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Preference and performance with cartoon-like images in instructional documentation

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Preference and performance with cartoon-like images in instructional documentation

by

Amanda Nicole Metz Bemer

A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

Major: Rhetoric, Composition, and Professional Communication

Program of Study Committee:
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Iowa State University
Ames, Iowa
2006

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Chapter 1: Seeing the power of images

If cartoon-like images can tell us how to accurately and safely operate a video camera, administer medication, or use potentially dangerous equipment, who are we to question their effectiveness? Or if Bach Man,1 the master railroader, has all the necessary information we need about how to set up and use a model train set, who are we to question him? Overlooking the possible effectiveness of cartoon-like images in instructions would be foolhardy because we should examine all possible methods of motivating and helping users to better use instructions. In fact, considering alternative methods can enable technical communicators to fulfill critical responsibilities: reducing problems as well as saving lives (Moore 1996). Why are these responsibilities relevant? The world is overrun with devices that hold expensive, harmful, and even fatal risks if misused. One way to reduce misuse and increase effectiveness of instructions is to take full advantage of visuals in combination with text (Schriver 1997).

Instructions in the United States are often perceived as boring and ineffective, leading users to overlook them when performing tasks, which introduces multiple risks, not only to products, but to users’ health and lives. Changing the way instructions are perceived in America requires further examination into what Americans want in their instructions and what they need to perform better or accomplish tasks more easily and successfully. Researchers in technical communication examine what readers want in instructions or ways to motivate readers to use instructions and feel good about doing so. Michael Steehouder and Nicole Loorbach, for example, have examined what users like about different sets of instructions, a study I discuss in chapter 2 (2004). Another notable example is David Goodwin (1991), who investigates motivation by using narratives in instructional

1 Bachmann’s Big Hauler Instruction Manual
documentation. According to Goodwin, readers are attracted to texts that allow them to successfully interact with the world through symbols and accomplish goals.

This question of success with instructions has been examined by multiple scholars, particularly in relation to visuals in instructional documentation (e.g., Schriver 1997, Redish 1993, Goodwin 1990). Visuals are widely agreed to be positive influences in instructions; they help users better understand and perform tasks (Schriver 1997, Levie 1987). In addition, visuals can help users feel positive about the tasks they’re performing (Fukuoka et al. 1999).

Why is this examination the work of technical communicators? Technical communicators have a responsibility to construct usable instructions—technical communicators are the people who create the knowledge that goes into instruction manuals that help users perform tasks. This sense of responsibility is supported by social constructivist theory, which holds that knowledge is constructed through social interaction (Miller 1979, Dobrin 1983). In the case of instructions, technical communicators articulate knowledge that users reinterpret and apply. This view of technical communicators as articulators suggests that technical communicators create knowledge by collaborating with both subject matter experts and audiences in order to put information into words (Slack et al. 1993). Technical communicators do not necessarily translate already known information but instead help identify and articulate this information. Knowledge needs to be communicable before it is real. Therefore, technical communicators create the knowledge that is used by people when they interact with their instructions—and these instructions are written (by technical communicators) with the rhetorical situation (audience, situation, context) in mind. The rhetorical situation of instructions contains audience, an aspect that certainly merits examination by technical communicators so that they can create knowledge that is understandable by users.

Because technical communicators and users are also aware of the rhetorical situation (Bitzer 1968, Consigny 1974), conventions in instructions can shape attitudes about certain types of images, attitudes that technical communicators need to consider and respect in order to increase users’ understanding and receptivity. These conventions may influence what images are suitable for readers (Hartley 1986). In this vein, exploring the use of cartoon-like images, photographs, and line drawings in instructions is relevant. Determining audiences’ preference for and performance with these types of instructional
visuals can help us to create more effective instructional documents for different rhetorical situations.

Because visuals have the power to influence users to better understand instructions and to feel better about using instructions, determining the most effective types of visuals for accomplishing these tasks merits examination. In this thesis, I investigate the effectiveness of instructions that combine text and various kinds of visuals—cartoon-like images, photographs, and line drawings. I examine assumptions and add to the disciplinary discussion about what kinds of visuals can effectively convey instructions to adult audiences in the United States. The problem is complicated by cultural conventions and visual characteristics. For example, photographs can have too much detail and background noise; line drawings are sometimes too simple; and in the US, cartoon-like images are sometimes perceived as childish and inappropriate for adults even though they are commonplace elsewhere in the world, like Japan.

Specifically, in this thesis I first look at the power of visuals in documentation in order to establish their importance and the relevance of further investigation of visuals. Then, I examine “cartoon-like images” in order to define their nature in relation to other visuals. I analyze users’ perceptions about cartoon-like images and their performance with this type of visual in relation to photographs and line drawings. Finally, I conclude that in contrast to popular opinion, cartoon-like images can be effective in documentation, though perceptions of the visuals are strongly influenced by age.

**The power of visuals**

Visuals are an extremely powerful part of instructions; they add two important elements to instructions—motivation and clarification. Of these two elements, motivation is perhaps more important. Motivation is integral to learning because reading a text is voluntary; people decide whether they want to read or not (Redish 1993). Visuals are important motivating factors because when deciding whether to read, many readers form an opinion about a document based solely on their first glance, in which they quickly assess the proportion of textual and visual information (Schriver 1997). Visuals can interest readers and motivate them to read the text. The motivational aspect of visuals (which is perhaps an aesthetic element) allows visuals to have the power to clarify (which is perhaps an
informational element). Thus, without the motivation that visuals create for readers, other aspects of visuals simply do not have a chance because the text is not read, indicating that motivation is an extremely important purpose for visuals that makes them integral to instructions. I first examine what makes visuals motivational, then I look at their ability to clarify instructions.

**Motivation**
What makes visuals motivational? Visuals have the innate ability to appear varied, which focuses attention and motivates people. Schriver (1997) notes that readers are very independent. They can only be persuaded by cues they find interesting. What's interesting to readers? In general, people appreciate variations in the objects they see, and the visual variations also increase their visual memory of those objects, a point Rudolf Arnheim (1969) makes when he illustrates his theory of active selectivity, which states that users' eyes focus on parts of a page that are visually different or unique—the variations, the interesting parts. Interesting visuals are motivational; they attract attention. Interesting visuals also help people remember tasks, so they are useful in the learning process.

With few exceptions, text simply does not look as not as variable as visuals, so it doesn’t motivate like visuals can. Visual variation is motivational, and this type of variation is more readily found in a document’s visuals rather than its print. A whole page of printed text has few visual variations; words, when viewed on the page level, are very similar. Visuals, on the other hand, typically have more variations. For example, an image of a screw and an image of a screwdriver look very different; the words “screw” and “screwdriver,” when viewed as a part of a whole page of text, do not. In essence, Arnheim’s active selectivity suggests that readers focus on the images because they look different. Hence, visuals draw the attention of readers and encourage them to pay attention to the document.

Once readers look at a document, however, they need to maintain their level of interest to keep reading. How can technical communicators maintain readers’ interest? What provokes interest is different for each audience, which makes the issue complicated because instructions need to appeal to all audiences who will use the product; different audiences can have different sexes, different ages, and different cultures. Technical communicators attempt to address multiple audiences by putting multiple languages into
instructional documents; in a perfect world, the same visuals would work for all of the world’s audiences. However, cultural differences, which I discuss further later in the next chapter, come into play with visuals. Because motivation is extremely important in encouraging people to use instructions and visuals are an excellent tool for motivating users, determining which visuals have the power to motivate which audiences is important. Once readers are motivated enough to read instructions, visuals have the power to clarify these instructions and create successful outcomes for the readers.

**Clarification**

Once people are sufficiently motivated to read a text, the visuals have the power to make tasks clearer in at least three ways:

1. indicating process
2. making ideas “vivid”
3. aiding understanding

First, visuals can indicate process. Because of their aforementioned noticeability (due to their variations), images have the ability to visually place tasks in order. Arrows are visuals that can easily indicate process on the whole-page, or the supra-level (Kostelnick and Roberts 1998) because they indicate direction and movement. Differences in visuals also indicate process; a visual representing an opened box, when put in the context of instructions for a toy, tends to indicate to readers that the process begins here—this is the first step—open the box. Users can easily associate the box in front of them with the box in the instructions. This relationship is very concrete for users.

The concreteness of the relationship between the picture and the real box leads into the next capability of visuals: pictures have the power to make ideas “vivid” (Hill 2004, Schrimer 1997). Visuals make ideas concrete in a way that words generally cannot. Words can be clear, but in order for words to be clearly understood, they must bring to mind visual images, which are concrete ideas. Concrete ideas are easier to understand and relate to the real world than abstract ideas.

Visuals’ third capability is prompting understanding of words. Visuals can also increase readers’ understanding, so they can check their comprehension of a step with an image indicating how it should be performed. One example of this understanding is seen by
those translating texts; translators can check the visuals to ensure accuracy and thus create better translations (Zanon 2002). This confidence helps translators and readers complete their tasks with less apprehension and a higher success rate.

Ultimately, visuals’ ability to clarify instructions is extremely valuable. Overall, visuals in instructions help users make fewer errors when performing tasks such as assembling models (Levie 1987), indicating that visuals have an enormous impact on users’ abilities to understand and perform tasks.

Visuals are perhaps the most valuable feature of instructional documents—they affect whether users are motivated to use the instructions and how well they accomplish the instruction’s procedures. Instructional visuals affect “comprehension, performance, and task attitude” regardless of the task involved (Fukuoka et al. 1999, 168). Illustrations in instructions can positively affect users’ learning of the steps necessary to complete tasks as well as their recall of those steps (Hartley 1985). Visuals can improve instructions; researching the effectiveness of different visual types is an especially worthwhile goal today. People have a special appreciation for visuals, and technology has advanced to the point that technical communicators can create a myriad of visuals.

**An advantageous time for using visuals**

Today, perhaps more than ever before, visuals have an ability to interest readers in ways that words do not, perhaps because of our growing interest in the visual world: Television, cinema, and video games have become mainstream forms of entertainment. Our culture is shifting, however slightly, towards accepting visuals as being as valuable as text. This shift is evident through the recent ISUComm initiative at Iowa State University, which involves teaching visual communication (among other types of communication) in first-year composition classrooms. We’ve also become more willing to accept that visuals are powerful. Users are probably more likely to accept largely visual texts today, which is perhaps indicated by the fact that the longest running sitcom television show ever is *The Simpsons* (CBS News), a cartoon on Fox that started in 1989 and is still on the air. This show’s status indicates that it has a large, probably loyal, audience—an audience who appreciates its cartoonish visual aspects.
Another example of the visual’s power in our culture was present in the last presidential election (in the wake of the September 11 attacks on the United States). Candidates (such as Democrat John Kerry and Republican George W. Bush) often appeared wearing flag pins to indicate their patriotism and devotion to their country. Presidential candidates now have image consultants because they realize that voters are influenced by aspects of their appearance (like what shirt they wear) as well as their platforms.

Also, the Internet hosts a variety of Web sites devoted completely to images—CuteOverload.com (http://www.cuteoverload.com), for instance, features images the webmaster finds “cute.” Thousands of users a day flock to the site just to look at these pictures. The site has drawn popular acclaim and has been written about in the Washington Post (Ahrens 2006). Overall, visuals in a variety of forms and circumstances are becoming a part of everyday life.

Visuals are more readily accepted as powerful communication tools today, and today is perhaps one of the most advantageous times for technical communicators to use this shifting belief to create better instructions—we now have sophisticated equipment at our fingertips to create well-designed images. Adobe InDesign is just one tool technical communicators use today for creating visuals that used to be drawn by hand. This technology gives us the ability to create visuals that are helpful as well as appealing to readers. We can use appropriate visuals to entice and motivate them to read instructions. We should look at visuals more closely because we can more easily use them.

Conclusion
Ultimately, technical communicators can use visuals to prompt readers to look at instructions. These visuals then clarify and motivate readers, helping them get through a task and accomplish it successfully, hopefully without frustration. The ability of visuals to motivate and clarify makes them invaluable; they need to be used effectively. In this vein, I examine user preference for and performance with cartoon-like images, photographs, and line drawings in instructions. More specifically, I answer two questions:

- What are preferences of Americans in various age groups for cartoon-like images, photographs, and line drawings in instructions?
What differences exist in the success that Americans under age 24 and over age 50 have completing instructions with cartoon-like images, photographs, and line drawings?

To answer these questions, in chapter two I examine cartoon-like images, particularly what they actually are and why Americans may have a negative view of them. I define the characteristics of cartoon-like images in relation to line drawings and photographs. Then I examine influences on the perceptions of Americans regarding these images in order to conclude that cartoon-like images can be helpful, but need further examination to be used well.

In chapter three, I present my research methodology for an electronic survey (to gauge perceptions of cartoon-like images) and a usability test (to determine performance levels with cartoon-like images in relation to line drawings and photographs).

In chapter four I discuss the results from my electronic survey. Results indicate that age influences Americans’ perceptions of the cartoon-like image, with the youngest demographic (15-24) and an older demographic (50+) holding negative perceptions of this type of visual.

In chapter five I present and analyze usability test results, which indicate that despite negative perceptions, cartoon-like images in instructions are actually usable; participants with these visuals had a high level of success.

Chapter six concludes my thesis. In this chapter, I discuss implications of my findings. I suggest that usability testing needs to be performed for each age group in an audience because their preferences will differ. I also discuss my methodology, and how it likely influenced my findings.
Chapter 2: Examining cartoon-like images

People are surrounded by images everyday. Many of these images are cartoon-like and aimed at a broad range of audiences. For example, new animated movies come out every year, some attracting a wide range of audiences—adults and children alike. Animated television shows are not only a Saturday morning event—they can be found on prime time and several cable stations. Food is advertised with cartoon-like images; breakfast cereals are often distinguished by the cartoon character on their box—for example, Cap’n Crunch Cereal is marketed by “The Cap’n” (Figure 2.1). He is an image with at least three of the five characteristics that make up my definition of cartoon-like images, a connotative nature, lack of realism, and personality, all of which I discuss later in this chapter.

The worlds of entertainment and marketing are not the only places cartoon-like images exist, however. Instructional documentation also often plays host to cartoon-like images. The instructions for a camcorder, for instance, may resemble some of the images we see on The Cartoon Network. My research question revolves around these cartoon-like images—I want to find out Americans’ preferences for these images, as well as for photographs and line drawings, in their instructional documents. In addition, I want to discover how well Americans perform with these three types of images.

In order to address my research question, I need to define the three types of images that I ask about in my survey and assess responses to in my usability test: photographs, line drawings, and cartoon-like images.

- **Photographs** are still images that have been recorded via a camera with film or digitally. These images may be altered via computer.
- **Line drawings** are realistic grayscale images featuring lines and shading, rendered by an artist or a computer program.
• **Cartoon-like images** are similar to line drawings in that they are rendered by an artist or computer program, but they have several defining characteristics that separate them from line drawings and other types of images. Cartoon-like images are iconic images from which we can infer multiple meanings. They lack realism, have personality, and use unique methods of emphasis.

"Cartoon-like images" require special attention because the technical communication literature is virtually silent about them. While cartoon-like images are similar in nature to line drawings (for example, they are both drawings that were traditionally done by hand before the advent of the computer), I differentiate cartoon-like images from line drawings because they have several characteristics that make them unique. For my purposes, I refer only to cartoon-like images in print, mainly because of their "permanent" visual qualities, which could increase usability (Williams 1995). Though some may feel that animated visuals merit research at this time due to their currency and their appeal, Neil Williams (1995) notes that print comics (which I argue later contain cartoon-like images, though in a paneled layout) are static and our viewing time of these images is not limited — unlike animated images, which stay visible only for moments. Actions and language on a printed page are relatively permanent, so readers can analyze the images and accompanying text at their own pace (Williams 1995). While users can easily hit rewind on the remote or keyboard to review a step, this is a hassle and takes time. If motivation is an important part of documentation, which I argue in the previous chapter, then print documentation’s use of cartoon-like images merits attention. When people use print instructions, they can go at their own pace and move on when they are ready; in contrast, animated instructions have a pre-determined pace and, thus, might discourage some people who may need more time.

In this chapter, I first explore a brief history of the cartoon, discussing how it has been defined throughout history. Then, I define cartoon-like images as they exist today, particularly in regard to print instructional documentation. I outline their characteristics in regard to types of visuals they might be confused with, such as comics and line drawings. By establishing what cartoon-like images are similar to, understanding them becomes easier. I then examine possible influences on American perceptions of cartoon-like images and suggest reasons why performance in completing instructional tasks with cartoon-like visuals may be enhanced.
Brief history of the cartoon drawing
Understanding cartoon-like images is aided by knowing their history. The first cartoon-like drawings were created in prehistoric times by cave dwellers in order to tell their stories—for example, their stories of successful hunts (Reitberger 1971). Egyptian hieroglyphics and other ancient languages also included cartoon-like illustrations (Reitberger 1971, Geipel 1972). Later, the cartoon-like drawing’s heritage can be seen in the caricature drawings of the Middle Ages—drawings done with “a few sharp lines” (Reitberger 1971, 11). Eventually, artists during the 18th and 19th centuries started using sequential pictures and speech balloons in political caricatures (Reitberger 11), creating cartoon-like images that are easily equated with the cartoons and comics of today.

In an effort to gain a better understanding of “cartoon-like,” I explore the term “cartoon.” Before 1840, cartoon referred to “any line drawing used as a preliminary for more finished work,” which today we might call a sketch, mockup, or layout (Geipel 1972, 13). However, the popular definition of “cartoon” has changed. Arguably, in the late 20th century Americans began to associate the term “cartoon” with “a severely simplified, elliptical kind of drawing” (Geipel 1972, 41). Others in the late twentieth and early twenty-first centuries associate “cartoon” with comics or animated television shows.

- **Comics.** One popular understanding of cartoon-like images refers to comics. For my purposes, the term “comics” refers to comic strips, comic books, graphic novels, and graphic albums. Comics, a form of sequential art, tell a story through a sequence of images, which is their main defining aspect. Pop culture icons such as Batman, Superman, and Spider Man began in comics—and we tend to associate comics with superheroes. However, this was not always the case. Some comics, for example, have had educational purposes. M. C. Gaines established his company, Educational Comics, in 1945, and published “sequential art stories” concerning the Bible (the Bible as a comic book was a bestseller) and historical events such as the Civil War (Reitberger 1971, 139; Roberts 2004, 211).

- **Animation.** Another popular definition of cartoon-like image deals with animated television shows. Television has affected the definition of “cartoon-like”—an
animated television show is referred to as a cartoon. Figures like Bugs Bunny and Mickey Mouse have come to represent what we mean when we say “cartoon”—originally in movie cartoons and more recently on television and in videos. The word “cartoon” might bring to mind Saturday mornings filled with rambunctious rabbits who always thwart the “bad guy” in an implausible manner. These cartoon shows often flout the rules of reality—for instance, Wile E. Coyote always manages to float in the air for at least five seconds before he looks down at the ground, which invariably is the cause for his falls off cliffs (Taylor 2001).

Though animated and static images have similar visual power, I differentiate them for my purposes. The static cartoon-like image probably is more closely related to the historical definitions of “cartoon” I previously discussed. However, my definition goes beyond these to further clarify “cartoon-like images” through a presentation of their characteristics and differentiation from related images.

**Characteristics of cartoon-like images**

What are cartoon-like images? They have five major definitive characteristics:

- They are iconic, which means that they visually reflect, or look like, what they represent.
- They have connotations, which means that users can infer meanings from them that are in addition to their intended meanings.
- They lack realism, so the images are sometimes distorted or exaggerated.
- They have personality, which is conveyed by aspects such as facial expression.
- They use unique methods of emphasis such as shock lines and spatial distortion.

Table 2.1 shows these characteristics. These characteristics are not necessarily exclusive to cartoon-like images—they just tend to be found much more often in cartoon-like images than other images that appear in instructional documentation. For example, a line drawing has the capability to show personality, but in an instructional setting, it rarely does so (see Figure 2.4). Photographs and line drawings do not tend to have these characteristics, though individual examples of them might.
Thus, these characteristics are useful for defining cartoon-like images. First, I examine cartoon-like images’ iconic nature, which is defined through the semiotic framework developed by Charles S. Peirce.

**Iconic nature of cartoon-like images**

Charles S. Peirce (1991) categorizes images into three types:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Cartoon-like Images</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Semiotics</strong></td>
<td>Iconic</td>
</tr>
<tr>
<td><strong>Interpretation</strong></td>
<td>Many connotations though obvious denotation</td>
</tr>
<tr>
<td><strong>Realism</strong></td>
<td>Generalizes or abstracts to the point of being unrealistic</td>
</tr>
<tr>
<td><strong>Personality</strong></td>
<td>Conveys a sense of personality or expression</td>
</tr>
<tr>
<td><strong>Methods of creating emphasis</strong></td>
<td>Distorts or emphasizes particular elements by, for example, representing them as abnormally large or surrounded by “shock lines” to draw attention.</td>
</tr>
</tbody>
</table>

- **Index**: an image that arises from what it signifies; for example, indexical images include representations that occur because of an event. Bear tracks on a sign, for instance, are indexical. They physically show what happens when a bear is in an area (it can leave tracks), so a bear could be around; the meaning extends beyond the bear tracks. Similar indexical images, such as an image of crossed-out smoke indicating that burning of waste (or other items) is not permitted in an area (fire cause smoke), may require cultural knowledge to understand.

- **Symbol**: an image that does not look like what it signifies, but meets a set of conventions; symbolic images meet cultural conventions and, thus, also require cultural knowledge in order to understand them. The triangle is a common North American-Western European convention that indicates danger.

- **Icon**: an image that looks like what it signifies; for example, iconic images resemble their physical counterparts and are likely to be effective because they show a process, object, and single task concretely. Figure 2.2, of a girl raising her hand, is an iconic image of a girl raising her hand.
image of a single action (if its intention is to show a picture of a girl raising her hand, and communicate this idea) because it looks like a girl raising her hand—it does not use a convention we would have to previously understand (so it’s not symbolic), and it does not necessarily arise from another situation, such as the previous example of a bear paw indicating the presence of a bear (so it’s not indexical).

Peirce would probably label most cartoon-like images as iconic. Cartoon-like images certainly look like the objects or scenarios they represent. From childhood, we are able to associate cartoon-like people with actual humans and understand that they represent the same thing. For example, Elmer Fudd is understood by most viewers to represent a man, even though he is cartoon-like and lacks certain elements of realism—for example, his nose is rounder than an actual human’s nose (Figure 2.3). Interpreting cartoon-like images can, at times, require less cultural knowledge than interpreting symbolic or indexical images. However, despite their usually obvious meanings, cartoon-like images generally have more possible connotations than other types of technical documentation images.

**Connotative nature of cartoon-like images**

Denotation and connotation can be used to differentiate the cartoon-like image from other images. Denotation refers to direct, obvious, or literal meanings. For example, in the line drawing Figure 2.4, the user is clearly supposed to understand that one should lift the sink with a partner.

![Figure 2.3 Elmer Fudd (The Unofficial Looney Tunes World)](image)

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Connotation refers to interpretations of images that go beyond the direct, obvious, or literal—that is, meanings that derive from socio-cultural interpretation or personal interpretations affected by a person’s nationality, ethnicity, race, gender, age, education, political views, religious practices, sexual orientation, and so on. In Figure 2.4, additional connotative meanings are possible though not expected (or easy).

Because cartoon-like images are iconic, they are effective as instructional images. Thus, users can understand the intended instructional meaning of these images. Cartoon-like images might be good instructional images. By having several connotations, some perhaps humorous, cartoon-like images could be motivational and interesting. For example, the telephone (a cartoon-like image) shown in Figure 2.5 can have more than one connotation. One possible connotation is that using this telephone is fun, which can be ascertained by the phone’s smile and overall happy demeanor. Another possible connotation is that using the phone is easy, which can be ascertained through the same means. The Cap’n of Cap’n Crunch cereal (Figure 2.1) is another example of connotation. The Cap’n is smiling as he eats the cereal, which seems to indicate the cereal is tasty and good. In addition, the Cap’n himself is a whimsical character (he is the captain of a ship, that in the brand’s commercials, often bursts into a room with his cereal). This whimsicality allows users to connote that eating the cereal is fun. Another connotation might be that children will enjoy it because it appears to be fun to eat.

A characteristic of cartoon-like images is their ability to inspire several interpretations, or connotations, which aren’t the main (perhaps instructional) meaning of the image.

**Realism**

The next, and perhaps most identifiable, aspect of cartoon-like images is their lack of attention to realism. For example, these images can be distorted to make one aspect stand out, or they can bring to life inanimate objects. Cartoon-like images’ characteristics include the humanization of inanimate objects, such as Figure 2.5, which shows a telephone with human features. The lack of reality in this image indicates it’s a cartoon-like image. In
addition, the figure has a personality; it appears happy. This idea of personality is another defining characteristic of the cartoon-like image, which I discuss next.

Spatial relationships are also often not drawn realistically in cartoon-like images. The building in Figure 2.6, though it is realistically a lot bigger than the person, is shown as only slightly taller than the person with the camcorder. This spatial distortion allows the picture to show both the whole building and a clear picture of the person doing the action. This lack of realism is a characteristic of the cartoon-like image that is also seen in Figure 2.1 of the Cap’n—his eyebrows are on his hat, which is clearly not possible and not a feature of real humans. In addition, his raised eyebrows indicate personality, the next characteristic of the cartoon-like image.

**Personality**

As I mentioned previously, cartoon-like images also have “personality,” whereas line drawings tend to not. With the term “personality,” I refer to emotions and demeanor. This concept of personality can be applied to cartoon-like images of both humans and inanimate objects.

*Humans*

Images of humans can help to distinguish cartoon-like images and line drawings. As seen earlier in figure 2.4, the drawing of two men lifting a sink, line drawings of people tend to be solemn, with little or no facial expression. These people have no easily discernible emotion or personalities. This line drawing is found in an IKEA manual; in contrast, later in the manual cartoon-like images of human-like creatures appear (Figure 2.7). The personality
shown in the cartoon-like images of Figure 2.7 is probably not necessary; one could likely still ascertain the drawing’s denoted meaning—if users have questions, they should call the store. However, users can also ascertain connotative meanings from these images, such as that calling the store will be a pleasant experience, which can be interpreted through the figure’s change of expression from puzzlement to contentment (shown with the frown and question mark that go away in favor of a smile).

For another example, recall Figure 1.1, of Bach Man, the master railroader, who has a friendly personality, which is indicated by his smile. Bach Man’s apparently friendly demeanor is perhaps meant to encourage users to call the phone number he states if they have more questions. Another cartoon-like image of a human with personality is Figure 2.8. This drawing is more obviously human because it has ears and eyebrows, which the previous Figure 2.4 (a line drawing) does not. This human cartoon-like image displays a pleasant personality, which is seen through the upturn of her mouth and the raised eyebrows. One might deem this woman to be helpful due to these facial personality characteristics. Other connotations might include relations to people a user might know, such as a favorite teacher or a friend who resembles the drawing.

Inanimate objects
The distinction between cartoon-like image and line drawing is also seen in the drawings of inanimate objects. Line drawings of inanimate objects tend towards the technical—they show clearly, and generally only, what is there, perhaps so that the user can easily identify the object (Figure 2.9). The wine cabinet in Figure 2.9 is just that, a fully assembled wine cabinet. Interpreting this image in multiple ways is difficult, particularly since in its original context, it appears next to a title, “wine cabinet.” In contrast, this cartoon-like
image of a VCR (Figure 2.10) clearly shows personality. The VCR is probably afraid of the hand doing something wrong in the picture, which can be seen through its raised eyebrow and sweat. Personality is present in this and most cartoon-like images.

**Methods of emphasis**

Cartoon-like images emphasize aspects differently than line drawings as a general rule. Line drawing images use call-outs and circles to show detail. Cartoon-like images are more likely to abnormally enlarge a portion of an image to show its detail, or draw attention to it through the use of personality. For example, this visual of a frayed AC line (Figure 2.11) emphasizes that portion of the image through shock-reaction lines, a sort of personality that shows the object is ‘in pain’ or expressing a feeling, likely a bad feeling. In this instance, the image explains that the cord should not be used if it is damaged. This example also uses arrows and labels in the drawing to indicate the important aspects. These could also appear in a line drawing, but it would probably be done in a simpler format that does not have stylized arrows, for example. A more traditional line drawing style of emphasis is the call-out, which can be seen in Figure 2.12.

Cartoon-like images have a variety of characteristics that distinguish them from other types of drawings. The cartoon-like image, according to Peirce’s terminology, is iconic. It tends to have several connotative meanings. The cartoon-like image also exhibits a lack of realism, has personality, and uses unique methods of
emphasis that set it apart from line drawings. Further defining cartoon-like images becomes easier by comparing them with related visuals. In this vein, I differentiate the cartoon-like image from comics and traditional cartoons. Cartoon-like images differ from comics because of layout; cartoon-like images don’t have to be presented in a paneled page layout, while comics do. They differ from the traditional cartoon because their main purpose is to inform or instruct, not humor and entertain.

Differences between the cartoon-like images and comics
Although the terms “cartoon-like” and “comic” are sometimes used interchangeably, they define two separate forms of art. A “comic” or “comic strip” uses cartoon-like images in a sequence and generally uses speech bubbles.

Although the illustrations in both cartoon-like images and comics can be very similar, “cartoon-like images” refer to the images themselves (which may include related text) whereas “comics” includes a distinct narrative that is conveyed in a series of panels (also called sequences of frames, cameos, or cells) (McCloud 1993, Geipel 1972, Reitberger 1971). The narrative in a set of instructions illustrated with cartoon-like images does not need to meet the supra-textual panel-based design of the comics. Cartoon-like images do not necessarily have to appear in panels. These images can stand alone, appear in a series, and be paired with text. This accompanying text does not, for example, have to be in “speech balloons” (Geipel 1972, 14), a convention of comics. Cartoon-like images appear in comics, but they can also appear in other types of documents—such as instructional documents and traditional cartoons, as I discuss next.

Difference between cartoon-like images in instructions and traditional cartoons
Another distinction that further defines cartoon-like images is the difference between traditional cartoons and cartoon-like images in instructions. The traditional purpose of cartoons is to entertain. Some of the visual conventions used to create humor include physical distortion and exaggerated facial expressions. The text is often conveyed in speech balloons, much like the aforementioned comics.

Though traditional cartoons and cartoon-like images have many similarities, they differ in purpose. While the cartoon aims to entertain or delight, the main purpose of
cartoon-like images in instructions is to inform (or instruct). While the cartoon’s conventions can make the important parts of cartoon-like images easier to understand, their primary purpose in the cartoon-like image is emphasis, not humor. For example, cartoon text is often made up of jokes, while the words accompanying cartoon-like images tend to not be humorous.

Now that I have defined cartoon-like images, I discuss perceptions of these images in the United States.

**Perceptions of cartoon-like images**

In the United States, popular opinion suggests that Americans have a decided preference for “serious” visuals, which include line drawings and photographs, in instructional manuals. In this thesis, I explore whether this preference actually exists or if it is myth. If the preference does exist, is it influenced by the usability of the images, or a cultural bias? Perceptions of cartoon-like images in the United States could be affected by culture and aesthetics instead of usability. Other countries, for example, Japan, often use cartoon-like images in their instructional documents (Lombard 1992).

Cartoon-like images (or “manga”) are often used to describe technical tasks in Japanese technical manuals. Why do the Japanese use these images? According to Catherine Lombard, they use manga images in manuals because Japanese consumers view these cartoon-like images as fun—the Japanese do not want to read a lot of text because they live in a very visual culture—for example, they have to memorize thousands of symbols to read their language (1992). American textbooks agree with the cartoon-like image’s description as “fun,” but they do not necessarily advocate this as a good impression. In English and American cultures, textbooks about instructional design, such as James Hartley’s *Designing Instructional Text* (1985), tend to focus on cartoon-like images’ ability to positively affect perception, but cast doubt over their ability to increase performance (85-6). Hartley acknowledges, though, that more research needs to be performed in this area for conclusions about cartoon-like images to be confidently made (86).

Despite a lack of definitive research, conventional wisdom suggests that using cartoon-like images in American manuals may show a lack of respect for users by suggesting that they cannot comprehend technical diagrams; some believe cartoon-like
images attract and motivate only “less able” users (Hartley 1985, 85). This conclusion might exist because of the stereotype that only children like cartoon-like images—a stereotype that may have developed somewhat recently because cartoon-like images (in comics) were originally intended for and favorably read by adults. Children were strongly discouraged from reading comics due to subject matter concerns (Reitberger 1971, 7). Hence, ascertaining where the stereotype originated is difficult.

Despite this stereotype of the adult who does not like comics or cartoon-like images, one study shows that 86 percent of users would not mind cartoon-like illustrations in a manual (Fukuoka et al. 1999). Those surveyed, however, were mostly under the age of 30, suggesting that a generational gap may exist in the opinions surrounding cartoon-like illustrations (Spyridakis 1999). This generational gap might be affected by culture and aesthetics.

**Culture**

If the stereotype of the adult who does not like cartoon-like images is true, it may be because of a cultural bias against cartoon-like images in the United States. If so, preference may not have much to do with the quality or usability of cartoon-like images. The ethos of a visual is affected largely by viewer perceptions, not necessarily the level of precision or artistry a visual presents. Cultural perceptions play a large role in the initial impression that instructions present, and pre-determining how a particular audience will react to certain images can be difficult (Kostelnick 1995). Two schools of thought exist about perception:

- The *global approach* “posits that visual language can be designed for disparate audiences by activating the perceptual capabilities of the eye and brain.”
- The *cultural approach* holds that language is a social construct that is learned (Kostelnick 1995).

Basically, these two approaches are associated with modernism and postmodernism, respectively. In a practical environment, these two approaches tend to overlap; thus, we need to always consider cultural aspects while creating illustrations (Kostelnick 1995).

Culture likely plays a large role in visual choices in the United States. Perhaps a reason for a cultural dislike of cartoon-like visuals in our texts deals with their usual purpose; most visuals of this sort occur for decorative purposes. For example, see the
cartoon-like image in the previously seen Figure 2.8. Its purpose appears to be fairly decorative—she does not instruct or show users what to do.

American readers may like their visuals to help explain text, while Japanese readers find visuals that are present for purely aesthetic appeal completely acceptable (Maitra and Goswami 1995). Beautifying documents through the use of visuals is a commonly accepted Japanese practice—in America, it might not be as commonly accepted. This lack of acceptance for the decorative visuals is evident through a simple Google search for visuals in instructions. Results, when they show instructional visuals at all, tend to show line drawings showing exactly how to assemble products, with little or no embellishment.

**Aesthetics**
Another influence on Americans’ possible cultural bias is aesthetics. Aesthetics play a large role in cultural influences, particularly because people do not tend to think about aesthetics—they’re everywhere in a culture. According to Charles Kostelnick (1995), “likes and dislikes are embedded in a larger aesthetic sensibility that readers acquire and value through a process of acculturation” (187). These judgments about aesthetics play a role in perceptions of instructional documents and may influence users to choose one set of visuals over another, perhaps even if users’ typical performance with a type of visual is poor. Because of a possible disparity in aesthetic perceptions and usability, perception and performance need to be tested in order to determine whether “what we like” is really “what works best.”

**Considering cartoon-like images**
If conventional wisdom suggests that cartoon-like images in instructions are a poor choice, then don’t we already know that we don’t like these images? No, one type of user help guide (see Figure 2.13) exists that suggests cartoon-like images are a good idea for Americans—the popularity of the “For Dummies” series of instructional manuals suggests that readers want to enjoy themselves as they learn how to perform tasks—they want to have “joyful experiences” (Steehouder and Loorbach 2004, 101). A 2004 study (Steehouder and Loorbach) suggests that we have little to lose by trying.
to give users such experiences. Performance with instructions designed to be motivational and enjoyable in this study was equal to performance with instructions that were not modified, and test participants reported an increased appreciation of the motivational version (Steehouder and Loorbach). Of course, we have to consider that this study was based in the Netherlands, not the United States.

The popularity of the “Dummies” series might be at least partially attributable to its use of cartoon-like images. Cartoon-like images have the capability to be motivational for at least some audiences (like the Japanese, as I discussed earlier), and performance with these visuals may be enhanced for some audiences. Ultimately, we are already using cartoon-like images in documentation today (the “Dummies” series, for example)—further examination of the issue is surely warranted.

Why might cartoon-like images be motivational? The style of these images can create interest in readers and keep their attention through their unique method of teaching or showing information; that is, “the “unreal quality of scenery and action stimulates imagination” (Reitberger 138, 141). The increased inferences (or connotations) that can be drawn from cartoon-like images due to their lack of realism and presence of personality may create a more motivational experience for users. If users can infer a humorous or pleasant meaning from images, they may have a more enjoyable time with the instructions.

Some technical communicators may not feel that user enjoyment is an important concern, but research in the medical field suggests that the use of cartoon-like images helps patients better understand prescription instructions (Delp and Jones 1996). Patients given cartoon-like instructions had higher motivation to read the instructions—in this study, 98 percent of patients with the cartoon-like instructions read these instructions, versus the 74 percent who read the non-cartoon-like instructions. In addition, comprehension was dramatically increased for cartoon instruction readers—46 percent of the cartoon-like instruction patients able to answer all questions about their medications correctly versus 6 percent of those without the cartoon-like instruction version who were able to answer all questions about their medications correctly.

In addition, studies show that instructions with cartoon-like visuals generally don’t hurt users (Levie 1987); users report that they aesthetically appreciate facial caricatures no more or less than photographs. In addition, at least one study “found that cartoon drawings
that ‘distorted the figure to emphasize the essential spatial relationship involved’ were perceived more rapidly than photographs and line drawings” (Levie 1987 p.16).

Enhanced performance with cartoon-like images
As I previously argued, performance with cartoon-like images does not appear to be outrageously poor. In fact, it may be enhanced. Besides the possibility of experiencing enjoyment, user performance with cartoon-like images is likely to be enhanced for two reasons. First, cartoon-like images (and all line drawings) tend to show only the important details, in contrast to the extremely high level of detail a photograph shows (Manning 1998, Levy 1987). Users are selectively “blind” to unnecessary details that they can subconsciously fill in for themselves anyway, thus users have less work to do with a drawing that leaves out these aspects (Taylor 2001, 48). A less complicated image is simply easier to process; it will hold fewer alternate (and potentially distracting) associations than a highly detailed image might (Taylor 2001). This lack of detail allows for clarity that would need to be added extraneously, in a completely separate process, to a photograph. One example of added clarity in a photograph is an arrow that is added to indicate motion. The process of adding the arrow is separate from the process of creating the photograph, and perhaps creates extra work for a technical illustrator.

Second, user performance with cartoon-like images might be enhanced because cartoon-like images are more related to language and text than photographs (Manning 1998). Thus, when we see photographs we picture images, while when we see cartoon-like drawings we see concepts or ideas—like processes for a task and how to do things. This relation occurs because while a photograph is a direct image of a real object, a cartoon-like image is a human’s representation of that object that may use conventions to get across ideas (see, for example, Figure 2.14, a cartoon-like image of a storm, featuring the

![Figure 2.14 Drawing of lightning](image-url)

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1 When I say that a photograph is a direct image of a real object, I do not mean that it directly reflects reality. I mean that while it is a representation, it is arguably a more realistic representation than a drawing—it may be less subjective, for instance, because it is largely a mechanical process, though of course, a mechanical process directed by a human cannot be totally objective.
convention of jagged lightning to indicate severity). Written language is also a representative drawing—letters in the alphabet were arbitrarily chosen to represent sounds, which form words, which represent ideas. The idea that concepts and drawings are very related is perhaps best seen when we remember that language as we know it today was started by cave dwellers drawing images of animals on cave walls (Berryman 1926).

**Our present use of cartoon-like images**

Performance with cartoon-like images may be enhanced, an idea that certainly warrants further review. In addition, cartoon-like images are already present in our documentation. We need to look at these images to see how well we perform with them. A good example is “Clippy,” the Microsoft Word helper paper clip. Clippy is an example of an animated cartoon-like image. Despite its animated status (I’m only considering print images), its visibility (most people seem to be aware of it) makes it a good frame of reference for cartoon-like images in documentation.

Considerable ire surrounds the use of this help avatar—very few people seem to prefer it over the Microsoft Word help index. One study suggests that this dislike may not be related to his status as a cartoon-like image, but because Clippy is a paper clip, an inanimate object that lacks human features, which interferes with users’ social interactions with the medium (Dharna et al. n.d.). In this undated study, researchers compared the use of three images to determine preference (based on user anxiety levels) and usability (based on user error). These images were chosen according to the human-like characteristics and realistic aspects of onscreen avatars. The images included an object (a space craft), a genie, and a photo-realistic human image. Results found that the object fared the worst, with users making more errors and experiencing the most anxiety when using it for help purposes. Nisha Dharna and her colleagues conclude that this is likely because the space craft object did not have human features, which users prefer in social interactions. In sum, people might prefer to receive their help from human-like images, whether they are cartoonish or realistic. Cartoon-like images may be viewed poorly because several of them are objects. If Clippy were replaced with a human-like cartoon character, such as a genie, users may be more apt to like the option of having an onscreen avatar help them with software issues. Americans
might not be opposed to all cartoon-like images; certain cartoon-like images (such as non-human objects) may influence a negative popular opinion for all cartoon-like images.

Conclusion
In sum, users in the United States are already using cartoon-like images—technical communication scholars need to fill the gap in visual rhetoric and documentation literature to explore the cartoon-like visual and its propensity for increasing motivation and clarity. In this chapter, I defined the characteristics of the cartoon-like image. The cartoon-like image is similar to a line drawing, but contains a lack of realism, as well as unique personalities and different methods of emphasis. The cartoon-like image is distinguishable from comics because it doesn’t require a paneled layout; it’s different than a cartoon because its main purpose is to inform and instruct, not entertain by creating humor.

If Americans do in fact perceive cartoon-like images negatively, they may be more opposed to the purpose they see cartoon-like images serving (decorative) than the images themselves. Cartoon-like images need to be explored further; they are not hurtful, but have been shown to be helpful (Delp and Jones 1996). In the next chapter, I explain my methodology for uncovering Americans’ perceptions of cartoon-like visuals and their performance success using cartoon-like visuals. In chapters four and five I discuss the findings of my electronic survey on perceptions of visuals (Americans are fairly unified in their opinions, which change depending upon the rhetorical situation and their age) and my usability test findings about performance (performance with cartoon-like images was somewhat more successful for my participants). Finally, I discuss the possible implications of these findings.
Chapter 3: Establishing my methods

Both electronic surveys and usability testing are often used in professional communication to answer questions; these methods are valuable and popular tools for gathering knowledge (e.g., Dumas and Redish 1999, Schriver 1997, Burnett 1994). For my purposes, however, each method falls short of the goal of helping me to gather knowledge to answer my research question. Because I ask two research questions (one about preference and the other about performance with instructional visuals), I use both methods of research in order to best answer my questions; the electronic survey provides qualitative data about preferences, and the usability test provides qualitative data largely about performance.

These two methods allow me to narrow in on both parts of my question in a way that using only one method would not let me do. Using an electronic survey allows me to gather information from a large number of respondents, but it only gives me information about what respondents think, not what they actually do. Using a usability test allows me to gather information about what respondents do, but it provides much less data from fewer respondents. Using both methods allows me to cast a wider net in my research and discover what many respondents think in comparison to what some respondents actually do.

Using both methods, in sum, allows me to answer both research questions—I collect information about both preference and performance. In the electronic survey, I gather responses related to preference and perception of visuals. In the usability test, I gather first-hand information about the way participants perform with three different types of visuals (cartoon-like images, photographs, and line drawings) in instructions.

As a part of my research process, I submitted my plans for research and received IRB exemption in the spring of 2006 (Appendix A). In submitting my plans, I created two documents: the email request to do the survey as well as the survey itself (Appendix B). In my research process, I created eight more documents: a consent form for the usability test, two usability questionnaires, an email request for usability participants in the older demographic group, and a follow-up email request for the same group (Appendix C). I also created three sets of instructions using the three types of visuals (Appendix D).

In this section, I outline my methodology to analyze the data to answer my research questions:
What are preferences of Americans in various age groups for cartoon-like images, photographs, and line drawings in instructions?

What differences exist in the success that Americans under age 24 and over age 50 have completing instructions with cartoon-like images, photographs, and line drawings?

Answering my research question required two types of research, a survey and usability testing.

**Electronic survey**

I used an electronic survey to collect participants’ perceptions of different visuals because an electronic survey (instead of paper) has several benefits, such as recipient group size, response rate, and time.

**Benefits**

Because my survey was electronic, I was able to distribute this survey to a larger group (429 participants) than would have been possible with hard copies of a survey. Emailing the survey to the Department of English staff and faculty list as well as first-year composition course lists was easier than hand delivering the survey to each person. Using an electronic survey greatly increased the number of participants I was able to survey, which increased the number of individuals who responded, particularly with the preparations I made to help this response rate.

**Response rate**

Response rates for Internet-based surveys have been found to be either comparable or somewhat lower than for traditional mailed surveys (e.g., Kwak and Radler 2002, Sheehan and Hoy 1999, Smith 1997). I’ve attempted to mitigate this effect through my test groups’ knowledge of and convenient access to technology. These participants’ access to and familiarity with the University’s email system may have helped survey response rates (Solomon 2001). In addition, the survey engine (PHP Surveyor) allowed me to easily send out reminder emails to those who had not yet completed the survey within a predetermined period of time (six days).
**Time**
The turnaround time for Internet-based surveys is faster than for print surveys (Kwak and Radler 2002). The survey went out on a Wednesday afternoon (April 26, 2006). By the next Monday evening, I had 72 responses (17%), so I sent out a reminder message to those who had not yet responded, yielding an overall response rate of 24 percent.

In addition, results of the electronic survey are input directly into an Excel worksheet for analysis. This greatly reduces the time needed to analyze survey results from my student and adult participants.

**Survey engine**
The survey engine was PHP Surveyor — freeware, which made it particularly attractive to me as a student researcher. I used the resources of the eServer, a system set up and maintained by Dr. Geoffrey Sauer at Iowa State University. Dr. Sauer was helpful in the survey implementation process, assisting me with setting up and maintaining the survey. He showed me how to input questions into the survey, create answers, and he gave me advice about at what time I should distribute the survey to garner a higher response rate (a Tuesday morning).

I also chose to use PHP Surveyor because it allowed me to create a survey to which participants responded only once. PHP Surveyor attaches unique tokens (in this case, 10-character numeric strings) to each participant's email address. When a participant submits the survey, his or her token becomes inactive so he or she cannot take it again. The numeric string tokens were long enough to dissuade users from taking the survey, then trying out random token numbers to try to take it again.

**Test groups**
I chose to study two groups in my survey: (1) faculty, staff, and graduate students in the English department, and (2) first-year composition students. The first group was chosen for two reasons: convenience and age. The Department of English maintains several email lists that reach faculty, staff, and graduate students. I used one such listserv to solicit survey participants. The second reason I chose this group was age—the group contains several participants who are aged 50 and above, a target group for my research question. This
allowed me to compare older participants’ responses with those of younger participants—
first-year composition students.

I also chose first-year composition students for age and convenience. Most of these
students are freshmen below the age of 20. This target age range represents a young
generation that has spent most of its life with computers in the home. The group is also
convenient for me to survey because most instructors of these courses are graduate students
who were willing to give their students a link to my survey, increasing the chance that
students would respond.

Each of the two age groups has easy access to email, which brings up a possible
bias—how does one make sure members of the survey group are not biased because of their
experience with email? I addressed this issue through my section of questions about
computer experience. I asked all participants about their experience (whether high or low)
to see if self-reported experience coincides with any other survey responses. Although I’m
clearly leaving out an audience who is completely computer illiterate, the convenience of a
computer-based survey outweighed the lack of this audience’s point of view. The
conclusions I draw from my research take this missing audience into account because I
consider the influence of computer experience.

Survey questions
I designed the survey questions (see Appendix B) to determine three points: respondent
age/gender, respondent’s familiarity and experience with computer programs, and
respondent’s perceptions of appropriate instructional visuals for others and him or herself.
The survey contains 15 questions, which I determined in pilot testing to be the number a
participant could reasonably answer in a brief amount of time. According to pilot test
participants, the survey takes approximately 10 minutes to complete.

I administered my pilot test to one male (age 25, B.A. in sport management) and one
female (age 22, B.A. a senior in journalism and mass communication). These participants
took the test on Sunday, April 16. They reported no confusion with the survey questions
and were able to answer all the questions. They liked not having to write responses, leading
me to believe that using multiple choice and ranking of options was appropriate, at least the
younger age groups. I also thought that a short survey would encourage more responses,
which was supported by the fact that my pilot test participants answered every question on the survey.

**Age/gender**

Questions about age and gender were very important in my survey because my research question asks about participants’ perceptions of visuals. The research by Waka Fukuoka, Jan H. Spyridakis and their colleagues suggests that age makes a difference when judging the appropriateness of cartoon visuals (1999). Including sex allowed me to consider whether a gender disparity exists in participants’ answers. Each of these questions helped me determine what age groups and sex would be useful for usability testing.

- Please indicate your sex.
- Please identify your age range.

**Experience and familiarity with computer programs**

A possible influence on perception of cartoon-like images is use of computer programs and participants’ skills with them. Questions about the participants’ experience and familiarity with computer programs allowed me to determine whether the Internet or use of complex technology (like types of software) might have a connection with a person’s perception of cartoon-like images. Use of the Internet may cause increased exposure to cartoon-like images, as the Internet is global and sites based in Japan may feature cartoon-like images, such as Japanese manga, more frequently. Also, an assumption exists that less-skilled users (for instance, those less skilled with computers) would prefer cartoon-like images (Hartley 1986). Asking questions about computer use and skill enables me to speculate about these factors and how they might influence perceptions of instructional visuals.

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  - Above Average
  - Expert
• Rate your level of experience using photoediting software. Please choose only one of the following:
  o None
  o Below Average
  o Above Average
  o Expert

• How frequently do you use computers for entertainment (i.e., playing games and/or surfing the Internet)? Please choose only one of the following:
  o Never or seldom
  o Occasionally
  o Often
  o Very often

• How frequently do you use computers for work-related or school-related tasks? Please choose only one of the following:
  o Never or seldom
  o Occasionally
  o Often
  o Very often

• When you encounter a question with a computer program, how frequently do you seek assistance (e.g., online help, manual, people)? Please choose only one of the following:
  o Never or seldom
  o Occasionally
  o Often
  o Very often

• How old were you when you started using computers? Please choose only one of the following:
  o 15-19 or earlier
  o 20-24
  o 25-29
• When using the computer for entertainment, rank the options listed below in order of frequency of use (1 as most). Please do not rank options that you do not use. Please number each box in order of preference from 1 to 7
  o Playing war-like games, like Call of Duty
  o Playing card games, like Solitaire
  o Playing simulation games, like Sim City
  o Downloading music or watching music videos
  o Actively using an instant messenger program
  o Blogging
  o Using a personal profile site, like Facebook

• Rank the following software in order of your frequency of use (1 as most). Please do not rank software that you do not use. Please number each box in order of preference from 1 to 7
  o Microsoft Word
  o Adobe Photoshop
  o iMovie
  o Macromedia Flash
  o Adobe InDesign
  o Microsoft Excel
  o Other program
Perception of appropriate visuals
I ask questions using five scenarios in order to determine each participant’s perceptions of appropriate visuals in different situations. I ask which visuals would be most appropriate in a variety of situations, with audience, purpose, and context specified in each question.

I asked respondents to rank order visuals—cartoon-like image, line drawings, photographs—in the order they would choose to use them (1=probably my first choice; 3=probably my last choice) for five scenarios. In the survey, each scenario is followed by a list of these three types of visuals that respondents could electronically rank order.

Videogame directions. You’re creating a manual for a new videogame for 8- to 12-year olds. You have to make a decision about what kind of visual to include in the section about operating the game’s control buttons. Assuming all the visuals are well-done, please rank the three visuals below in the order you would choose to use them (1=probably my first choice; 3=probably my last choice).

Chainsaw manual. You’re working on a manual for new chainsaw owners and have to make a decision about what kind of visual to use. What kind of visual would you like to use to illustrate basic safety procedures? Assuming all the visuals are well-done, please rank order the three visuals below.

Restaurant safety sign. You’re working on a safety sign for a restaurant kitchen and have to make a decision about what kind of visual to use for workers who need to be reminded to wash their hands regularly. What kind of visual would you like to use? Assuming all the visuals are well-done, please rank order the three visuals below.

Medical instructions. You’re working on an instruction sheet about a new process for people with diabetes to self-monitor their glucose levels. What kind of visual would you like to use? Assuming all the visuals are well-done, please rank order the three visuals below.

Camcorder visuals. Imagine this situation: You're using your camcorder and need to know how to change the date and time. What kind of visual would you like to help explain how to solve the problem you're having? Assuming all the visuals are well-done, please rank order the three visuals.

I designed these scenarios in such a way that they would be sufficiently different in audience, purpose, and context, so that I could speculate on possible reasons respondents
made their choices. These questions allow me to identify possible influences on participant’s perceptions, such as whether a risky situation influences participants’ choices of appropriate visuals.

**Management of survey responses**

On May 5, 2006 (eleven days after distributing the survey via email), I downloaded the responses from the PHP Surveyor program on the eServer Web site. Because of the settings I used in the PHP Surveyor program, the responses submitted were not connected with the identities of individual respondents; thus, I was able to determine who responded but the responses themselves were compiled in the spreadsheet.

Because the download entered the results into a text file, which I found unusable for my purposes, I saved the document as an Excel file on both my laptop and flash drive. Storing it in two places gave me a back-up copy in the event of computer failure.

In compliance with the IRB policies, no one had access to the files except for me and my major professor. These files will be safeguarded and accessed for future research projects.

**Analysis of survey responses**

I analyzed my survey results using Excel tools. My main method of analysis included counting types of responses (e.g., “Who selected photographs as most preferred in scenario two,” etc). I also sorted the information in order to discover what other answers these respondents chose (i.e., if they chose cartoon-like images as most preferred for scenario one, I wanted to see their demographic responses and computer experience responses).

After analyzing survey results, I conducted a usability test using knowledge I gained from the survey. While the survey is a valuable research tool, providing me with data on demographic groups’ preferences and possible relationships between factors such as computer use and perceptions of cartoon-like images, conducting a usability test in addition to the survey allowed me to test actual use of these images. Because I posed two research questions (in essence, one asking about subjects’ perceptions of instructional visuals and the other asking about their performance with them), my research methods need to help me answer both. While the electronic survey gives me answers about perceptions, it cannot answer questions about performance. I could ask these questions in the survey, but answers
might not be honest—whether intentional dishonesty or just a lack of knowledge influencing people’s responses. Hence, a usability test gives me information about participant performance with visuals that allows me to answer the second question: “What differences exist in the success that Americans under age 24 and over age 50 have completing instructions with cartoon-like images, photographs, and line drawings?”

**Usability test**
The goal of the usability test was to determine whether the type of visual used in the instructions affected user performance with the instructions. The difficulty of finding suitable English material for this test should be noted. Ultimately, I conducted the test using material from pages 27 and 28 of Canon’s manual for the Elura 50 camcorder (Canon 1999). In this section, I discuss the usability test in detail, including the materials used, my scenario for the test, and the demographic groups I tested.

**Materials**
Three documents were used in the usability testing for each participant: a set of instructions, a pre-test questionnaire, and a post-test questionnaire. The instruction sets were developed from the Canon Elura manual (pages 27-28), which contains information about how to hold the camera, how to pan, and how to tilt (in order to create better videos). I only tested participants on tasks included in the instructions; participants did not need any additional knowledge about the Canon Elura to accomplish the tasks successfully.

I pilot tested the usability test materials (the two questionnaires and the scenario) using the same participants who pilot tested the survey, (1) a 25-year-old male with a BA in sport management, and (2) a 22-year-old female who is a senior in journalism and mass communication. These participants experienced no comprehension problems with the questionnaires or the scenario (including the script).

**Instructions**
I tested three types of instructional visuals: cartoon-like images, line drawings, and photographs. In searching for a suitable set of instructions to test, my main criteria were the visuals in the instructions and the availability of the product used in the instructions. The original Canon Elura manual contains cartoon-like images, and the camcorder is available
for check-out from the Department of English. Hence, I chose the Canon Elura camcorder manual for my usability test. I took the information from pages 27 and 28 of the Canon Elura manual and combined it into a single page. Figure 3.1 shows the original pages.

Figure 3.1 Original Canon Elura manual pages

Figure 3.2 shows my revision of instructions to focus only on panning and tilting, still using Canon’s cartoon-like images. I used Macromedia Flash to clean up the cartoon-like images from the original version, which were blurry (see Figure 3.2). A blurry visual would make the visual less easy to figure out and give participants a negative impression that could influence my results. Clearer visuals would enable participants to focus on the function of the image, not the quality of its reproduction. The final version of the cartoon-like image version of the instructions can be seen in Figure 3.3.
Tips for Making Better Videos

Holding the Camera

For maximum stability, grip the camera in your right hand and keep your right elbow pressed against your body. If necessary support the camera with your left hand. With practice, you will be able to operate the controls by touch, without taking your eye off the viewfinder.

Camera moves

Use pans to record a landscape or follow a moving subject. Stand at the end of the moving subject's path and turn to face the subject. After a few seconds of running, turn slowly from the waist. Hold the final image for a few seconds before you stop recording.

Tilt the camera up to exaggerate the height of the subject. For example, to introduce a building, you might start the recording at the top of the building and after a few seconds begin to focus downward toward the ground. Hold the final image for a few seconds before you stop recording.

Figure 3.2 Original version of cartoon-like images

Figure 3.3 Revised version of cartoon-like images

I created two alternate versions of the instructions—maintaining the original text and overall design but changing the cartoon images to photographs in one version and to line drawings in the other. I took the photographs using Lisa Heitzman, a Rhetoric, Composition, and Professional Communication master’s student, as a model. I created the line drawings from the photographs using Adobe Photoshop’s “photocopy” filter. Figures 3.4 and 3.5 show the photograph and line drawing versions of the instructions. These can also be found in Appendix D.
**Tips for making videos**

**Holding the camera**

For maximum stability, grip the camera in your right hand and keep your right elbow pressed against your body. If necessary, support the camera with your left hand. With practice, you will be able to operate the camera by touch, without taking your eye off the action.

**Camera moves**

Use pans to record a landscape or follow a moving subject. Decide the area you want to cover and position the center of your panning angle. Without moving your feet, turn your waist to the starting position, then record, and after a few seconds begin to turn slowly from the waist. Hold the final image for a few seconds before you stop recording.

Tilt the camera up to exaggerate the height of the subject. Tilt down from the top of a building, for example, as an introduction to subjects at the bottom.

---

**Questionnaires**

In order to gain perception responses to these three sets of instructions, I constructed a pre-test and post-test questionnaire. I decided to use questionnaires instead of interviews in the interest of speed. The faster I could complete each test, the more tests I could conduct and the more information on which I would have to base my results.

**Pre-test**

The pre-test questionnaire gathers demographic data from the participant (see Appendix C). In this questionnaire, I ask seven questions: the participant’s age and sex, frequency of computer use, tendency to seek help when encountering problems with tasks, frequency and type of computer game use, and educational status. With these questions, I gain information about these possible influences on perceptions of the instructions used during the test by comparing responses to test outcomes.

**Post-test**

With the post-test questionnaire (Appendix C), I gather data from the participant about his or her perceptions of the instruction set’s helpfulness and proficiency with camcorders. This questionnaire contains four questions, a number that does not seem overwhelming to
participants, which I noted with my actual test participants. I only asked this small number of questions because I wanted to ensure participants would answer all of them. I felt that too many questions would gather incomplete responses or a rejection of the questionnaire altogether. Because at this point the usability test has already been conducted, a considerable time investment on both my participants’ and my part, the participants’ willingness to give me more time at this point is important. Thus, the final version of the questionnaire was brief.

Scenario
After participants filled out the pre-test questionnaire, I started the test scenario. The test scenario asked participants to use the instructions (and the camera moves therein) to film footage of a hallway or room. To increase the number of participants able to take the test, I did not use any specific building for testing. Instead, tests were administered in places convenient for the participant (Ross Hall, Carver Hall, the Food Science Building, a park, and at a participant’s home).

All tests, except for one, were performed indoors due to inclement weather, particularly high winds, which interfere with the audio recording capabilities of the camcorder. In addition, heat and humidity were abnormally high during the weeks of testing, so participants may have been reluctant to participate if the tests had taken place outdoors.

Conducting the tests in several locations does not affect the results because the instructions do not tell participants they have to film particular objects. The instructions do suggest filming a landscape or moving object—neither of which were readily available for any test participants. The term “landscape” indicates a sense of distance; participants, including the one who filmed in the park, did not have any large open areas in which to film something at a distance. I did not gauge success according to the objects they chose to film as possible replacements for these objects if they could not find a moving object or landscape. For these reasons, location of the test was not an influence on participant success.

Participants videotaped as part of the tasks and, thus, recorded their comments and time themselves (I employed a think-aloud protocol). This recording diminished the need to videotape participants, as participant comments were recorded and their recorded footage
indicated whether they understood the instructions. Allowing participants to record their comments themselves helped me make sure I caught all the comments, particularly if they chose to wander down a hallway away from me. The camcorder is thus always close enough to them to catch what they say. This use of the test camcorder to record testing is also a time-saving method. Using another camcorder would require extra time for set up. Finishing tests in less time allowed me to test more participants, which increased the spread of participants in my research.

Script
I used the same basic script for each usability test so that I could reduce variations in what I said the participant was supposed to do in the test. Of course, when I say “area,” I inserted the actual location the test was taking place. Generally some pleasantries were traded before I started with the script. I did this (for example, “How are you?”) to make participants feel comfortable. I explained the think-aloud protocol to participants by saying that it basically means that participants should talk about what they’re thinking at all times. I told them that they could say anything they wanted about the instructions and shouldn’t worry about offending me.

What we’re doing is called a think-aloud protocol. [If they know what it is, I stop explaining it here.] Basically, while you’re doing the tasks, I want you to talk about what you’re thinking. For example, if you think something in the instructions sucks, feel free to say it. If you find something interesting, say it. Questions about this?

What I want you to do is film this hallway [or room, or area] using these instructions. If you need some sort of motivation for why you would be doing this, imagine that you are creating stock footage [of the area] for an organization that could be using this footage to do things such as make an argument that [area] needs improvement. You are done when you believe you’ve followed all of the instructions. Please turn the record function on the camera on now; it’s the big, red button.

Then I gave the participant the instruction sheet and let him or her start.
Participants
I conducted the usability test on two groups of participants, individuals ages 15-24 and individuals ages 50 and older.

Younger demographic group
The younger demographic group for this usability test had 14 participants. Eleven were from a technical communication class and two were from a business communication class. The instructors of these classes allowed me to take the participants out of their classes for my test. Results from one participant were removed from the data set because she was a nontraditional student—35 years old—in an undergraduate class. Table 3.1 identifies the age and sex of each participant in the younger demographic, as well as the instruction type they tested.

Table 3.1 Younger demographic participant details

<table>
<thead>
<tr>
<th>Participant</th>
<th>Age</th>
<th>Sex</th>
<th>Instruction type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Darryl</td>
<td>21</td>
<td>Male</td>
<td>Cartoon</td>
</tr>
<tr>
<td>Stacy</td>
<td>20</td>
<td>Female</td>
<td>Cartoon</td>
</tr>
<tr>
<td>Caleb</td>
<td>22</td>
<td>Male</td>
<td>Cartoon</td>
</tr>
<tr>
<td>Rick</td>
<td>24</td>
<td>Male</td>
<td>Cartoon</td>
</tr>
<tr>
<td>Keisha</td>
<td>22</td>
<td>Female</td>
<td>Photo</td>
</tr>
<tr>
<td>Ken</td>
<td>22</td>
<td>Male</td>
<td>Photo</td>
</tr>
<tr>
<td>Donnie</td>
<td>24</td>
<td>Male</td>
<td>Photo</td>
</tr>
<tr>
<td>Bobby</td>
<td>22</td>
<td>Male</td>
<td>Line drawing</td>
</tr>
<tr>
<td>Gabe</td>
<td>20</td>
<td>Male</td>
<td>Line drawing</td>
</tr>
<tr>
<td>Tom</td>
<td>20</td>
<td>Male</td>
<td>Line drawing</td>
</tr>
</tbody>
</table>

After explaining that participation was entirely voluntary for each student, I distributed the IRB-approved form to obtain participant permission. I then distributed the pre-test questionnaire. After the questionnaire was filled out, I explained the scenario to the participant. The scenario was explained aloud to the participant as a timesaving method; the less time each test took, the more participants I could test. As explained before, a camera that I had already turned on and set with the correct settings to tape was given to each participant with one of the three instruction sheets. When finished, the student filled out a
post-test questionnaire (Appendix C), which, as I previously discussed, asked him or her about the usability test he or she had just completed. Specifically, this questionnaire includes questions about the participant’s preference for the instructions, their use of the instructions, and their proficiency with camcorders.

**Older demographic group**
The second group of participants (detailed in Table 3.2) fit into the older demographic — age 50 and older. Participation was solicited through the Department of English’s listserv “englchat,” which reaches many of the faculty, staff, and graduate students in the department. The same procedure used with the under-24 age group was used when testing these 50-and-over individuals. Of the participants, two were graduate students, one was a staff member, five were professors or instructors, and one was a graduate student’s spouse.

**Table 3.2 Older demographic participant details**

<table>
<thead>
<tr>
<th>Participant</th>
<th>Age</th>
<th>Sex</th>
<th>Instruction type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kara</td>
<td>59</td>
<td>Female</td>
<td>Cartoon</td>
</tr>
<tr>
<td>Debbie</td>
<td>53</td>
<td>Female</td>
<td>Cartoon</td>
</tr>
<tr>
<td>Carla</td>
<td>59</td>
<td>Female</td>
<td>Cartoon</td>
</tr>
<tr>
<td>Sam</td>
<td>55</td>
<td>Male</td>
<td>Photo</td>
</tr>
<tr>
<td>Sandra</td>
<td>58</td>
<td>Female</td>
<td>Photo</td>
</tr>
<tr>
<td>Derek</td>
<td>61</td>
<td>Male</td>
<td>Photo</td>
</tr>
<tr>
<td>Walker</td>
<td>50</td>
<td>Male</td>
<td>Line drawing</td>
</tr>
<tr>
<td>Melinda</td>
<td>51</td>
<td>Female</td>
<td>Line drawing</td>
</tr>
<tr>
<td>John</td>
<td>58</td>
<td>Male</td>
<td>Line drawing</td>
</tr>
</tbody>
</table>

Testing both the younger and older demographic groups allowed me to look at my results and consider age as a possible influence on performance with the instructional visuals.

**Management of usability testing**
To manage the results of my usability test, I grouped documents from the test (compliance forms and questionnaires) according to their age group (younger and older). I used two tapes for the testing so I would not confuse the younger group with the older group, also. I also sorted my the usability testing results by assigning each participant a random name.
that seemed age-appropriate and started with the same first letter as their real name. This practice allowed me to easily associate participant responses with the participant.

After all tests were completed, I downloaded the tapes to a computer, then used Windows Movie Maker to separate clips according to participant and age. Then, I burned a DVD with these clips for easier access and storage. In compliance with the IRB policies, no one had access to the tapes except for me. These files will be safeguarded and accessed for future research projects.

**Analysis of usability testing**
I recorded information from participant questionnaires (pre-and post-test) and associated them with participant performance, comments, and my observational comments from the usability test. I calculated mean, median, mode, and standard deviation of data concerning time during my research in order to find patterns in this data.

**Conclusion**
Because the older demographic group is largely from the Department of English, some of these people are technical communication scholars or have familiarity with the area. These people are in my discourse community and thus may have been more likely to understand what I was asking them to do in the scenario and what I expected from them. This understanding could have contributed to the older demographic’s outcomes (mainly successful) in the usability test. This effect may be negated due to the fact that the participants in the younger group who were members of a technical communication class were at the time of testing studying usability. Because of this, they had some knowledge of usability testing and were possibly able to understand what I was doing because of it. However, ultimately it is difficult to judge these effects on the test’s outcome.

In the next two chapters I discuss the results of my electronic survey and usability test. These methods allowed me to gain appropriate information to answer my research questions about Americans’ perception of and performance with cartoon-like images, photographs, and line drawings in instructions.
Chapter 4: Examining survey results

In my research, I examine perceptions of cartoon-like images in the US and ask an important question: “What are preferences of Americans in various age groups for cartoon-like images, line drawings, and photographs in instructions?” To answer this, I needed to determine people’s perceptions of cartoon-like images, which I did with an electronic survey. In this chapter, I report the survey’s results, identifying who prefers cartoon-like images and in what situations they feel such images are “most preferable” or “most appropriate.” I define “most preferable” or “most appropriate” as the choice respondents identified as “most helpful” on a three-point scale, with three being the lowest score and the equivalent to “least helpful.” Respondents rated cartoon-like images alongside photographs and line drawings to determine which type of visual they felt was “most helpful” for five scenarios, which I describe later.

In conducting the electronic survey, I emailed 429 potential respondents (see Chapter 3 for demographic details). Of the 111 actual respondents (25% of the 429 potential), I struck seven from the data set due to incomplete responses. So I analyzed 104 responses (24%). Survey respondents responded to three types of questions:

- demographic—I asked respondents about their sex and age.
- scenario ranking—I asked respondents to rank visual types that they would choose to use for five scenarios, on a scale of “most helpful” to “probably least helpful.”
- computer experience—I asked respondents about their experience with computers, including their proficiency with different programs and the computer activities (e.g., game play) they engage in.

In this chapter I identify people’s preferences for cartoon-like images, photographs, and line drawings in instructions. Specifically, I discuss my primary findings:

- Seven age groups expressed negative perceptions about cartoon-like images (they chose it as least preferable overall 50 percent or more of the time); the two groups of interest were those under the age of 24 and those over the age of 50.
- Only two groups expressed more positive than negative perceptions about cartoon-like images, those age 30-34 and those age 60-64.
• Though age and a sense of safety seemed to influence respondents’ perceptions, other factors such as sex, tendency to seek help, skill level, and exposure appeared to have little influence.

In my discussion, I initially examine the demographic information (sex and age) and computer experience in relation to scenario rankings, which enables me to identify who chooses cartoon-like images and in what scenarios they make which choices. After determining the age and sex of respondents who self-reported most and least preferring cartoon-like images, line, drawings, or photographs, I analyze survey results to identify possible influences on these respondents’ positive perceptions of particular images, such as their tendency to seek help, perception of safety, skill level, and exposure to cartoon-like images in computer and video games.

In sum, this chapter answers my first research question: “What are preferences of Americans in various age groups for cartoon-like images, photographs, and line drawings in instructions?” In my survey, I discover that age plays a role in preference, but sex does not for my respondents. The tendency to seek help, skill level, and exposure to cartoon-like images in computer and video games does not seem to play a strong role in preference for visuals.

**Respondents and scenarios**
Respondents self-identified their age range and sex. The 104 responses I analyzed were reasonably balanced by sex—56 were from females and 48 from males. Table 4.1 identifies the 104 respondents’ self-identification of age and sex.
I used my survey to gather information about respondents’ preferences for different types of instructional visuals and compared this information with their self-identified age, sex, and computer experience. To determine preference for specific types of visuals, the respondents rank ordered cartoon-like image, line drawings, photographs in the order they chose to use them (“1=probably my first choice; 3=probably my last choice”) for five scenarios. In the survey, each scenario was followed by a list of these three types of visuals (cartoon-like image, photograph, line drawing) that respondents could electronically rank order.

Videogame directions. You’re creating a manual for a new videogame for 8- to 12-year olds. You have to make a decision about what kind of visual to include in the section about operating the game’s control buttons. Assuming all the visuals are well-done, please rank the three visuals below in the order you would choose to use them.

Chainsaw manual. You’re working on a manual for new chainsaw owners and have to make a decision about what kind of visual to use. What kind of visual would you like to use to illustrate basic safety procedures? Assuming all the visuals are well-done, please rank order the three visuals below.

Restaurant safety sign. You’re working on a safety sign for a restaurant kitchen and have to make a decision about what kind of visual to use for workers who need to be reminded to wash their hands regularly. What kind of visual would you like to use? Assuming all the visuals are well-done, please rank order the three visuals below.
Medical instructions. You’re working on an instruction sheet about a new process for people with diabetes to self-monitor their glucose levels. What kind of visual would you like to use? Assuming all the visuals are well-done, please rank order the three visuals below.

Camcorder visuals. Imagine this situation: You're using your camcorder and need to know how to change the date and time. What kind of visual would you like to help explain how to solve the problem you're having? Assuming all the visuals are well-done, please rank order the three visuals.

Using respondents’ answers to these five scenarios as well as their responses to the other aforementioned types of questions, I am able to speculate on possible influences on their preferences for instructional visuals.

Preferences related to sex and age
First, I examine the overall findings—that is, the composite preferences of the 104 respondents. Then I provide a close-up view by examining the respondents’ choices separated by sex and, finally, their choices separated by age. Table 4.2 and Figure 4.1 show which respondents chose each visual as “most preferable” for each of the five scenarios. The line drawing was chosen most often as “most preferable” for each scenario.

As the last column of Table 4.2 indicates, overall the survey respondents chose cartoon-like images as “most preferable” 24 percent of the time, photographs as most preferable 32 percent of the time, and line drawings as most preferable 44 percent of the time.

Table 4.2 Number and percentage of respondents selecting each type of visual as most preferable

<table>
<thead>
<tr>
<th>Type</th>
<th>Videogame directions</th>
<th>Chainsaw manual</th>
<th>Restaurant safety sign</th>
<th>Medical instructions</th>
<th>Camcorder visuals</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cartoon-like image</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>50</td>
<td>5</td>
<td>41</td>
<td>10</td>
<td>18</td>
<td>124</td>
</tr>
<tr>
<td>Percentage</td>
<td>48%</td>
<td>5%</td>
<td>39%</td>
<td>10%</td>
<td>17%</td>
<td>24%</td>
</tr>
<tr>
<td>Photograph</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>22</td>
<td>50</td>
<td>20</td>
<td>47</td>
<td>29</td>
<td>168</td>
</tr>
<tr>
<td>Percentage</td>
<td>21%</td>
<td>48%</td>
<td>19%</td>
<td>45%</td>
<td>28%</td>
<td>32%</td>
</tr>
<tr>
<td>Line drawing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
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<td>49</td>
<td>43</td>
<td>47</td>
<td>57</td>
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</tr>
<tr>
<td>Percentage</td>
<td>31%</td>
<td>47%</td>
<td>41%</td>
<td>45%</td>
<td>55%</td>
<td>44%</td>
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</tbody>
</table>
Figure 4.1 shows respondents' visual choices for each of the five scenarios. For the first scenario (the videogame instructions), the cartoon-like image was perceived as most favorable. In contrast, for the chainsaw manual, respondents felt that the photograph was most appropriate. Shifting again for the restaurant safety sign and for the camcorder visuals they'd use themselves, participants chose the line drawing as most preferable, though respondents chose cartoon-like images as a close second in the restaurant safety sign scenario, while they chose line drawing dramatically more often for the camcorder scenario. Finally, in the scenario about instructions for using a medical device respondents chose photograph and line drawing as equally as most preferable. According to my overall survey results, respondents most frequently chose line drawings as “most preferable” (for scenarios 3, 4, and 5); they chose cartoon-like visuals as “most preferable” the least number of times (for scenario 1, only), as can be seen in Figure 4.1.

Figure 4.1 Percent each visual was chosen as most preferable for each scenario

**Preference related to sex**

Sex could be a factor in respondents’ visual preferences; however, it didn’t seem to affect these survey respondents’ preferences for instructional visuals. Respondents’ preferences delineated by sex can be seen in Table 4.3.
Of the 15 choices (three possible visuals for each of the five scenarios shown in Table 4.3), males and females were similar in their visual preferences in 11 instances. Males and females were consistent in their preferences for videogame directions, the chainsaw manual, medical instructions—regardless of the type of visual. Their agreement was also obvious in preferences of line drawings for restaurant signs and photographs for camcorder instructions. Males and females disagreed about visuals in four instances: cartoon-like images and photographs for restaurant signs as well as cartoon-like images and line drawings for camcorder visuals.

Table 4.3 Number and percent of female and male respondents selecting each type of visual as most preferable

<table>
<thead>
<tr>
<th>Type</th>
<th>Videogame directions</th>
<th>Chainsaw manual</th>
<th>Restaurant safety sign</th>
<th>Medical instructions</th>
<th>Camcorder visuals</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cartoon-like image</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>female</td>
<td>28</td>
<td>3</td>
<td>25</td>
<td>6</td>
<td>13</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>50%</td>
<td>5%</td>
<td>45%</td>
<td>11%</td>
<td>23%</td>
<td>27%</td>
</tr>
<tr>
<td>male</td>
<td>22</td>
<td>2</td>
<td>16</td>
<td>4</td>
<td>5</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>46%</td>
<td>4%</td>
<td>33%</td>
<td>8%</td>
<td>10%</td>
<td>20%</td>
</tr>
<tr>
<td>Photograph</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>female</td>
<td>12</td>
<td>26</td>
<td>8</td>
<td>27</td>
<td>15</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>21%</td>
<td>46%</td>
<td>14%</td>
<td>48%</td>
<td>27%</td>
<td>31%</td>
</tr>
<tr>
<td>male</td>
<td>10</td>
<td>24</td>
<td>11</td>
<td>20</td>
<td>14</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>21%</td>
<td>50%</td>
<td>23%</td>
<td>42%</td>
<td>29%</td>
<td>33%</td>
</tr>
<tr>
<td>Line drawing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>female</td>
<td>16</td>
<td>27</td>
<td>23</td>
<td>23</td>
<td>28</td>
<td>117</td>
</tr>
<tr>
<td></td>
<td>29%</td>
<td>48%</td>
<td>41%</td>
<td>41%</td>
<td>50%</td>
<td>42%</td>
</tr>
<tr>
<td>male</td>
<td>16</td>
<td>22</td>
<td>20</td>
<td>24</td>
<td>29</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>33%</td>
<td>46%</td>
<td>42%</td>
<td>50%</td>
<td>60%</td>
<td>46%</td>
</tr>
</tbody>
</table>

As can be seen in Table 4.3, both men and women in my study exhibited relatively minor differences in their perceptions of the appropriateness of each type of instructional visual. Both men and women were nearly equally likely to prefer or not prefer a cartoon-like image for most of the scenarios.

When somewhat large differences in percentages exist, they don’t mean men and women ordered their preferences for visual types differently; for example, in my study, more women (23 percent) than men (10 percent) selected cartoon images as “most preferable” when choosing an image to use themselves. However, this difference does not appear to be indicative of a larger pattern of preference because both groups ranked the visuals in nearly the same order overall (line drawing first, then photograph, then cartoon-like image for both sexes). When other differences arose, they were usually minor.
percentage differences that didn’t affect the groups’ identical preference order. For example, for the chainsaw manual scenario, women chose the line drawing as most preferable (48 percent), the photograph next (46 percent, only two percentage points fewer), then the cartoon-like image last. Men chose the photograph first (50 percent), then the line drawing (46 percent, only four percentage points fewer than their first choice), and then the cartoon-like image. Hence, the totals for line drawing and photograph preference were very close, so they probably don’t indicate a major difference in preference.

Preference related to age
Age appears to be a major factor in respondents’ perceptions of cartoon-like images, which can be seen in Table 4.4 and 4.5 and Figures 4.4 and 4.5. Of particular note in these results is the positive response that those in the age ranges of 30-34 and 60-64 had for the cartoon-like image.

Age was a major division of preference in my survey, as can be seen in Table 4.4. The youngest groups, those 15-19 and 20-24, chose the cartoon-like image as “most preferable” 20 percent and 22 percent of the time, respectively. Next, the 25-29 age group also chose the cartoon-like image 22 percent of the time. The next group, those age 30-34 chose the cartoon-like image as most preferable 44 percent of the time. The 35-39 group drops back to 22 percent, and the next two groups’ choices, 40-44 and 45-49, drop more to 10 and 16 percent. The 50-54 age group chose the cartoon-like image 23 percent, and the next group, made up of those 55-59, chose it only 20 percent. The 60-64 age group chose the image 40 percent of the time, while the last age group, 65-69, chose it 20 percent.
Table 4.4 Number and percentages of respondents in each age group who rank the cartoon-like image as most preferable each scenario

<table>
<thead>
<tr>
<th>Age (number of respondents)</th>
<th>Videogame directions</th>
<th>Chainsaw manual</th>
<th>Restaurant safety sign</th>
<th>Medical instructions</th>
<th>Camcorder visuals</th>
<th>Total times cartoon-like image was chosen as best</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ages 15-24 (38)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>18</td>
<td>1</td>
<td>13</td>
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<tr>
<td></td>
<td>47%</td>
<td>3%</td>
<td>34%</td>
<td>11%</td>
<td>8%</td>
<td>21%</td>
</tr>
<tr>
<td>15-19 (25)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>2</td>
<td>1</td>
<td>25</td>
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<td></td>
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<td>36%</td>
<td>8%</td>
<td>4%</td>
<td>20%</td>
</tr>
<tr>
<td>20-24 (13)</td>
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<td></td>
<td></td>
<td></td>
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<tr>
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<td></td>
<td>38%</td>
<td>8%</td>
<td>31%</td>
<td>15%</td>
<td>15%</td>
<td>22%</td>
</tr>
<tr>
<td>Ages 29-49 (44)</td>
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<td></td>
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<td></td>
</tr>
<tr>
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<td>2</td>
<td>18</td>
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</tr>
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<td></td>
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<td>0</td>
<td>60%</td>
<td>10%</td>
<td>30%</td>
<td>22%</td>
</tr>
<tr>
<td>30-34 (9)</td>
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<td>22%</td>
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<td>44%</td>
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<td></td>
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<td>3</td>
<td>1</td>
<td>1</td>
<td>12</td>
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<td></td>
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<td>27%</td>
<td>9%</td>
<td>9%</td>
<td>22%</td>
</tr>
<tr>
<td>40-44 (5)</td>
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<td>10%</td>
</tr>
<tr>
<td>45-49 (9)</td>
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<td>7</td>
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<tr>
<td></td>
<td>44%</td>
<td>0</td>
<td>33%</td>
<td>0</td>
<td>0</td>
<td>16%</td>
</tr>
<tr>
<td>Ages 50-69 (21)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>2</td>
<td>10</td>
<td>2</td>
<td>6</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>43%</td>
<td>10%</td>
<td>48%</td>
<td>10%</td>
<td>29%</td>
<td>28%</td>
</tr>
<tr>
<td>50-54 (6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>2</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>50%</td>
<td>0</td>
<td>33%</td>
<td>17%</td>
<td>17%</td>
<td>23%</td>
</tr>
<tr>
<td>55-59 (9)</td>
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<td></td>
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<td></td>
</tr>
<tr>
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<td>4</td>
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</tr>
<tr>
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<td>33%</td>
<td>0</td>
<td>44%</td>
<td>0</td>
<td>22%</td>
<td>20%</td>
</tr>
<tr>
<td>60-64 (6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>50%</td>
<td>33%</td>
<td>50%</td>
<td>17%</td>
<td>30%</td>
<td>40%</td>
</tr>
<tr>
<td>65-69 (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>100%</td>
<td>100%</td>
<td>0</td>
<td>0</td>
<td>20%</td>
</tr>
</tbody>
</table>

Three age groups chose cartoon-like images as most preferred more often than they chose it as least preferred — including those age 30-34 and those age 60-64, which can be seen in Figure 4.2. In addition, the 65-69 age group chose similarly, but because this group is made up of one respondent, this result may not be easily generalized to the larger public.
Figure 4.2 Cartoon-like image preference by age range

The percent of the time each age group chose cartoon-like images as least preferable is seen in Table 4.5. The youngest group, those age 15-19, chose it as the least preferable visual an overall 59 percent of the time. Following closely behind them is the next age group of 20-24-year-olds, who chose it as least preferable 55 percent of the time. Next, those age 25-29 had similar results, choosing it 52 percent. Bucking this possible pattern is the 30-34 age group, who chose it as least preferable only 33 percent of the time. The 35-39 age group feels quite differently; they decided the visual was least preferable 60 percent of the time, as did the 40-44 age group. Following closely behind is the 50-54 group, who report it as least preferable 57 percent. Those ages 55-59 chose it as least preferable 49 percent, while those age 60-64 seem to agree with the 30-34 age group, choosing the cartoon-like image as least preferable only 33 percent of the time. The last age group, 65-69, chose it zero percent of the time, but this age group is made up of only one respondent.
The two groups in my survey who chose the cartoon-like image as most preferable the most times are those age 30-34 and 60-64. According to my survey, respondents age 30-34 chose cartoon-like images as most preferable 44 percent of the time. Intriguingly, the male/female ratio for respondents age 30-34 was about even (four male, five female). Thus, the response is not affected by any preconceptions that women may be more likely to choose cartoon-like images than men. As can be seen in Figure 4.2, the age 30-34 group and
age 60-64 group chose cartoon-like image as most preferable more times than they chose it as least preferable. This finding indicates a preference for these types of visuals.

Why do these two groups, whose age is 30 years apart, have similar preferences? A possible interpretation of these data is that the more education a person has, the more likely he or she is to accept cartoon-like images as possibly helpful and thus prefer it over the other instructional visuals. This interpretation is supported by the fact that the older respondents (60-64) in my survey (who have a high level of education) were among the least likely to choose the cartoon-like image as least preferable for any situation (only 33 percent of the time, which matches the percentage of the 30-34 age group) (see Table 4.4).

Preference related to computer experience
In this section I outline respondents' self-reported behaviors related to using software, playing computer games, and seeking help in conjunction to preferences for various types of images. I asked respondents questions about their experiences with computer programs, which cover three areas:

- Using software proficiently
- Playing computer games
- Seeking help

Responses to these questions allow me to see patterns related to skill-level at tasks, exposure to cartoon-like images, and experiences with types of help in conjunction with a respondent’s likelihood of choosing a cartoon-like image as most preferable for him- or herself. In this section, data on choosing cartoon-like images as most preferable for oneself comes from the rankings for scenario five, which asks about camcorder instructions intended for the survey respondent. This scenario is a worthwhile tool for discovering perceptions of visuals because common sense suggests respondents may choose images for others (such as for the children in scenario one) that they would not choose for themselves. This idea is seen in the fact that in the 15-24 age group, who dislikes the cartoon-like image the most, 47 percent found it most preferable for the children of scenario one, but only 8 percent found it most preferable for themselves in scenario five (Table 4.4). In fact, overall 49 (47 percent) respondents found the cartoon-like image most preferable for the children of
scenario one, while only 18 (17 percent) chose it as most preferable for themselves in the situation of scenario five.

**Preference related to using software proficiently**
In this section, I examine what may have influenced these 18 respondents to choose the cartoon-like visual for themselves while so many others, specifically 65 respondents (63 percent) chose it as least preferable. Influences I examine are related to computer use and the tendency to seek help.

All 104 respondents stated that they used computers for work or school-related tasks either “often” or “very often.” I expected this response because of nearly all the respondents’ involvement in higher education—as students, staff, or instructors.

Twelve respondents, or 67 percent, who chose the cartoon-like image for themselves report “above average” experience with photo-editing software. In addition, seventeen of the eighteen respondents, or 94 percent, report “expert” or “above average” skills with word processing software. These high levels of computer skills suggest that more experience/proficiency with photo-editing/design software may be a factor in preference for cartoon-like images. Thus, though cartoon-like images are often seen as being best for those who are less-skilled at tasks (Hartley 1986), this is a misperception according to my respondents.

**Preference related to playing computer games**
Overall, 55 respondents in my survey (53 percent) reported that they play games that use animation and cartoon-like images (like *The Sims* or *Call of Duty*). This game-playing does not seem to have any relationship with being more likely to choose cartoon-like images as most preferable for personal use. More than half of respondents (53 percent, or 29 of 55) who report playing these games ranked cartoon-like images as least preferable for scenario five, which asks about the type of visuals one would prefer in camcorder visuals for him- or herself. In contrast, only 28 percent (or 5 of 18) of respondents who play these games ranked a cartoon-like image as most preferable in this scenario. Thus, at least for the respondents in this survey, more exposure to cartoon-like images in computer games made respondents less likely to prefer these images in their own instructional materials.
Preference related to seeking help
Whether respondents choose to use help—in the form of manuals, online help, asking a friend, or any type of help the user thinks of as instructional—may have an influence on their choices of visuals. One might assume that respondents will choose images that they encounter most often as most preferable. Thus, if respondents never use help, they have little on which to base their preferences except popular opinion. In this section, I first look at who has a tendency to seek help. Then I look at the five scenarios to determine any relation between a tendency to seek help and the choice of cartoon-like images as most preferable in that scenario. Table 4.6 details who reports seeking help according to sex and age.
Table 4.6 Percent of respondents who seek help according to frequency separated by sex and age

<table>
<thead>
<tr>
<th>Age range (number of respondents)</th>
<th>Never or seldom</th>
<th>Occasionally</th>
<th>Often</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall 56 female 48 male</td>
<td>14</td>
<td>43</td>
<td>30</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>5f 9%</td>
<td>22f 39%</td>
<td>19f 34%</td>
<td>10f 18%</td>
</tr>
<tr>
<td></td>
<td>9m 19%</td>
<td>21m 44%</td>
<td>11m 23%</td>
<td>7m 15%</td>
</tr>
<tr>
<td>Ages 15-24 (38)</td>
<td>10</td>
<td>16</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>26%</td>
<td>42%</td>
<td>24%</td>
<td>8%</td>
</tr>
<tr>
<td>15-19 (25)</td>
<td>6 (1f)</td>
<td>13 (7f)</td>
<td>4 (2f)</td>
<td>2 (0f)</td>
</tr>
<tr>
<td></td>
<td>24%</td>
<td>52%</td>
<td>16%</td>
<td>8%</td>
</tr>
<tr>
<td>20-24 (13)</td>
<td>4 (11)</td>
<td>3 (3f)</td>
<td>5 (4f)</td>
<td>1 (0f)</td>
</tr>
<tr>
<td></td>
<td>31%</td>
<td>23%</td>
<td>38%</td>
<td>8%</td>
</tr>
<tr>
<td>Ages 25-49 (44)</td>
<td>2</td>
<td>19</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>5%</td>
<td>43%</td>
<td>25%</td>
<td>27%</td>
</tr>
<tr>
<td>25-29 (10)</td>
<td>0</td>
<td>6 (4f)</td>
<td>2 (1f)</td>
<td>2 (2f)</td>
</tr>
<tr>
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<td>0</td>
<td>60%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>30-34 (9)</td>
<td>0</td>
<td>2 (0f)</td>
<td>4 (3f)</td>
<td>3 (2f)</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>22%</td>
<td>44%</td>
<td>33%</td>
</tr>
<tr>
<td>35-39 (11)</td>
<td>1 (0f)</td>
<td>5 (2f)</td>
<td>2 (0f)</td>
<td>3 (1f)</td>
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<tr>
<td></td>
<td>9%</td>
<td>45%</td>
<td>18%</td>
<td>27%</td>
</tr>
<tr>
<td>40-44 (5)</td>
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<td>2 (2f)</td>
<td>1 (0f)</td>
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<td></td>
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<td>40%</td>
<td>40%</td>
<td>20%</td>
</tr>
<tr>
<td>45-49 (9)</td>
<td>1 (11)</td>
<td>4 (2f)</td>
<td>1 (1f)</td>
<td>3 (3f)</td>
</tr>
<tr>
<td></td>
<td>11%</td>
<td>44%</td>
<td>11%</td>
<td>33%</td>
</tr>
<tr>
<td>Ages 50-69 (21)</td>
<td>2</td>
<td>8</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>10%</td>
<td>38%</td>
<td>48%</td>
<td>10%</td>
</tr>
<tr>
<td>50-54 (6)</td>
<td>0</td>
<td>2 (1f)</td>
<td>4 (2f)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>33%</td>
<td>67%</td>
<td>0</td>
</tr>
<tr>
<td>55-59 (9)</td>
<td>1 (1f)</td>
<td>3 (1f)</td>
<td>4 (4f)</td>
<td>1 (1f)</td>
</tr>
<tr>
<td></td>
<td>11%</td>
<td>33%</td>
<td>44%</td>
<td>11%</td>
</tr>
<tr>
<td>60-64 (6)</td>
<td>1 (11)</td>
<td>3 (1f)</td>
<td>2 (0f)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>17%</td>
<td>50%</td>
<td>33%</td>
<td>0</td>
</tr>
<tr>
<td>65-69 (1)</td>
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<td>0</td>
<td>0</td>
<td>1 (11)</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4.6 shows that respondents’ tendencies to seek help do not seem to be influenced by their sex. Nineteen percent of men and nine percent of women report “never or seldom” seeking help, which contradicts common lore that a man “never” seeks help. For both men and women, the largest percentage (44 and 39 percent) reported “occasionally” seeking help, and the next largest (23 and 34 percent) reported “often” seeking help. The only difference lies in that a higher percentage (18 percent) of women report “very often” seeking help.
help than never or seldom doing so (nine percent). The opposite is true for men—a higher percentage of males report “never or seldom” seeking help (19 percent) than report “very often” seeking help (15 percent). This difference, however, is slight. Despite the fact that ten percent more men than women report “never or seldom” seeking help, the overall trend seems to indicate that women and men appear to be nearly equally as likely to seek help or report seeking help—most men and women in my survey fall in the middle, with the most of each sex seeking help “occasionally,” then “often” before any difference is seen with my respondents.

Although sex does not seem to determine who seeks help, age is a factor for respondents in my survey. Younger individuals seem the least inclined to seek help; 26 percent of this group report “never or seldom” seeking help, in comparison to just five and ten percent of the other two age groups.

This younger age group is among the least likely to choose cartoon-like images as most preferable for any scenario. Lack of use of help could influence this young age group’s perception of cartoon-like images. If one doesn’t use help manuals, for example, one will not come across cartoon-like images in manuals that contain them. Because they do not see cartoon drawings in manuals, they have little frame of reference for this concept and might prefer images they see more often. Or, younger individuals may be more sensitive to possible assumptions that cartoon-like images are childish because children are viewed as the largest audience for cartoon-like images.

Overall, respondents’ tendency to seek help seems to have little relationship with the type of image they perceive as most preferable. In this section, I look at who chose the cartoon-like image as most preferable in each situation, and how often they report seeking help. The results indicate that no pattern appears to exist between the tendency respondents had to seek help and their preference for cartoon-like visuals.

Videogame directions: In my survey, 51 respondents chose the cartoon-like image as most preferable in the videogame scenario. Of these, 47 respondents use help “occasionally,” “often,” or “very often.” Four of these respondents report “never or seldom” seeking help. This finding seems to indicate that if a respondent ever seeks help, they feel that children are appropriate audiences for cartoon-like images. This result could be because children are often seen as main audiences for cartoons.
Chainsaw manual: Only five respondents chose the cartoon-like image as most preferable for users of a new chainsaw. Two respondents noted that they “never or seldom” seek help or use manuals. Two “occasionally” seek help, and one “often” does. (In this survey, 80 respondents ranked the cartoon-like drawing as least preferable in this scenario.) These results do not indicate a pattern for sex or age. Thus, the tendency to seek help seems to have little influence on a person’s choice of cartoon-like images for the chainsaw manual, which, as I discuss later, has high risk associated with its use.

Restaurant safety sign: Overall, 40 respondents chose the cartoon-like image as most preferable for a restaurant safety sign instructing workers to wash their hands. Nine of these respondents “never or seldom” seek help. Of the other 31, nineteen “occasionally” seek help, seven seek help “often,” and six report seeking help “very often.” Because these respondents seem divided on their tendencies to seek help, there seems to be little relation between people’s help tendencies and their feelings on safety signs in restaurants.

Medical instructions: Only 10 respondents felt that cartoon-like images were most preferable for those using a new self-monitoring diabetes device. Of these people, one reports “never or seldom” seeking help, while nine report doing so. Four “occasionally” seek help. Three “often” seek help. Two seek help “very often.”

Camcorder visuals: Overall, only eighteen respondents chose the cartoon-like image as most preferable when they encounter a problem with a camcorder. Two report “never or seldom” seeking help. Of the other 16, six “occasionally” seek help, six “often” seek help, and four seek help “very often.”

My respondents’ tendencies to seek help did not seem to influence their preference for cartoon-like images. For all scenarios, at least a few respondents chose each visual type and each tendency to seek help, from “never or seldom” to “very often.”

Discussion of instructional visual preference influences
Besides differences according to age, self-reported preferences for cartoon-like images in instructional documents yield possible relationships between respondents’ perceptions of safety, their computer skills, and previous exposure to such images. Because I constructed
my survey in an attempt to discover respondents’ preferences for instructional visuals, I was able to analyze responses and make inferences about these possible influences.

Preference related to age
My results indicate that respondents to my survey in the age groups of 30-34 and 60-64 are the most likely to prefer cartoon-like images. Previous research (Fukuoka et al. 1999) indicates that individuals who are now in the age group of 30-34 do, in fact, have a preference for cartoon-like visuals. More unclear is why the 60-64 age group prefers them, but I speculate that because of my survey respondents’ higher education levels (many have PhDs and teach in a university setting), they are perhaps more open to the possibility of a cartoon-like image having value in particular situations.

The age group of 15-24 preferred cartoon-like visuals the least, choosing it as most preferred only 21 percent of the time and choosing it as least preferred 63 percent of the time. Common sense would seem to indicate that this group would be most likely to prefer this type of visual because cartoon-like images are often seen as entertainment for this age group. They are also major consumers of computer games. However, at least in this survey, they do not prefer these images.

Preference related to safety perception
Three of my scenarios deal with situations that involve safety issues (the chainsaw manual, restaurant safety sign, and medical instructions). Respondents rejected cartoon-like images for the first and third safety scenarios, but embraced them for the second. Respondents perhaps related high risks to the chainsaw and medical device scenarios; the lack of preference for cartoon-like images in these scenarios is easily seen in Table 4.2 (five percent found the cartoon-like image most preferable for the first, and 10 percent found it most preferable for the second scenario). Respondents, however, don’t seem to relate the restaurant safety sign with a hazardous scenario; 39 percent of respondents chose the cartoon-like image as most preferable in this situation, which suggests that they may not see the restaurant sign as a serious safety issue. My results suggest that for situations in which risk is involved, respondents don’t think cartoon-like images are appropriate.
Preference related to skill level
Another possible influence on cartoon-like image preference is skill level. Though cartoon-like images have been suggested as being suitable only for those who are less-skilled (e.g., Hartley 1986), respondents who ranked themselves as “above average” or “expert” with word-processing programs made up 94 percent of the respondents who chose cartoon-like images as most preferable for themselves in the camcorder scenario. Those who ranked themselves as above average with photo-editing software made up 67 percent of those who chose cartoon-like images as best in this scenario. Hence, those with a high level of skill at complex tasks seem just as likely to prefer cartoon-like images as those who lack these skills.

Preference related to exposure
Though one would think that continued exposure to cartoon images in daily life might make one prefer those images, it does not seem to affect preference for cartoon-like images. Only eighteen percent of those who chose cartoon images as most preferable for themselves in the camcorder scenario reported playing videogames. Conversely, 53 percent of individuals who chose cartoon-like images as least preferable in this scenario reported that they play computer games that contain these types of cartoon-like images.

Conclusion
Overall, discovering why people have negative or positive perceptions of cartoon-like images is a difficult task. However, my survey results make it clear that people in the US certainly have strong opinions about instructional images that change according to different variables, like risk in situations or an individual’s age.

A large percent of individuals, particularly those in the 15-24 age group and some members of those in the age groups older than 50 seem to have strongly negative perceptions of cartoon-like images. In the next chapter I use these survey results to attain appropriate subjects for usability testing. I test participants from these age groups to obtain information about performance with the three types of visuals in my study. Participants with the cartoon-like images had the highest level of success in my usability test, as I describe in the next chapter.
Chapter 5: Analyzing the usability test results
The lore is that people don’t read instructions, and in the course of working with my participants, I discovered that the lore is sometimes reinforced by reality. When I asked the participants if they typically use instructions, three (of nineteen) admitted that they do not. However, people’s perceptions differ about what constitutes instructions. One participant, Walker, indicated that he hated using online-help and never did, then he went on to recount an experience in which he used online forums to solve a software problem. Hence, a clearer definition of “help” is likely to be needed because participants like Walker do not always think of themselves as seeking or using instructions.

In my study, I learned that people may have more experience with instructions than they actually report—either in casual conversation or in my questionnaire. This experience matters in completing complex tasks because observation of participants in my study leads me to conclude that the more experience a person has with complex tasks (including the instructions to complete them), the easier completing them appears to be. So people who never use instructions may not be as good at following instructional text as those with experience.

People who say they don’t use manuals (or other instructional materials) aren’t necessarily accurate in self-reporting the way they complete tasks. Some people who deny using instructions do, in fact, use them; however, they don’t always call them “instructions.” Their inaccurate or unintentionally misleading self-reports suggest that they may not understand what instructions actually are. In my study, 66 percent of participants who reported “never or seldom” using manuals or some form of online help had success using the instructions. This result suggests a number of possibilities: the instructions were very easy; I provided too much information about the task; participants had more experience with instructions than they reported; or they misrepresented their prior knowledge about completing the task. Given that the nineteen participants demonstrated a range of success in completing the task, I discount the first two possibilities; if the task were excessively easy or my script (the same for everyone) had been too explicit, all of the participants are likely to have had the same high level of success; this didn’t happen. Hence, the second two reasons—misrepresenting experience and/or knowledge, whether intentional or not—are
more likely explanations for the success of participants who claim little or no use for or experience with instructional materials.

In the previous chapter, I outlined the results of my survey about perceptions of cartoon-like images, line drawings, and photographs, concluding that age is a major factor in participants' preferences for different types of visuals in instructions. But I asked myself if these age differences play out in participants' actual performance. I formulated a second research question: "What differences exist in the success that Americans under age 24 and over age 50 have completing instructions with cartoon-like images, photographs, and line drawings?" In this chapter I analyze the results of the usability testing I conducted in order to answer this question. For my usability test, I chose the two age groups that my survey results identified as reporting negative perceptions of cartoon-like images: (1) 24 and younger and (2) 50 and older. I did not pay special attention to gender/sex in the usability test because the survey indicated no remarkable differences in perception based on this variable.

I conducted this usability test using three types of visuals—cartoon-like images, photographs, and line drawings—which were all chosen as "most helpful" at least some of the time by participants in the survey. Analyzing visuals that participants perceive differently lets me understand more about performance, which allows me to suggest that certain types of visuals may be more effective than others for certain groups.

In this chapter I make an effort to identify differences that exist in the success of two different age groups in completing instructions with cartoon-like images, photographs, and line drawings. Participants in my usability test had the most success with cartoon-like images, then with line drawings, and, finally, they experienced the least success with the photographs. The older age group was most successful with each type of visual. To illustrate this, I first reiterate the scenario and tasks of the usability testing in order to discuss usability results with each type of visual. Then I characterize participants according to time, success, visual use, perception, and attitude. Next, I review participants' self-reported data (such as preference/perception of instructions after the test) with their success during the test. Finally, I discuss my primary finding—performance results with the cartoon-like image were most successful for the majority of participants—and other findings from the usability test.
The results of my usability test reinforce my survey’s indication that age is a major
difference when it comes to visuals in instructions. My usability test suggests that younger
participants (24 and below) are most likely to be successful with cartoon-like images in their
instructions—they did not experience success with photographs or line drawings. Older
participants (50 and above) experience success with cartoon-like images, photographs, and
line drawings.

Discussion of usability test results
In the usability test, I asked participants to film footage using two “camcorder moves”
covered in the Canon Elura instructions—panning and tilting. Individuals from both
demographic groups (age 24 and below and age 50 plus) were tested; the three sets of
instructions were divided so that at least three participants from each group received each
type. One visual was used by four participants in the 24 and under age group. Using four
rather than three participants (as in the other groups) does not distort the test because I
average perception rankings, success rankings, and time data.

In analyzing the usability test results, I look at five measures:

1. time
2. success
3. visual use
4. perceptions
5. attitudes

Performance measures such as time and success, and subjective measures such as attitude
and perception are frequently used to analyze the usability of a document or product
(Dumas and Redish 1999). Time and success, which are verifiable, clearly indicate the ability
of a set of instructions to help people reach their goals. Another measure of usability, visual
use, which I discuss after the performance measures of time and success, is not as commonly
used in instructions, though it becomes an appropriate measure in this study because of the
emphasis on participants’ use of different visual types. I recorded visual use with comments
made by participants that indicated attention, or lack thereof, to visuals during testing and
while responding to the post-test questionnaire. In contrast, attitude and perception are subjective. In this study, I recorded attitude according to participants’ comments and other mannerisms participants displayed during tasks, which I discuss later. I collected information about perception on the post-test questionnaire by asking participants to assess the instructions and give comments.

**Characterizing participants: Time**
The first usability measure is time. I report time from the moment participants started recording (which I instructed participants to do right before I gave them the instructions) to the moment they turned off the recording function. I chose not to time individual tasks because of differences in artistic preference and vagueness in the instructions regarding speed and number of pans and tilts required. For example, some people panned very slowly while others did so more quickly because my instructions did not specify a speed at which to perform the tasks. The number of times to film the tasks was also not specified; some participants did tasks multiple times. Hence, a comparison of task time would not reveal much information. However, the overall time is a worthwhile and traditional measure of usability (Dumas and Redish 1999).

In this section, I calculate the mean and mode of participants’ time for each type of visual (see Table 5.1). I calculate the mean as the average amount of time that participants used — from beginning to end — to read the instructions and complete the tasks in this study. The mode is the time that occurs most frequently in the data set, which I calculated overall and for each group. Mode is rounded to the nearest half-minute in order to get a categorical record of frequency. For example, if a participant took 2:22 to complete the task, I rounded it to 2:30. If a participant took 2:46, I rounded that time to 3:00. Because time to complete the task ranged from 1:15 to 4:42, I created seven categories, in 30-second increments, from 1:30 to 4:30.
As Table 5.1 shows, participants averaged 2:28 minutes to complete the tasks. The mode, or most frequent time outcome, was 2 minutes. The mode is lower than the mean because one participant, Sandra (older group), was an outlier. With the photograph instructions, she spent 4:42 reading the instructions and doing the tasks. This time is longer than any other participant and 34 seconds longer than the next longest time of 4:08, recorded by Carla (older group) with the cartoon-like image instructions.

Table 5.2 displays two important kinds of information: First, it presents the time taken by each participant complete the instructions, separated by type of visual. Second, it presents the means, modes, and standard deviations for the three groups: cartoon-like images, photographs, and line drawings.

**Mean**
Overall, participants spent the most time doing the tasks and reading the instructions with the cartoon-like images: an average of 2:39 minutes, which is eleven seconds more than those with the photograph and 25 seconds more than those with the line drawing.

**Mode**
The mode for the cartoon-like image was the highest, at three minutes. The mode for photograph and line drawing instructions was each 2 minutes, which corresponds with the overall mode.

**Standard deviation**
The range of time needed by participants who used the cartoon-like image instructions was 1:24 to 4:08 minutes, which had a standard deviation of 1.05. Photograph participants’ range of time, 1:20 to 4:42 minutes, had a standard deviation of 1.25. Finally, participants with the

<table>
<thead>
<tr>
<th>Overall</th>
<th>Time</th>
</tr>
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<tbody>
<tr>
<td>Mean</td>
<td>2:28</td>
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<tr>
<td>Mode</td>
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</tr>
<tr>
<td>Standard Deviation</td>
<td>0.99</td>
</tr>
</tbody>
</table>
line drawing instructions took the smallest range of time, 1:15 to 3:27 minutes, which had a standard deviation of 0.77 minutes.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Time</th>
<th>Participant</th>
<th>Time</th>
<th>Participant</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Darryl</td>
<td>1:24</td>
<td>Keisha</td>
<td>1:38</td>
<td>Tom</td>
<td>1:58</td>
</tr>
<tr>
<td>Stacy</td>
<td>1:24</td>
<td>Ken</td>
<td>1:20</td>
<td>Bobby</td>
<td>2:08</td>
</tr>
<tr>
<td>Caleb</td>
<td>3:04</td>
<td>Donnie</td>
<td>1:54</td>
<td>Gabe</td>
<td>1:15</td>
</tr>
<tr>
<td>Rick</td>
<td>2:01</td>
<td>Sam</td>
<td>2:22</td>
<td>Melinda</td>
<td>3:27</td>
</tr>
<tr>
<td>Kara</td>
<td>3:23</td>
<td>Derek</td>
<td>2:56</td>
<td>Walker</td>
<td>1:54</td>
</tr>
<tr>
<td>Debbie</td>
<td>3:08</td>
<td>Sandra</td>
<td>4:42</td>
<td>John</td>
<td>2:47</td>
</tr>
<tr>
<td>Carla</td>
<td>4:08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>2:39</td>
<td><strong>Mean</strong></td>
<td>02:28.7</td>
<td><strong>Mean</strong></td>
<td>02:14.8</td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td>3:00</td>
<td><strong>Mode</strong></td>
<td>2:00</td>
<td><strong>Mode</strong></td>
<td>2:00</td>
</tr>
<tr>
<td><strong>Standard Deviation</strong></td>
<td>1.05</td>
<td><strong>Standard Deviation</strong></td>
<td>1.25</td>
<td><strong>Standard Deviation</strong></td>
<td>0.77</td>
</tr>
</tbody>
</table>

Age was not a strong factor in determining time that an individual took on a task (see Table 5.3). Participants in both age groups with each visual type varied in time. Older participants took longer to complete the tasks. This longer time is seen in the higher means for the older groups. The younger groups’ means are all below 2:00. The older groups’ means are all above 2:00, with the cartoon-like image and photograph means above 3:00, at 3:33 and 3:20, respectively.
Table 5.3 Task time separated by age group

<table>
<thead>
<tr>
<th>Cartoon-like image</th>
<th>Photograph</th>
<th>Line drawing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant</td>
<td>Time</td>
<td>Participant</td>
</tr>
<tr>
<td>≤ age 24</td>
<td>≤ age 24</td>
<td>≤ age 24</td>
</tr>
<tr>
<td>Darryl</td>
<td>1:24</td>
<td>Keisha</td>
</tr>
<tr>
<td>Stacy</td>
<td>1:24</td>
<td>Ken</td>
</tr>
<tr>
<td>Caleb</td>
<td>3:04</td>
<td>Donnie</td>
</tr>
<tr>
<td>Rick</td>
<td>2:01</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>1:58</td>
<td>Mean</td>
</tr>
<tr>
<td>≥ age 50</td>
<td>≥ age 50</td>
<td>≥ age 50</td>
</tr>
<tr>
<td>Kara</td>
<td>3:23</td>
<td>Sam</td>
</tr>
<tr>
<td>Debbie</td>
<td>3:08</td>
<td>Derek</td>
</tr>
<tr>
<td>Carla</td>
<td>4:08</td>
<td>Sandra</td>
</tr>
<tr>
<td>Mean</td>
<td>3:33</td>
<td>Mean</td>
</tr>
</tbody>
</table>

These three groups show differences in times that merit individual analyses. For example, though the cartoon-like image group appears to have the widest variety of times, the photograph group actually has the largest standard deviation. The line drawing group has the smallest standard deviation, which indicates similar performances throughout the group.

**Cartoon-like image**
The cartoon-like image group’s mean is 2:39, eleven seconds longer than the overall average time participants needed to complete the tasks. This increased time indicated that participants spent more time with the cartoon-like image instructions than with the photograph or line drawing instructions. This increased attention could indicate confusion about the instructions or task, or it could simply suggest that participants with the cartoon-like instructions paid more attention to the instructions than the other groups and thus spent more time with them. In addition, participants with the cartoon-like image may have simply panned and tilted more slowly than participants in the other two groups. Thus, a higher time does not necessarily suggest confusion (and thus more time spent with) the visuals.
One example of a participant who took a long time, but whose time is not attributable to the visuals, is Debbie (from the older age group). She spent a brief amount of time with the instructions, then panned the hallways multiple times somewhat slowly in order to film a steady image. In addition to the time she spent filming, she also spent a considerable amount of time criticizing the written text. For example, she experienced some ire over the fact that the instructions did not indicate whether she should pan 180 or 360 degrees. During her post-test questionnaire, she stated that she had not looked at the visuals, so her increased time (3:02) was not due to trying to figure out the meaning of the cartoon-like images, but to criticism of the written text and careful, slow panning of the hallway multiple times.

Standard deviation for participants with the cartoon-like image instructions was 1.05 minutes, which is close to the overall standard deviation of 0.99 minutes. This standard deviation suggests some variability among the participants’ experiences, though not as much as with the photograph instructions.

**Photograph**
In contrast to the cartoon-like image group, the photograph group had a mean of 2:28 minutes to complete the task and a mode of 2:00. This group with photographs in the instructions fell in the middle—these participants took more time than the line drawing participants, but less time than the cartoon-like image participants. This finding could be influenced by two reasons: the group either took less time with the instructions or took less time filming the tasks. As I describe in the next section about participant success, this finding is likely because this group experienced a lot of failure—many participants did not accomplish both tasks, so they did not spend as much time filming. One example of a person who was unsuccessful, yet spent a lot of time with the instructions was Donnie (1:54), from the younger group. He perused the instructions fairly quickly, then did his own filming techniques. He panned with the camcorder, though it was unclear whether he did so because the instructions indicated—he did the task very fast and seemed to pan mainly because he wanted to show one thing at the west end of the hall, then decided to show something at the east end of the hall. Donnie spent a lot of time dealing with the instructions because he had to come to me and ask for them back because he couldn’t remember what he
was supposed to do. After looking through them again, he still failed at the second task, not even attempting it.

The mean and mode of this group falls between the other two, but it has the largest standard deviation, 1.25 minutes. This highest standard deviation is largely attributable to Sandra, the outlier with a time of 4:42. If the standard deviation is recalculated without Sandra, the standard deviation is 0.64, which suggests that Sandra’s time increased the size of the standard deviation. Despite this, I’m keeping Sandra’s data in my results because if my study group were larger, she might not be an outlier. Her time is important to consider.

**Line drawing**

Finally, the line drawing group finished in the shortest amount of average time, 2:15, thirteen seconds fewer than the overall average, and with a mode of 2:00, which matches the overall mode. As I also discuss in the next section, this finding is likely because participants with the line drawing did not pay much attention to the instructions overall—text or visuals. My speculation is shaped by the way the younger half of this group filmed competently, but did not film the tasks indicated on the instructions. This group knew what they were doing, but chose to do what they wanted instead of what the instructions said. One example of this behavior is Bobby from the younger group (2:08). He spent less than thirty seconds looking at the instructions before filming the tasks. However, he failed to actually do any of the tasks on the instructions. He spent most of his time looking around the hallway for interesting things to film. Because I’ve already ruled out giving participants too much information before the task as a cause of lack of success for participants with proficiency with camcorders, problems with the instructions are likely to blame for this outcome. Because participants did not note confusion with the instructions, they probably just did not focus on the instructions. I am not certain about the reason for their lack of attention though I believe the inattention is related to their lack of motivation regarding the instructions.

The standard deviation for participants with the line drawing instructions is the smallest at 0.77 minutes. This deviation, which is also lower than the overall deviation of 0.99 minutes, suggests that all participants with these instructions took similar amounts of time.
Overall
In sum, Table 5.2 shows a remarkable range of times in each group, though the photograph group has the largest range with a standard deviation of 1.25 minutes. This range of time shows that participants treated the test differently—as is seen with other usability measures, some participants simply did not do the tasks, others were confused with the instructions and visuals accompanying them, some participants spent a lot of time doing the tasks through slow, multiple pans and tilts, some participants did additional filming during the tasks, while still others did the tasks quickly and only once. Why this difference in handling of the test? Common sense indicates that because people are different and have different experiences, they handle new experiences in different fashions. For example, those with prior knowledge of camcorders are probably more likely to feel comfortable with the test’s tasks and thus more likely to film using additional methods, which increases their times.

One example of doing more than the task at hand asked is Derek (older group) in the photograph group. He had “fun” during the test and, even though he skipped one task (tilting), he still had a time of 2:56, 28 seconds more than the overall average. He spent this extra time filming people who passed in the hallway and engaging them in brief conversation. His comfort level allowed him to do more than the task at hand, while also perhaps contributing to his lack of success with both tasks. Thus, Derek’s overall time was increased, though not in relation to his handling of the instructions or the tasks in the instructions.

Characterizing participants: Success
Information about the participants’ success rates supports the idea that participants, due to prior knowledge, handled the tasks and instructions differently. For each group, performance success was determined by whether participants completed the two tasks: panning and tilting. Though the instructions included the correct way to hold the camcorder, I did not rate success with holding the camcorder because some participants held the instructions while performing tasks and were, thus, unable to hold the camcorder with both hands, as the instructions indicated. When only one task was completed (panning or tilting), I considered a participant’s performance unsuccessful. Groups with the three different visuals are separated by age, and age is a major determiner of success. Results of
the study indicate a large number of participants who were unsuccessful, mainly those from the younger group with photographs and line drawings.

**Cartoon-like image performance**
In the younger group 75 percent of participants successfully completed the tasks. In the older group, 67 percent were successful. In the younger group, 75 percent were successful. Overall, 5 participants of 7 were able to successfully use the cartoon-like instructions, the highest rate of success for the usability test. This group also had the highest times, though it’s difficult to suggest one reason for this group’s higher times. Each individual treated the instructions and task differently, and in this group many simply took longer. A few participants chose to do different tasks or the tasks multiple times very slowly, specifically Caleb and Carla. Each of these participants decided to film in the way they wanted, whether they read the instructions carefully (Caleb didn’t, Carla did) or not. Carla also finished the panning task, but she did so multiple times in a slow fashion. Other participants, like Kara at 3:23, simply took more time with the instructions.

**Photograph performance**
Participants had varying levels of success with the photograph instructions. No one in the younger group experienced success, while two out of the three in the older group were successful. One explanation for their lack of success is confusion. Keisha found the arrows in the panning visual confusing; she thought they indicated a swinging motion, which she performed and declared her confusion. In the younger group, no participants successfully completed all the tasks. In the older group, 67 percent successfully completed the tasks. Overall, less than half the participants with photo instructions successfully used the instructions.

**Line drawing performance**
In the younger group, no participant using the line drawing instructions successfully completed the tasks. In the older group, all three participants successfully completed the tasks. This variance could indicate a lack of following the directions as opposed to confusion about the tasks, particularly since these younger participants mostly filmed in other ways, but showed competence with filming overall. Hence, the participants knew how to operate the camcorder so they likely understood the instructions, but as discussed earlier about
Derek, prior experience could have contributed to comfort level and caused participants to perform additional, or in the line drawing group’s case (for example, as I previously described with Bobby), different tasks. In sum, only half of the participants overall managed to use the line drawing instructions successfully; they were all in the older group.

Despite differences in the way participants treated the test, success is still a useful measure. Whether participants chose to do the tasks indicates a certain attention to instructions, both my oral instructions and the text instructions. Older participants overall were more likely to succeed than younger participants. Thirty percent of the young participants experienced success—the only younger participants who experienced success had the cartoon-like images. In contrast, 78 percent of the older participants experienced success, and their success was spread throughout the three visual groups.

This attention, which perhaps contributes to success, could be attributed to the visuals, and the way participants used the visuals is the measure I examine next.

**Characterizing participants: Visual use**

To gain more information about visual use, perception, and attitude in addition to notes made during observation, I distributed a pre- and post-test questionnaire to my usability test participants. Specifically, participants were asked to give information about their use of help manuals, video/computer games, and educational status in the pre-test questionnaire. In the post-test questionnaire, they were asked to rate their perception of quality of the instructions they used, describe how the visuals were useful or not useful, and rate their own proficiency with a video camcorder. In this section I look at the ways participants used the visuals, then examine participant perceptions of the instructions alongside their self-rated proficiency at the task and their performance level—whether successful or unsuccessful. Examining these measures next to each other allows me to learn more about performance.

In my study, use of visuals during the testing did not seem to vary for different visual types. Instead, variations in use seemed to be influenced by things like people’s habits and general behaviors towards instructional documents. If a participant never uses visuals in instructions, I tried not to indicate that they should in this instance. As such, attention to visuals can be broken down into two types of participants—those who paid no
attention to the visuals, and those who used the visuals either for determining how to perform tasks and/or to confirm their completion of tasks.

No attention to visuals
First, a large group of participants overlooked the visuals. This behavior was made clear in two ways: the participant did not comment on the visuals or the participant indicated during the post-test questionnaire that they had not noticed the visuals (usually because they needed to see the instruction sheet again in order to answer the questions). Debbie (cartoon-like image version) and Sandra (photograph version) are examples of the latter group. Each needed to look at the instructions again in order to answer questions about the visuals, and indicated that they hadn’t really noticed them the first time through. This lack of attention did not affect success; both Debbie and Sandra successfully completed both tasks without using the visuals. Of course, both Debbie and Sandra report a high level of proficiency and prior experience with these tasks. This experience may have contributed to a lack of need for the visuals. Other participants with less experience may have avoided the visuals and failed because of it, though this conclusion is difficult to draw due to participant self-reporting of visual use (not all participants commented on the visuals during or after the test) and self-reporting of proficiency.

Another influence on people’s avoidance of the visuals could have been because the text was clear, but this reason is unlikely. Debbie, who experienced success despite avoiding the visuals, stated multiple criticisms of the text’s vagueness. She still, however, chose to use the text over the visuals. Thus, avoiding the visuals is probably a behavior that is largely influenced by prior experience with instructions and personal preference.

Uses of visuals
Those participants who used the visuals had varying methods of doing so, which are made clear through their comments. Two major uses were determining how to perform a task and reinforcing that a task was done correctly.

Derek, with the photograph version, used the images to figure out how to correctly complete tasks, indicating that during tilting “the picture helped a lot.” Kara, who used the cartoon-like version, used the visuals to work out what she was supposed to do and to reaffirm her correct completion of a task. During the panning task, she experienced
confusion and turned to the visual for help, “Oh, there’s a picture. That might help. I don’t know what that means, but I’ll try anyway. Ok.” After her attempt at the task, she used the same visual to reaffirm that she had performed it correctly, which is clear through the next comment, “So, looking at the picture, I should’ve gone all the way from left to right. So I’ve done that now.”

Another participant who clearly used visuals, though experienced problems with them, was Keisha (photograph version). She made this use evident through her attempt at panning, during which she stated what she thought the image was doing and then did it. However, she misinterpreted the arrows in the image (which did swing down and back up) to believe they indicated swinging instead of turning horizontally. Her comments make it clear that she looked at the image first, then the text to clarify the image.

“OK now I’m looking at the picture...I’m looking at the picture swinging it.” Then, she swung the camcorder to pan. Then she laughed, maybe out of nervousness or the sense that she wasn’t doing it right. She then looked at the text. “I’m confused...Ok, so it was just showing how to pan; now I understand what it’s talking about.” She laughed again. - Keisha

Discussion
These two main uses, determining tasks and affirming correct completion, were found despite the type of visual a participant was using. In addition, participants with each set of instructions ignored the visuals. All of the types of visuals were thus seemingly treated the same. No overt dislike of a visual was mentioned during testing, though some indicated on questionnaires and during testing that visuals were not always clear. In the following section I examine post-test perceptions of visuals recorded on the second questionnaire in relation to perceptions of the instructions and proficiency with the camcorder.

Characterizing participants: Perception
Another usability measure is perception. This measure answers a lot about my research question; it allows me to understand people’s perceptions of instructional visual types. It also lets me examine perception next to performance, especially success.

For clarity, I’ve grouped participants by visual type to look at perception, proficiency, and performance. Table 5.4 indicates that preference for a type of visual and
performance with that type of visual vary for different participants. Ratings are on a scale of one to four, with four being the highest.

Table 5.4 Overall preference, proficiency, and performance ratings

<table>
<thead>
<tr>
<th>Type of instructional visual</th>
<th>Average rating of instructions</th>
<th>Average rating of proficiency with camcorder</th>
<th>Rate of success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cartoon-like</td>
<td>2.75</td>
<td>2.92</td>
<td>71%</td>
</tr>
<tr>
<td>Photograph</td>
<td>3.125</td>
<td>2.83</td>
<td>33%</td>
</tr>
<tr>
<td>Line drawing</td>
<td>2.67</td>
<td>2.2</td>
<td>50%</td>
</tr>
</tbody>
</table>

Table 5.4 indicates the photograph was most preferred, but it had the lowest rate of success, 33 percent. The cartoon-like image was rated second-most preferred and had a 71 percent rate of success. The line drawing sample received the lowest preference rating overall and came in second in success with a rate of 50 percent achieving success. Of course, it’s important to notice that those using the cartoon-like sample rated themselves as most proficient with the camcorder. Thus, some of their success could be attributed to confidence and prior knowledge and skills instead of visual usability. Also, it’s important to notice that those using the line drawing rated themselves as least proficient with the camcorder so some of their lack of success could be attributed to lack of experience instead of a lack of visual usability. Overall, these findings suggest that performance and perception have little to no relationship. The most preferred instruction sample is coupled with the lowest success rate, suggesting that what we like is not always what we can use the best.

Characterizing cartoon-like image participants: Perception

Table 5.5 details participants who used the cartoon-like image instructions; this group had the highest level of success and the second-highest preference rating for the visual.
Table 5.5 Participants who used the cartoon instructions

<table>
<thead>
<tr>
<th>Participant</th>
<th>Instruction ranking (4 highest)</th>
<th>Self-rated proficiency with camcorders</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Darryl</td>
<td>2</td>
<td>2</td>
<td>Successful</td>
</tr>
<tr>
<td>Stacy</td>
<td>3</td>
<td>2</td>
<td>Successful</td>
</tr>
<tr>
<td>Caleb</td>
<td>2</td>
<td>4</td>
<td>Unsuccessful</td>
</tr>
<tr>
<td>Rick</td>
<td>4</td>
<td>4</td>
<td>Successful</td>
</tr>
<tr>
<td>≤ 50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kara</td>
<td>2</td>
<td>2</td>
<td>Successful</td>
</tr>
<tr>
<td>Debbie</td>
<td>3.5</td>
<td>3.5</td>
<td>Successful</td>
</tr>
<tr>
<td>Carla</td>
<td>No report</td>
<td>No report</td>
<td>Unsuccessful</td>
</tr>
</tbody>
</table>

Responses after the usability test to the cartoon visuals were mainly positive. Not all positive thoughts were attributed by participants to the cartoon-like images’ helpfulness; participants also felt that the visuals were interesting.

Rick noted that “[The visuals were] very simple to understand...you could look at the visuals without really reading the words.” Caleb noted that the “visuals were ok.” Each of these participants gave themselves the top score of four when self-ranking their proficiency with the camcorder, or ones like it. Debbie, who did not use the visuals during the tasks, noted that the “visuals were fine.” She “noticed the first one but not the others. They seem to work well.” Debbie also self-ranked herself high on the proficiency scale with a three and a half. Hence, skilled people in my study seemed to perceive cartoon-like instructions in a positive manner. This level of self-rated skill indicates prior experience, which I speculate could be related to a positive perception of the instructions. When participants have experience, they may have more prior knowledge about instructions — thus, they are able to apply this knowledge in the usability test, which sometimes leads to success.

Less skilled participants were not turned off by the cartoon instructions and managed to perform decently with them, as both Stacy and Kara were successful in their usability tests. Stacy, who ranked herself as a two on the proficiency scale, felt positively about the instructions. She stated that “The visuals were good. They showed a person using a camcorder but they weren’t really helpful. They seemed to just help make it more interesting.” Like Stacy, Kara felt that the visuals weren’t that helpful, noting that the
“visuals were confusing.” However, she didn’t think the instructions seemed “odd” and felt that she had likely seen instructions like these before. These participants may have prior experience with cartoon-like images in instructions, or the instructions may just be similar to other instructions the participants had prior experience with, which contributed to success. Also, participants may have rated themselves as less-skilled than they truly were.

In my analysis of these findings, I need to consider the fact that when filling out questionnaires or participating in usability tests participants may not know what to say or say something to try to please me as the tester or just because they know they should be saying something. Participants may have ranked their proficiency level as higher or lower than it really is—this factor can be hard to self-measure, so participants may have just guessed. In addition, some of the vague answers I received (like the aforementioned comment by Kara that the “visuals were confusing”) could be due to participants just trying to say something, whether they really believed it or not. This factor is difficult to control for in my testing, though I considered it—it probably occurred for each visual type, or was at least equally likely to occur for each type. Thus, while it was a serious consideration, I didn’t feel that it influenced my findings in a way that would change them dramatically.

**Characterizing photograph instruction participants: Perception**

Table 5.6 details participants who used the photograph instructions; this group had the lowest level of success, but the highest preference for the visual type.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Instruction ranking (4 as highest)</th>
<th>Self-rated proficiency with camcorders</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keisha</td>
<td>2.5</td>
<td>4</td>
<td>Unsuccessful</td>
</tr>
<tr>
<td>Ken</td>
<td>3</td>
<td>2</td>
<td>Unsuccessful</td>
</tr>
<tr>
<td>Donnie</td>
<td>3</td>
<td>4</td>
<td>Unsuccessful</td>
</tr>
<tr>
<td>≤ 50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sam</td>
<td>No report</td>
<td>2</td>
<td>Successful</td>
</tr>
<tr>
<td>Derek</td>
<td>4</td>
<td>1.5</td>
<td>Unsuccessful</td>
</tr>
<tr>
<td>Sandra</td>
<td>No report</td>
<td>3.5</td>
<td>Successful</td>
</tr>
</tbody>
</table>
Responses to the instructions with the photograph visuals fell into two groups: ratings of enjoyment and ratings of helpfulness. Evaluation of their ability to be enjoyed were largely negative. Reactions to their helpfulness were mainly positive with one major exception.

According to Donnie, “the instructions were informative and useful, but they were also boring and sterile.” This response suggests that participants who are proficient with tasks would benefit from more interesting visuals, which one participant in the cartoon group noted the cartoon-like instructions were. Also supporting this speculation is Table 5.6, which shows that participants who rated their own proficiency at a four were likely to perceive the instructions as worse than others in the group were; Keisha (who ranked herself as a four in proficiency) gave the instructions a two and a half, for example, while Derek, who gave himself a one and a half for proficiency, rated the instructions at a four. Because those who reported lack of proficiency with camcorders rated the instructions relatively high in comparison to those who were proficient; this could indicate that the photograph visuals, while helpful for those who felt less skilled, does not help those who feel skilled. Put more simply, people who are good at tasks do not like photographs, if my participants’ responses can be generalized to a larger population.

Responses about helpfulness were mainly positive. Sandra felt that the visuals were “somewhat helpful,” though she already knew how to do the tasks. Derek noted that “the visuals—especially the ones indicating movement—were very helpful.” Of course, Derek is a researcher in the area of visual rhetoric, so it makes sense that he paid attention to and used the visuals, and that his comments on the visuals were specific—his prior experience and constructed knowledge led him to pay attention to the visuals and use them.

There is one major exception to the group’s positive reviews of the instructions’ helpfulness. As mentioned previously, Keisha, though she rated herself as a four in proficiency with camcorders, did not find the visuals exceedingly helpful. She experienced obvious confusion with the second visual, which describes panning. She felt that according to the arrows, a swaying motion was indicated. When shown the cartoon-like image demonstrating the same task, she found that to be much more accurate and potentially helpful. She identified its purpose at first glance. Keisha may have prior experience with cartoon-like images, and thus have a constructed knowledge base about them, which would lead her to be able to decipher them easily in this instance. Of course, when she identified
the cartoon-like image she had already deciphered the equivalent photograph visual, so her easy identification of the cartoon-like image does not necessarily indicate that the cartoon-like image is actually easy to figure out.

**Characterizing line drawing instruction participants: Perception**

Finally, Table 5.7 details participants who used the line drawing instructions; this group had both the lowest level of success and the lowest preference ranking for the visual type.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Instruction ranking (4 highest)</th>
<th>Self-rated proficiency with camcorders</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tom</td>
<td>3</td>
<td>3</td>
<td>Unsuccessful</td>
</tr>
<tr>
<td>Bobby</td>
<td>3</td>
<td>3</td>
<td>Unsuccessful</td>
</tr>
<tr>
<td>Gabe</td>
<td>2</td>
<td>1</td>
<td>Unsuccessful</td>
</tr>
<tr>
<td>&lt; 50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melinda</td>
<td>3</td>
<td>2</td>
<td>Successful</td>
</tr>
<tr>
<td>Walker</td>
<td>1</td>
<td>3</td>
<td>Successful</td>
</tr>
<tr>
<td>John</td>
<td>4</td>
<td>No report</td>
<td>Successful</td>
</tr>
</tbody>
</table>

Reactions to the line drawing instructions seemed to fall in line with the participants’ self-reported proficiency. Those with little previous knowledge felt confused, and those who reported knowing what they were doing with the camcorder beforehand had little trouble. Prior experience and constructed knowledge was a major measure in this group’s success.

Gabe had little familiarity with camcorders, which probably contributed to his dislike for the instructions. He reported being “confused too much,” and felt that the visuals “helped a little, but not enough to fully understand the camcorder.” Of course, participants were not expected to use the instructions to manipulate the electronic actions of the camcorder, only to move the camcorder using different filming techniques. He had no constructed knowledge base about camcorders, so he didn’t know what to expect or how to handle these instructions for the task.

John, who did not rank his proficiency but who indicated prior use of camcorders, felt that the visuals were “good” and “easy to understand.” Melinda also indicated prior use of camcorders, though gave herself only a two for proficiency; despite this ranking, she gave
the instructions a relatively high three. This high ranking may indicate that the instructions related to prior knowledge she had of camcorder instructions—the instructions (including the visuals) matched her schema.

Ultimately, the fact that success with the line drawing version was divided by age (with the younger group experiencing no success), indicates that the actual instructions are likely not to blame for lack of success. Instead, age seemed to be a major influence (though I cannot determine causality with this study).

**Discussion**

In sum, perceptions of instructions did not seem to relate to performance with them. In each group, participants who failed at completing the tasks seemed just as likely to give the instructions a relatively high rating (three or more) as those who succeeded. Five of the nine participants who did not succeed still rated the instructions they used as at least a three. Five of the ten participants who succeeded rated the instructions as a three or more. Hence, I speculate that a positive perception of the instructions did not relate to a successful encounter with them.

Next, I examine the effect of the instructions on task attitude, which was made clear through the mannerisms of participants and the comments they made. This section is not delineated by visual type because visual type seemed to make little difference overall on a person’s attitude.

**Characterizing participants: Task attitude**

According to some scholars, instructions have the ability to influence not only performance, but also attitude (Fukuoka et al. 1999). Though attitude was not always obvious, in my study, two major participant attitudes were prevalent: confidence and uncertainty/nervousness. These attitudes were delineated according to sex, however, much more so than visual type. Males were more likely to show confidence, while females were more likely to show nervousness and uncertainty.

Males were much more likely to exhibit confidence in their abilities. This confidence was mainly seen through the completion of additional tasks and through conversation not related to the tasks during the testing. For example, Walker demonstrated considerable proficiency with the camcorder and turned it off in between tasks (though he was instructed
not to) and zoomed (which was not part of the tasks). Performing additional acts that are not in the instructions indicates a level of confidence in his abilities that matches his success and the brief time he spent with the instructions. He also spoke to his son about what he was doing while he filmed.

Females, in contrast to the males I studied, were much more likely to exhibit insecurity about their abilities, whether they successfully completed a task or not. Insecurity was viewed through self-deprecation beforehand (such as Carla stating she was not “mechanically-minded”), nervous laughter during tasks, and qualifying statements regarding their actions and abilities.

An example of doubting of one’s own abilities is seen with Kara, a woman in the older group. While reading the instructions, specifically the first section, she decided she would likely not get better with practice. When the instructions stated that with practice she would be able to operate the controls by touch, she replied “I doubt that, but we’ll see.”

A good example of insecurity seen through qualifications is Stacy. Stacy, though successful with the tasks, stated during panning that she was “Um... just trying it out.” She also laughed nervously while she told me this. She did not repeat the task, however, and this attempt was her only panning example. She must have felt she completed the task correctly because she did not attempt to repeat it. Hence, her qualifying statement of “trying” instead of a more confident statement such as “doing” or “panning” indicates lack of confidence in her abilities. Her laughter supports this speculation of insecurity.

Confidence from participants could be because of prior experience, or it could be due to people’s personal confidence levels, or gender. If it’s due to the last two factors, then attitude was not directly inspired by the task. Determining the direct cause of attitude is not possible with my study, though because of my results, I speculate that gender plays a large role in determining confidence with these tasks, particularly when I compare female confidence levels to males’.

Despite these gender differences in attitude, there was little gender difference in performance with instructions. Of the 7 females who participated in this test, 5 experienced success. Though fewer individuals experienced success with the line drawing and photograph instructions, this gendered task attitude seemed similar for all three types of
instructions. Thus, while I’m not looking at causal data, I’m led to believe that attitude did not have a strong relationship with performance success in my usability study.

**Discussion**

The measures in my usability test (time, success, visual use, perception, and attitude) indicate that participants’ experiences differed largely. Older participants were more likely to succeed overall than younger participants. Thirty percent of the young participants experienced success—the only younger participants who experienced success had the cartoon-like images. In contrast, 78 percent of the older participants experienced success, and their success was spread throughout the three visual groups. This difference could be influenced by a number of factors; two such factors are age (as related to prior experience) and motivation (related to visual type).

Performance is affected by participants’ prior experience with camcorders and knowledge about instructions, which is apparent in this study for the older group (the higher they self-rated their proficiency, the more likely they were to experience success). This prior proficiency effect was not clearly seen in the younger age group, though there could be several reasons for this finding. One is that the younger group was less involved or interested in the usability testing, so they didn’t pay as much attention to the instructions, as I discussed earlier. Another possible reason is that the younger group, though possibly proficient with camcorders, just hasn’t had much prior experience using instructions.

Popular opinion today is that young people can ‘magically’ use technology without looking at the instructions, as the multiple people who ask their children to program the VCR, for instance, could attest. Thus, age was a factor in a participant’s success, and higher age might be equated to more prior experience. Success with the cartoon-like image, however, was not easily associated with age. Success rates with this visual were similar for both age groups—75 percent for the younger participants and 66 percent for the older participants. Prior knowledge and experience with cartoon-like images in instructions could be a factor in this success, though I believe that with the dearth of cartoon-like images in instructions in the United States (they appear, but seem to appear not nearly as much as the other types), I attribute this difference to the level of motivation that cartoon-like images can create.
The next factor is motivation—attention to the instructions played as important a role in my study as understanding of them. If a participant did not pay close attention to the instructions, it seems unlikely that the tasks in the test would be accomplished correctly. In the younger demographic group, four participants (using photograph and line drawing versions) mostly ignored the written instructions. They focused on the scenario (filming a hallway as stock footage) and performed filming techniques they chose. They did not attempt the tasks in the instructions, though most read them. More difficult to speculate on, however, is whether participants who read them managed to retain the information. One participant in the cartoon-like image group, however, suggests that without enough attention to the instructions, one would not remember the tasks long enough to perform them. Caleb didn’t focus much on the instructions at all, just gave them a quick read-through (he made it through nearly all of the sheet, as is evident on the recording) then returned them to me. He also made a mistake, looking for a “pan” button when neither the visual nor the text mentioned one and the camcorder does not have one. Instead, the visual and the text are focused on how to pan physically with the camcorder. It’s unclear whether Caleb didn’t understand the instructions for this task, forgot the task, just decided not to follow the task, was not a skillful reader, or may have had cognitive limitations. However, after returning the instructions to me he did not ask for the instructions back, which suggests he may have simply forgotten about the second task (tilting).

Despite Caleb’s anomalous behavior (he was a member of the cartoon-like image group), more participants with cartoon-like images than the other visuals managed to follow the directions, stay on task, and successfully complete the tasks. Why is this? This result could be because the cartoon instructions were more interesting than the other versions, so they garnered more attention in the first place and seemed more important. This attention to visuals could be a reason that participants with the cartoon-like images took longer to look at the instructions and complete the tasks. One participant in the younger group, Stacy, did note on the post-test questionnaire that though the visuals didn’t help much, they were interesting. Keisha in the younger group, who experienced confusion with the photograph’s arrows, noted that the cartoon-like image for the panning task was easier to figure out. In fact, she identified it correctly on the first try. Of course, at this point she had already used the photo instructions, so she knew what task the visual indicated.
Why might the cartoon-like images be more interesting than the other types? As I discussed in chapter 2, cartoon-like images are different from photographs and line drawings because they lack realism, show personality, and have different methods of emphasis. This lack of realism and personality might have had the ability to draw participants in my test into the instructions more fully. Performance with instructions, both motivation to use instructions and enough focus to use them correctly, might be improved with cartoon-like images.

Thus, in my usability test, younger participants were more likely to experience success with cartoon-like images— in fact, not a single younger participant with the other images experienced success. For the older age group, participants were more successful— 66 percent with both the cartoon-like images and photographs were successful, while 100 percent were successful with the line drawings. As I just discussed, this finding could be influenced by age (related to prior knowledge and experience) and motivation (related to the level of motivation each visual as the ability to create).

In the next chapter, I discuss implications of my research findings. More specifically, I suggest changes to methods of usability testing related to age of participants, and I discuss how my methodology influenced my findings.
Chapter 6: Discussing the findings

If Bach Man, the master railroader (Figure 1.1), appeared in your instructions, would you listen to him? According to my research, if you are between the ages of 30-34 or 60-64, the answer is probably yes. If not, you might just throw away the instructions in disgust. If you throw those instructions away, however, you'd probably be doing yourself a disservice because my research indicates that your performance with those instructions would be similar to your performance with photographs and line drawings.

Ultimately, in my study I discovered that though most age groups (except those I just mentioned) usually prefer photographs and line drawings to cartoon-like images, performance with cartoon-like images is superior, or at least similar, to performance with photographs and line drawings. Though I did not design my study to determine causality, in this chapter I speculate on possible causes for these preferences in the aforementioned age groups. I also explore implications of my findings, particularly related to usability testing. In addition, I discuss my methodology and the influences it probably had on my findings.

Summary of my findings

In my study I discovered differences in preference, though they were small (with only two age groups disagreeing with the rest). Larger differences appeared in performance. My age-related findings seem to be supported by previous research about user preference.

Preference for and performance with different visuals

Though the younger and older demographics each felt that cartoon-like image instructions were least appropriate for most tasks, usability with these instructional visuals was comparable to the usability of photograph and line art visuals. In fact, usability test participants with the cartoon-like image instructions were more successful than the others (with a success rate of 71 percent, versus the photograph group’s 33 percent and line drawing group’s 50 percent). Thus, preference for cartoon-like images likely has more to do with certain age groups’ negative perceptions of them rather than the actual visual’s lack of functionality in instructions. In addition, users with the cartoon-like images seemed to stray off task fewer times than those with the other visuals.
During usability testing, some participants strayed off task. These participants mainly used the photograph and line drawing instructions. In contrast, the participants with cartoon instructions were more focused and accomplished the tasks. They seemed to have a better understanding of what was being asked of them. This finding could be coincidence—perhaps the cartoon-like image participants were simply people who focused more easily on tasks; however, it could show that cartoon instructions help users stay motivated and on task. One participant noted that the photograph visuals kept him on task, and thus staying focused seems to be a function of the visual. Because the cartoon visual was noted as “interesting” (by Stacy), it is likely that this visual would be motivational and help users stay on task.

**Previous research**

Previous research about preference for using cartoon-like images in instructions indicated that a certain age group perceived these visuals in a positive light (Fukuoka et al. 1999). In this article, most of the surveyed individuals were below the age of thirty; now, seven years later, these individuals are probably in their thirties (Spyridakis 1999). My survey data corroborates these prior results—individuals in the 30-34 age group were most likely to choose cartoon-like images as “most helpful.” Overall, these individuals chose cartoon-like images 44 percent of the time overall in the survey. Individuals age 60-64 were similar—they also chose cartoon-like images as “most helpful” 44 percent of the time. With all age groups combined, cartoon-like images were chosen 24 percent of the time overall for all five scenarios.

What is special about these two age groups that make them more predisposed to believe the cartoon-like image to be helpful? The special factor could be that they were at prime ages (young children and their parents) when arcade games and home console games first came out and gained popularity.

First, these two groups are about thirty years apart in age. This age separation would make the older group the age of the younger group’s parents. The two groups would form one nuclear family unit of parents and children. Because of this, they’ve probably had similar experiences; that is, the parents might purchase a toy for the younger group, and they would both experience the toy. Those aged 30-34 today would have been born in 1972-
The seventies were an eventful time for the video game, particularly arcade games in bars. The parents of these children (today’s 60-64 age group) would have been in their early thirties at this time, and would’ve likely frequented bars, where the arcade game was just introduced (the first game was created in 1971) and became quite popular (Wikipedia). Hence, this age group became acclimated to cartoon-like images in arcade games, which perhaps leads to their acceptance of the images in instructional documents.

This older age group then purchased home console systems for their children; in 1977, Atari came out with the Atari 2600, one of the first home console systems in which the games came as additional cartridges, as opposed to the games being built into the system. This console became very popular by 1979 (a best-selling Christmas present that year, with a million sold) and spawned many others like it. These children quite literally grew up with home console video games and made them successful. This group, then, seems like a logical group to see value in cartoon-like images in other genres. These preferences are largely age-related, which raises possible implications for usability testing.

Implications
Because my testing has shown that for some audiences (and the audiences are largely age-determined), cartoon-like images are appropriate and possibly more helpful than other types of visuals, technical communicators (and those who employ them) need to consider this type of visual when they’re creating instructional documents. Though the popular lore is that cartoon-like images are disliked in America, in fact, some audiences like them in certain situations.

My survey results show that in different contextual situations, respondents preferred different types of visuals. I designed my survey scenarios to encompass multiple types of situations, from high risk to those involving children’s games. I discovered that in high risk situations where safety is paramount, such as when operating a chainsaw, respondents feel that cartoon-like images are highly inappropriate—77 percent overall ranked it as least helpful. In a dramatically different situation, directions for a children’s videogame console, respondents’ opinions on the cartoon-like image changed completely, with 48 percent choosing the image as most helpful. Thus, technical communicators need to carefully analyze the rhetorical situation when designing instructions. Because groups’ opinions
differ (according to age, if my results can be generalized to the larger public), different age
groups need to be considered when designing instructions, especially when usability
testing.

Not all technical communicators (or their employers) believe that usability testing is
necessary for instructions. Some communicators use methods in which they attempt to
visualize audiences and guess what they will do with different styles of instructions
(Schriger 1997). These methods, however, would most certainly fall short when audiences
vary by age, and these variances seem to be separated by as short a span as five years each.
In addition, these preferences seem to be conditioned at an early age, so the thirty-year-olds
of today will be the forty-year-olds of ten years from now. They will likely, however, still
feel the same as they did ten years before, while the new thirty-year-olds might have
completely different preferences. Thus, assumptions based upon “when I was that age”
would not be accurate. Visualizing what users think would not be easy. Actual audience
members in the correct age groups need to be tested when creating instructions in order to
ensure that the perceptions of that age group have not shifted and that communicators are
targeting the correct people when they think about audience in terms of age. Of course, my
findings are shaped by my methodology.

**Influences on my findings**

Multiple parts of my test, such as my participants, my presence, and my test materials,
probably influenced my results. First, though, I discuss aspects of my usability test I would
change to improve it given more time.

I learned many things about usability testing during my study, and if I did this study
again, there are several aspects I would change. First, most problems that occurred during
testing dealt with participants simply not following instructions in both the actual testing
and with the questionnaires. Camcorder recording methods were covered in the
instructions, and some participants did not seem to understand why these instructions
needed to exist, particularly those who were familiar with camcorders before the test. Thus,
some participants noted that they did “not see the point” of the instructions (and then went
on to ‘do their own thing’ when filming the scenario. I was still able, however, to get
responses about the instructions. In future testing about types of visuals in instructions, I
would try to find instructions for tasks that all participants are unfamiliar with to avoid participants not following or using the instructions.

Next, I was not able to use many time measures during the testing because some participants seemed unsure how many times they were supposed to perform the tasks. In addition, some participants simply panned and tilted more slowly than others. This variance had more to do with personal artistic preference than ability. Time is an important quantitative aspect of task performance that has the ability to tell testers information about how well a participant can use instructions. In future usability testing, I will attempt to test tasks that can be timed more definitively.

In addition, when filling out the questionnaires, some participants did not follow all of the instructions. Some did not rank the instructions' proficiency and/or their proficiency with a camcorder. This lack of reporting makes it difficult to analyze the data. In the future, it would be prudent to watch participants more closely during these tasks, though I feel that this may cause the participant to answer questions less honestly. Thus, a happy medium needs to be found. For the purposes of this study, I referred to notes I made during testing as well as other comments made on the questionnaire to fill this gap. To overcome a lack of data, I labeled all completed instances of panning and tilting (no matter how long it took the participant) as successful instances in which participants understood and followed the instructions. I've also attempted to overcome this obstacle through averaging ratings without using that participant as an averaging factor.

Despite these drawbacks, the findings of my study indicate intriguing patterns. Perhaps due to these drawbacks, one such pattern was a lack of motivation and focus, or rather, an inability to follow directions/instructions. Of course, my participants also influenced my findings.

**Participant influences**
Methodology influences results of any study—in my instance, many methodological aspects probably affected my results. First, my survey respondent group was unique in that many of them had knowledge about visuals and/or instructions because they were rhetoric and technical communication faculty. Thus, they were likely to give answers to questions that were informed by studies and knowledge of the field, not just opinion or gut instinct.
Because I was trying to measure or gain knowledge on ‘gut instinct’ preferences, these respondents limited my findings. In addition, many of this same group were participants in my usability test. These participants may have had an idea of what types of information I was interested in gathering, so their responses were likely influenced by this knowledge, though it is difficult to ascertain exactly how my findings would change had I looked at a different group of individuals.

**Usability tester influences**

My usability test participants may have been influenced by me, as well. I was the usability tester they interacted with during the test, so their responses to the test were likely impacted by their responses to me. As a woman in her twenties who is smaller than most people, my participants were likely not intimidated by me. This lack of intimidation can be seen in the fact that participants didn’t seem to have difficulty talking to me before and after the test. There’s a chance that participants may have, for instance, felt that they needed to help me complete my study, so they told me answers they thought I wanted to hear. This type of response is seen in some of the questionnaire answers that were vague (for example, I mentioned Kara’s vague responses in chapter 5). Controlling for this type of response is difficult because it’s hard to realize how people will react to certain circumstances and individuals, though the study of this does seem to fall into the realm of rhetoric and professional communication. I don’t believe that the usability tester is a neutral aspect of the usability test. Our professional activities often involve usability testing—in order to better perform these tests, we need to understand all aspects of them, including researcher effects. As such, I plan to research this area in the future to discover how usability testers and their mere presence (and demographics, appearance, etc.) influence participants and results.

**Test material influences**

I’m also confident that the instructions I tested influenced my results. The instructions were for camcorder use, a task that many people are reasonably familiar with. Also, because the tasks were not difficult and didn’t involve multiple steps, participants could complete the tasks by accident—for instance, I’m sure that some participants managed to pan and tilt with the camcorder not because they were attempting to, but because they saw things they wanted to film and turned the camcorder in a specific way to record these images. Though
I'm certain this happened, I can't tell exactly who did this and when, so I can't effectively control for these responses in this test. Had I more time, I would've tried to control for prior knowledge by finding instructions for a somewhat obscure technical task involving multiple steps that could probably not be accidentally completed, such as assembling a VCR or the like. This way I could be fairly certain that performance was related to instruction use.

**Future research**

These influences on my methodology open the door to possible future research opportunities, as do some of the findings from my survey.

As I previously discussed, my findings were likely influenced by my methodology. One of these aspects was the fact that I was the usability tester—the person who had direct contact with my test participants. There exists an assumption in technical communication that the usability tester is neutral, or invisible. I disagree with this assumption—I'm sure my presence as the tester influenced how my participants acted. In the future, I would like to test the influence that the usability tester has on participants in the test. For example, does her appearance influence results? Does her sex influence results? Future research on this topic is needed because usability tests play a large role in products and instructions. If the tests are influenced in a way that we haven’t considered, our findings in various studies could be less accurate.

Next, in my usability study, men and women approached the tasks with different attitudes—men were confident while women seemed nervous or self-deprecating. Did my presence as the usability tester influence these attitudes? If not, gender research would help us to identify why men and women approach instructions with different attitudes, though they seem to have similar success with them. Do we need to design instructions differently for the different sexes? Research in this area would not only be interesting, it could help increase safety by encouraging users to use the instructions more often.

Another possible avenue for future research involves safety perception, which I gauged in my survey, but didn’t focus on. Respondents in my survey were asked about three scenarios that involved risk—the chainsaw manual, restaurant safety sign, and medical instructions. Respondents strongly disliked the use of cartoon-like images for the chainsaw manual and medical instructions, but found them largely appropriate for the
restaurant safety sign. This finding indicates that respondents don’t find restaurant safety to be as strong of a risk as the other two scenarios. Future research involving the way people perceive risk and what they see as risky would help technical communicators design appropriate warnings and instructions.

Conclusion
Overall, my research suggests that cartoon-like images need to be given more thought in the United States because they can be quite usable in many situations. However, they need to be used with care—in some situations, particularly those involving high risks, users might reject the images.

In addition to situational differences, age differences exist in perceptions of visuals that merit further examination. Despite the presence of positive and negative perceptions for different visuals, performance with the visuals was remarkable similar (at least in the older age group), and further examination of this performance could greatly increase the usability of instructions and warnings. My usability test experience raised multiple questions that I am eager to address in the future, especially the question of whether the usability tester influences results by aspects we don’t think about a lot, such as her appearance.

Overall, my findings suggest that cartoon-like images and other visuals in instructions need to be examined further and perhaps constantly, particularly because age differences seem to exist that might affect usability.
Appendix A: Institutional Review Board materials
DATE: March 17, 2006

TO: Amanda Bemer

FROM: Dianne Anderson, IRB Co-Chair

RE: IRB ID # 06-145
STUDY REVIEW DATE: March 16, 2006

The Institutional Review Board has reviewed the project, “Preference and Performance with Cartoon-like Visuals in Documentation” requirements of the human subject protections regulations as described in 45 CFR 46.101(b)(2). The applicable exemption category is provided below for your information. Please note that you must submit all research involving human participants for review by the IRB. Only the IRB may make the determination of exemption, even if you conduct a study in the future that is exactly like this study.

The IRB determination of exemption means that this project does not need to meet the requirements from the Department of Health and Human Service (DHHS) regulations for the protection of human subjects, unless required by the IRB. We do, however, urge you to protect the rights of your participants in the same ways that you would if your project was required to follow the regulations. This includes providing relevant information about the research to the participants.

Because your project is exempt, you do not need to submit an application for continuing review. However, you must carry out the research as proposed in the IRB application, including obtaining and documenting (signed) informed consent if you have stated in your application that you will do so or required by the IRB.

Any modification of this research must be submitted to the IRB on a Continuation and/or Modification form, prior to making any changes, to determine if the project still meets the Federal criteria for exemption. If it is determined that exemption is no longer warranted, then an IRB proposal will need to be submitted and approved before proceeding with data collection.

cc: English
    Rebecca Burnett
    File

ORC 04-21-04
Applicable exemption category(s):

(1) Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

(3) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under paragraph (b)(2) of this section, if: (i) the human subjects are elected or appointed public officials or candidates for public office; or (ii) Federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.

(4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

(5) Research and demonstration projects which are conducted by or subject to the approval of Department or Agency heads, and which are designed to study, evaluate, or otherwise examine: (i) Public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs.

(6) Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed or (ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.
Appendix B: Survey documents

- Survey questions
- Email invitation for survey
### Visuals in Instructions

The results of this survey will provide information about the ways visuals are used in instructions.

#### Demographic

**1001: Please indicate your sex.**

Please choose **only one** of the following:

- [ ] Female
- [ ] Male

**1002: Please identify your age range.**

Please choose **only one** of the following:

- [ ] 15-19
- [ ] 20-24
- [ ] 25-29
- [ ] 30-34
- [ ] 35-39
- [ ] 40-44
- [ ] 45-49
- [ ] 50-54
- [ ] 55-59
- [ ] 60-64
- [ ] 65-69
- [ ] 70-74
- [ ] 75 or over

#### Experience

**2001: Rate your level of experience using word processing software.**

Please choose **only one** of the following:

- [ ] None
- [ ] Below Average
- [ ] Above Average
- [ ] Expert

**2002: Rate your level of experience using photoediting software.**

Please choose **only one** of the following:

- [ ] None
- [ ] Below Average
- [ ] Above Average
- [ ] Expert

**2003: How frequently do you use computers for entertainment (i.e., playing games and/or surfing the Internet)?**

Please choose **only one** of the following:

- [ ] Never or seldom
- [ ] Occasionally
- [ ] Often
- [ ] Very often

**2004: How frequently do you use computers for work-related or school-related tasks?**
Please choose only one of the following:
- Never or seldom
- Occasionally
- Often
- Very often

2005: When you encounter a question with a computer program, how frequently do you seek assistance (e.g., online help, manual, people)?
Please choose only one of the following:
- Never or seldom
- Occasionally
- Often
- Very often

2006: How old were you when you started using computers?
Please choose only one of the following:
- Under 15
- 15-19 or earlier
- 20-24
- 25-29
- 30-34
- 35-39
- 40-44
- 45-49
- 50-54
- 55-59
- 60-64
- 65-69
- 70-74
- 75 or over

Perceptions
3011: You’re creating a manual for a new video game for 8- to 12-year olds. You have to make a decision about what kind of visual to include in the section about operating the game’s control buttons. Assuming all the visuals are well-done, please rank the three visuals below in the order you would choose to use them (1 = probably my first choice; 3 = probably my last choice).
Please number each box in order of preference from 1 to 3
- Photograph of a person showing how the task is done
- Life-like drawing of a person showing how the task is done
- Cartoon-like or stick figure of a person showing how the task is done

3012: You’re working on a manual for new chainsaw owners and have to make a decision about what kind of visual to use. What kind of visual would you like to use to illustrate basic safety procedures? Assuming all the visuals are well-done, please rank order the three visuals below.
Please number each box in order of preference from 1 to 3
- Photograph of a person showing how the task is done
- Life-like line drawing of a person showing how the task is done
3013: You’re working on a safety sign for a restaurant kitchen and have to make a decision about what kind of visual to use for workers who need to be reminded to wash their hands regularly. What kind of visual would you like to use? Assuming all the visuals are well-done, please rank order the three visuals below.

Please number each box in order of preference from 1 to 3
- Photograph of a person showing how the task is done
- Life-like line drawing of a person showing how the task is done
- Cartoon-like or stick drawing of a person showing how the task is done

3014: You’re working on an instruction sheet about a new process for people with diabetes to self-monitor their glucose levels. What kind of visual would you like to use? Assuming all the visuals are well-done, please rank order the three visuals below.

Please number each box in order of preference from 1 to 3
- Photograph of a person showing how the task is done
- Life-like line drawing of a person showing how the task is done
- Cartoon-like or stick drawing of a person showing how the task is done

3020: When using the computer for entertainment, rank the options listed below in order of frequency of use (1 as most). Please do not rank options that you do not use.

Please number each box in order of preference from 1 to 7
- Playing war-like games, like Call of Duty
- Playing card games, like Solitaire
- Playing simulation games, like Sim City
- Downloading music or watching music videos
- Actively using an instant messenger program
- Blogging
- Using a personal profile site, like Facebook

3030: Rank the following software in order of your frequency of use (1 as most). Please do not rank software that you do not use.

Please number each box in order of preference from 1 to 6
- Microsoft Word
- Adobe Photoshop
- iMovie
- Macromedia Flash
- Adobe InDesign
- Microsoft Excel

3040: Imagine this situation: You’re using your camcorder and need to know how to change the date and time. What kind of visual would you like to help explain how to solve the problem you’re having? Assuming all the visuals are well-done, please rank order the three visuals (1=probably the most helpful; 3=probably the least helpful)

Please number each box in order of preference from 1 to 3
- A photograph of a person doing the task
- A life-like line drawing of a person doing the task
Submit Your Survey.
Thank you for completing this survey. Please fax your completed survey to: .
A few days ago I emailed you about participating in a survey entitled "Visuals in Instructions." Unfortunately, due to some technical problems, I had to reset the survey. I apologize for the inconvenience and would appreciate your participation at this time.

- Your risk? Zero!
- Your time needed? About 5 minutes.
- Effort to complete? Very little.
- Who else is completing the survey? Students in composition classes and faculty/staff in the Department of English.
- Why bother? I desperately need you to complete and return the survey so my response rate of completed surveys is high.
- Will I get famous? No. Your responses are anonymous.

Your participation in this survey will assist me greatly with my M.A. thesis research in the Department of English. This survey will help increase knowledge about the ways in which visuals are used in instructions.

To participate, please click on the link below. (If you encounter an error, please copy the token number from the survey link and paste it into the box that appears on the screen.)

Thank you,

Amanda Bemer

http://survey.eserver.org/15&token=0411797785
Appendix C: Usability test documents

• Email requests to participate in test

• Test consent form

• Pre-test questionnaire

• Post-test questionnaire
Subject: Searching for usability test volunteers

Need to balance the scales of karma in your favor by doing a good deed? Here's the perfect opportunity--help me complete my thesis!

I'm looking for individuals who have matured to the age of 50 or more to participate in a usability test. A usability test is basically an observational study--you'll be using a camcorder and instructions to perform a couple of tasks while I watch. You'll be completely anonymous (I'm assigning numbers in place of names in my thesis and other places where I discuss my research). Your face won't appear on any recordings because you'll be recording with the camcorder. Only your voice will be heard on the tapes.

No experience with a camcorder? No problem. I'm testing the instructions, not your skills. No special knowledge is required for your participation, just willingness to help a master's student graduate and an age that fits in the demographic (50+).

There is no foreseeable risk to you by participating in this study; I've already tested several other individuals, and no one was harmed. There will also be treats!

I'm hoping to test this week. Please email me to let me know of your willingness and what times you're available.

Thanks!
Amanda Bemer
Rhetoric, Composition, and Professional Communication MA student
Subject: Desperately seeking four more volunteers

You've probably already received this request—I'm sending out another plea for assistance because I still need usability test participants. This is your chance to get in on the action and volunteer!

I'm looking for four volunteers (two age 24 and under, and two age 50 and over) to help me finish my thesis research by participating in a usability test—basically you'll complete a few tasks with a camcorder while I watch.

Why should you volunteer? There's no risk to you, and you'll get a treat. Famous people like Dave Roberts have participated in the test and enjoyed it. If you don't believe me, ask him.

Don't have time? It only takes fifteen minutes. Tops.

Don't know anything about camcorders? That's ok. I'm not testing your knowledge.

Know everything about camcorders? That's also ok.

I'm hoping to test within the next couple of days. Please email me to let me know of your willingness and what times you're available.

Thanks!
Amanda Bemer
Rhetoric, Composition, and Professional Communication MA student
Usability Test Consent Form

This usability test is being conducted to give researchers more information about visuals in instructions. There are no foreseeable risk to you; the instructions are being tested, not your skills or knowledge.

As a participant in this usability test, you will be asked to complete multiple tasks with a video camera using a given set of instructions. You will also be asked to fill out a pre-test questionnaire and a post-test questionnaire. Your test will be videotaped.

Your responses will be confidential—you will be assigned a random number associated with your responses for summary and discussion of the test results. If you have any questions, please ask the test administrator, Amanda Bemer. If at any time you feel uncomfortable with these procedures, you may withdraw from the testing.

Please sign and print your name below and date this form to indicate your consent and understanding of the above. Signing this form indicates that you are willing to participate in usability testing.

---------------------------------  ---------------------------------  ---------------
Test participant (please print) Signed Date

---------------------------------  ---------------------------------
Test administrator Date
Pre-test questionnaire

Age:
Sex:

How often do you use computers?

Never or seldom  Occasionally  Often  Very Often

How often do you use help (manuals, etc) when you have trouble completing a task?

Never or seldom  Occasionally  Often  Very Often

How often do you play video or computer games? (not Solitaire, more like The Sims or Call of Duty)

Never or seldom  Occasionally  Often  Very Often

What game(s) do you play the most?

What’s your educational status—how much school have you completed?
Post-test questionnaire

Age:
Sex:

What is your overall ranking of the instructions on a scale of 1-4? (4 is highest) Why?

What is your opinion of the visuals? Did they suit your needs? Did they help you? What seemed to be their function? Why?

Have you ever used instructions that contained visuals like these before? When?

Have you used this camcorder, or one like it, before? How would you rate your proficiency on a scale of 1-4? (4 is highest)
Appendix D: Usability test instructions

- Original Canon Elura manual pages
- Original Canon Elura images (blurry images)
- Cartoon-like image version of test instructions
- Photograph version of test instructions
- Line drawing version of test instructions
Tips for Making Better Videos

Holding the camera

For maximum stability, grip the camera in your right hand and keep your right elbow pressed against your body. If necessary support the camera with your left hand. With practice, you will be able to operate the controls by touch, without taking your eye off the action.

Using a tripod

To prevent any unwanted movement, you can mount the camera on a tripod, (or any flat surface at a suitable height) and operate it with the wireless controller.

• When you are using a tripod, be careful not to leave the viewfinder exposed to bright sunlight or it may melt. (The light is concentrated by the viewfinder lens.)
• When not using the camera, return the viewfinder to its retracted position.
• Make sure that the fastening screw of the tripod is no longer than 3/16 inch (5.5 mm), or it will damage the camera.

Composition

The most important element in the scene does not have to be in the center. For a more interesting picture, try to position your subject so it is slightly to one side. Leave some space on the side of the frame that the subject is facing or moving towards.

Don’t cut off the top of the subject’s head, and don’t cut people off at the neck, hips or knees (move a little bit above or below).

Watch out for distracting objects in the background.
Instead of zooming while recording, try to choose your picture angle before you begin. A good way to tell a story with video is to begin with a long shot that establishes the situation, and then move in with medium shots and close-ups to show the details. Remember to change your viewpoint for each shot.

Remember that any camera movement or change in picture angle should have a definite purpose. Avoid unnecessary or half-hearted movements.

**Picture angle**

![Long shot](image1)

![Medium shot](image2)

![Close-up](image3)

**Camera moves**

Use pans to record a landscape or follow a moving subject. Decide the area you want to cover and stand facing the end of your panning angle. Without moving your feet, turn your waist to the starting position. Start recording, and after a few seconds begin to turn slowly from the waist. Hold the final image for a few seconds before you stop recording.

Tilt the camera up to exaggerate the height of the subject. Tilt down from the top of a building, for example, as an introduction to subjects at the bottom.
**Tips for Making Better Videos**

**Holding the camera**

For maximum stability, grip the camera in your right hand and keep your right elbow pressed against your body. If necessary support the camera with your left hand. With practice, you will be able to operate the controls by touch, without taking your eye off the action.

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