also use respondent's words to make your reporting more concrete. Instead of paraphrasing or summarizing, use direct quotes. A small number of direct quotes illustrating interviewee sentiment can make your arguments much more concrete. This strategy can be particularly effective when coupled with frequency counts indicating widespread agreement with the quoted views.

If you do decide to quote users directly, you should be careful to do so in accordance with best practices for respecting human participants in research. Don't use participant names. If you have to repeatedly refer to an individual, use initials or a numeric code: S1, S2, etc. Don't use quotes that reveal any embarrassing or identifying details. You should always inform participants that their words may be used in research reports. This information should be explicitly included in the informed consent form (see [Chapter 15](#)). For questions that address particularly sensitive issues, you may wish to avoid quoting any interviewees directly.

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## 8.11 SUMMARY

Interviews and focus groups present substantial challenges for HCI researchers and practitioners. Writing questions, identifying appropriate respondents, conducting interviews, and analyzing data all require considerable skill and experience. For those of us who come to HCI from a technical background, the social science techniques and strategies that are involved may seem unfamiliar and somewhat daunting.

Despite these concerns, interviews and focus groups are invaluable tools for HCI researchers and practitioners, providing data into user and stakeholder needs and perceptions that would be difficult, if not impossible to get using other techniques. It's that simple—if you want to know what people want or what they think, you must ask them. For researchers, this might mean in-depth conversations aimed at building models to explain how systems are used and why. For designers and builders of interfaces, interviews can help build understanding of needs and reactions to interfaces. If you want to know why your last design failed, you can start by interviewing the users.

The choice of one-to-one interviews or focus groups involves trade-offs in time, expediency, depth, and difficulty. Focus groups let you hear from many people at once but with less depth from any given individual. You should consider the trade-off between this loss of depth and the potentially fuller understanding that may arise from a conversation between participants having multiple perspectives. Unfortunately, there are no guarantees: this intriguing dynamic conversation might not materialize. As the moderator of a focus group, you have a very important role to play: this is where the difficulty comes in. Skillful moderation can keep conversation focused and inclusive, increasing your chances of getting good data.

Interviews and focus groups might best be conducted as complements to other data collection approaches. Empirical studies, usability tests, ethnographic investigations, and case studies are among the methods that might be used alongside interviews. You can use multiple, complementary tactics to confirm findings or identify potential disconnects. Perhaps users prefer one interface design over another, even though it is slower. Why is this? Well-formed interview questions might help you understand the reasons.

If you feel intimidated by these challenges, start small. A simple, fully structured interview with closed questions will help you get started. As you become more comfortable with writing questions, talking to interviewees, and analyzing data, you might move on to interviews with less structure and greater challenges. Don't be ashamed to bring in some outside help. A colleague who is knowledgeable and experienced in interviewing can be an invaluable aide.

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## DISCUSSION QUESTIONS

1. The trust required to successfully conduct an interview may be difficult to achieve under certain circumstances. If honest answers to difficult questions may have repercussions for your interviewees, they might be less than forthcoming. If you were interested in developing a tool that would encourage teens to pay for downloading music rather than illegally trading copyrighted songs, you might consider interviewing teens to understand their attitudes and practices. However, they may be reluctant to share information with you, for fear that their parents would learn of any inappropriate activity that they have been involved in. As parental consent is likely to be required for the participation of underage teens, these concerns are not necessarily invalid. How might you build trust with these teens? How might you evaluate their comments to determine whether they are being truthful?
2. The development of a tool to encourage teens to pay for downloaded music presents some challenges in data gathering. If teens are using home computers for potentially inappropriate activities, parents may feel that they have a legitimate interest and concern in what their children are doing. To better understand the problem, you might decide to interview parents as well as teens. Would you interview them separately or together? What sort of questions would you ask parents and how would they differ from questions that you might ask of teens? Would you use one-to-one interviews or focus groups? Why?
3. Interviews can become awkward if the interviewees start asking difficult questions about the research. Imagine you are interviewing hospital equipment repair technicians about their practices for recording their workflow, including repairs completed, time spent on each repair, and related tasks. What should you do if the workers' concern for their job security leads them to ask tough questions about why the data is being collected and what it will be used for? If you know that management is trying to collect data that might be used to raise expectations and workload or to reduce staff, what should you tell the technicians? How can you resolve your responsibility to the client (the management) who is paying the bills, while showing appropriate respect for the workers you are interviewing?

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## RESEARCH DESIGN EXERCISES

1. Design and conduct an interview. Chances are pretty good that most of the people you know have or use cell phones. They are also likely to have strong opinions about their likes and dislikes regarding phone interface design and features. Design an interview that you might use to understand what cell phone users would like to see in a new generation of phone. What sort of questions would you ask and why? How much structure would you want to have? Would you use any props or observations? Once you have this interview designed, try it on a friend, classmate, or colleague. What did this teach you about interviewing? Were there questions that you should have asked but didn't? What worked well, what didn't?
2. Revisit the cell phone usage interview from Exercise 1. What would be different if you were to collect this data via a focus group instead of interviews? Revise the questions to account for any differences between individuals, in terms of preferences, experiences, and needs. How might you foster discussion and deliberation between focus group participants?
3. Revisit the cell phone usage interview from Exercise 1, but try it online this time. Sign up for an account on an instant-messaging service (if you don't have one already), and ask a friend or classmate to be your interviewee. Ask the same questions that you asked before. How do the responses differ? Did you get as much information or less? Did you notice any differences in the amount of feedback or the quality of the responses? Which did you find most useful? Which did you prefer?

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