As the previous three chapters imply, the effect of a stimulus is "context-dependent." That is, decision makers do not perceive and remember material in isolation; they interpret new information in light of past experience and the context in which the material occurs. In one situation, a stimulus (for example, a personality trait) may be perceived one way, and in another situation, the "same" stimulus may be seen very differently. Many perceptual illusions exploit the principle of context dependence (see Figure 4.1). In the area of judgment and decision making, four of the best illustrations of context dependence are the contrast effect, the primacy effect, the recency effect, and the halo effect.

THE CONTRAST EFFECT

Here is a simple experiment you can perform on yourself (or on your friends). All you need is three large bowls of water. Fill the first bowl with hot water, the second bowl with tepid water, and the third bowl with ice water. Next, submerge one hand in the hot bowl and one in the cold bowl, and keep them there for thirty seconds. Once your hands have adjusted to the water temperature, place the "hot" hand in the bowl of tepid water and, after five seconds, join it with the "cold" hand.

If you are like most people, you will feel a very strange sensation. The hand that was formerly in hot water will be telling you that the tepid water is cold, and the hand that was in cold water will be telling you that the tepid water is hot. In fact, if you try this experiment on a friend and keep the temperature of the tepid water a secret, she or he will probably not be able to tell what temperature the tepid water is. Each hand will be exhibiting a "contrast effect," but the two effects will be in opposite directions!

Many early studies in psychology concerned perceptual judgments such as temperature discrimination, color discrimination, and weight estimation. Consequently, contrast effects were among the first psychological phenomena to be reliably demonstrated in the laboratory. For example, Muzafer Sherif, Daniel Taub, and Carl Hovland (1958) published an influential article on contrast effects in judgments of weight. Sherif, Taub, and Hovland found that when subjects initially lifted a heavy weight, they subsequently rated relatively light weights as lighter than they actually were.

FIGURE 4.1

To see some effects of context on visual perception, hold this page up to a bright light source. Most people report that the edges of the square bend inward and that the parallel lines no longer look parallel. (Adapted from Block and Yuker, 1989.)
One of the most interesting studies of the contrast effect was published by Stanley Coren and Joel Miller (1974). Coren and Miller noted that a 5-foot 10-inch sports announcer looks very short when interviewing a team of basketball players, but looks very tall when interviewing race horse jockeys. At the same time, the apparent size of the announcer does not shrink when the announcer is standing beside a large race horse—or, for that matter, a stadium.

From this observation, Coren and Miller speculated that the contrast effect only occurs when the contrasted stimuli are similar to one another. To test this hypothesis, they presented a dozen volunteers with each of the clusters shown in Figure 4.2. The cluster in the upper left quadrant is an example of the famous Ebbinghaus illusion. In the Ebbinghaus illusion, the center circle appears larger when it is surrounded by smaller circles than when it is contrasted with larger circles.

Coren and Miller found, however, that the Ebbinghaus illusion diminished as the surrounding shapes became less like circles (as judged by the experimental volunteers). The illusion was weaker with hexagons than circles, weaker still with triangles, and weakest of all using irregular polygons. By comparing the quadrants in Figure 4.2, you can see that even simple judgments of size depend critically upon context.
THE PRIMACY EFFECT

A classic study of context dependence was published by Solomon Asch (1946). Although Asch is best known for his research on conformity (discussed in Chapter 17), he also pioneered the study of “impression formation.” In most of his research on impression formation, Asch asked subjects to give their impressions of a hypothetical person who had certain traits. His 1946 article reviewed 10 different experiments using this paradigm, but for now, we will consider just one.

In this experiment, Asch asked subjects for their impressions of someone with the traits listed in Item #3 of the Reader Survey. Half of the subjects were asked about someone who was envious, stubborn, critical, impulsive, industrious, and intelligent. The other half were asked about someone with the very same characteristics, except that the characteristics were presented in the opposite order: intelligent, industrious, impulsive, critical, stubborn, and envious.

What Asch found was that the characteristics appearing early in each series influenced impressions more strongly than the characteristics appearing later. This pattern is known as a “primacy effect.” If you responded to Item #3 by rating John’s emotionality as very high, a primacy effect may have occurred—the emotional traits envious and stubborn may have affected your impressions more than they would have if they had appeared later in the list.

Would envious and stubborn still produce a primacy effect if intelligent preceded them as the first word? According to a study by Norman Anderson (1965), they probably would. Anderson found that the primacy effect is not merely a product of the first entry in a series. Instead, it is a general relationship between the position an entry occupies and the effect it has on judgments. First impressions are the most important impressions, but second and third impressions still show a significant primacy effect.

THE RECNENCY EFFECT

The primacy effect occurs not only when people form impressions of each other, but in a great many situations involving the evaluation of sequential information. For example, a primacy effect sometimes occurs when people are exposed to opposite sides of a controversial issue. In many cases, people are more influenced by the first presentation of an issue than by subsequent presentations.

This is not always the case, however. In some instances, the final presentation has more influence than the first presentation. Such a pattern is known as the “recency effect.” The recency effect often occurs when people are able to remember the last presentation more clearly than the first one.

An interesting question arises as to which effect is the strongest. For example, suppose you are participating in a public debate, and suppose further that you are offered the choice of speaking first or last. What should you choose? If you speak first, you might be able to take advantage of a primacy effect, but if you speak last, you might capitalize on a recency effect. Which choice is best?

This question was investigated by Norman Miller and Donald Campbell (1959). Miller and Campbell edited the transcript of a court trial concerning damages allegedly incurred as a result of a defective vaporizer. The proceedings were rearranged so that all the material for the plaintiff appeared in one block of text, and all the material for the defendant appeared in another block. In other words, the “pro” communication included testimony from witnesses called by the plaintiff, the cross-examination of witnesses for the defense by the plaintiff’s lawyer, and the opening and closing speeches by the plaintiff’s lawyer. The “con” communication included testimony from witnesses for the defense, the cross-examination by the defense, and the opening and closing speeches by the counsel for the defense.

After Miller and Campbell edited the transcripts, they recorded the proceedings with different people reading the parts of different characters (lawyers, witnesses, and so forth). Each recording lasted about forty-five minutes, and the communications were presented in one of eight different ways (see Figure 4.3 for an overview). In some conditions, subjects rendered judgments immediately after hearing back-to-back communications (pro-con or con-pro), and in other conditions, a one-week delay separated various phases of the experiment.

FIGURE 4.3
Norman Miller and Donald Campbell (1959) investigated primacy and recency effects by comparing the impact of communications in the eight experimental conditions shown below.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Order of Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pro Message → Con Message → Response</td>
</tr>
<tr>
<td>2</td>
<td>Con Message → Pro Message → Response</td>
</tr>
<tr>
<td>3</td>
<td>Pro Message → Con Message → (delay) → Response</td>
</tr>
<tr>
<td>4</td>
<td>Con Message → Pro Message → (delay) → Response</td>
</tr>
<tr>
<td>5</td>
<td>Pro Message → (delay) → Con Message → Response</td>
</tr>
<tr>
<td>6</td>
<td>Con Message → (delay) → Pro Message → Response</td>
</tr>
<tr>
<td>7</td>
<td>Pro Message → (delay) → Con Message → (delay) → Response</td>
</tr>
<tr>
<td>8</td>
<td>Con Message → (delay) → Pro Message → (delay) → Response</td>
</tr>
</tbody>
</table>
What Miller and Campbell found was a primacy effect in some cases and a recency effect in others—that is, they found that in some conditions people were more persuaded by the first communication, and in others, they were more persuaded by the second communication (regardless of whether the communication was pro or con). When subjects were asked about the court case one week after hearing back-to-back presentations (Conditions 3 and 4), a primacy effect occurred. On the other hand, when the communications were separated by a week and subjects were asked about the case immediately after the second communication (Conditions 5 and 6), a recency effect occurred. The first two conditions and the last two conditions did not result in significant primacy or recency effects.

Miller and Campbell (1959) also found evidence that recency effects were a function of differences in recall. As measured by a multiple-choice test, subjects in Condition 5 tended to recall more factual material about the con communication than about the pro communication, and subjects in Condition 6 tended to recall more factual material about the pro communication than about the con communication.

So to answer the original question: If you are offered the choice of speaking first or last in a public debate, you should speak first if the other side will follow you immediately and there will be a delay between the debate and people's responses to it. For example, if you are debating an issue that will be voted on in a week, then you should choose to speak first. On the other hand, if some time will separate the two communications, and if people will be asked to act immediately after the second presentation, you should capitalize on the recency effect and choose to go last.

Stephen Hoch (1984) found essentially the same results in several experiments on how people make predictions. Hoch asked people to generate reasons why a future event might occur ("pro-reasons") and reasons why the same event might not occur ("con-reasons"). For some events people listed pro-reasons first, and for others they listed con-reasons first. Hoch found a strong primacy effect when people generated both sets of reasons back-to-back, but a recency effect when people worked on a three-minute task between listing pro- and con-reasons. These findings are consistent with age-old selling techniques in which customers are encouraged to list the reasons for making a purchase (pro-reasons) and list the reasons against making a purchase (con-reasons). If the two sets of reasons are generated back-to-back, customers may unwittingly fall prey to primacy effects (Gross, 1964).

HALO EFFECTS
Contrast, primacy, and recency effects show that the same stimulus can have a different effect depending on its context and order of presenta-

![Image of a page from a book](image1)

**44 PERCEPTION, MEMORY, AND CONTEXT**

Another example of context dependence is the "halo" effect, so named by Edward Thorndike back in 1920. Thorndike found that when army superiors were asked to evaluate their officers in terms of intelligence, physique, leadership, and character, the ratings were often highly correlated. According to Thorndike, a flight commander who had supervised the work of aviation cadets showed a correlation of .51 between his ratings of their intelligence and their physique, .58 between their intelligence and their leadership ability, and .64 between their intelligence and their character. Thorndike also found positive correlations among various teacher evaluations that were used to determine salaries and promotions. In one case, for example, general merit as a teacher correlated strongly with ratings of general appearance, health, promptness, intellect, and integrity and sincerity. In another case, ratings of a teacher's voice correlated strongly with ratings of intelligence and "interest in community affairs."

In his original article on the halo effect, Thorndike (1920, pp. 28-29) concluded that "even a very capable foreman, employer, teacher, or department head is unable to treat an individual as a compound of separate qualities and to assign a magnitude to each of these in independence of the others." Nowadays, we know that Thorndike's findings were partly due to technical aspects of how the rating scales were constructed, but his general idea has stood the test of time. Even when ratings are solicited using sophisticated measurement techniques, a halo effect often results (Cooper, 1981; Feldman, 1986).

Since the time of Thorndike's observations, many different halo effects have been documented. For example, research on "beauty halo effects" has shown that, relative to average-looking or unattractive people, physically attractive people are seen as happier, higher in occupational status, more likely to get married, and more desirable in terms of personality (Dion, Berscheid, & Walster, 1972). David Landy and Harold Sigall (1974) also found that essays were rated as higher in quality when they were attributed to a physically attractive author rather than an average-looking or unattractive author.

As in the case of the contrast effect, many pioneering experiments on the halo effect were performed by Asch (1946). For instance, in one experiment, Asch asked roughly half the subjects to form an impression of someone who was intelligent, skillful, industrious, warm, determined, practical, and cautious. Similarly, he asked the other subjects to form an impression of someone who was intelligent, skillful, industrious,
cold, determined, practical, and cautious. Thus, both groups of subjects heard the same description, except that the person was described as warm in the first instance and cold in the second.

Subjects were then presented with pairs of traits (mostly opposites) and were asked to indicate which trait was most consistent with the impression they had formed of the person. The pairs included traits such as generous/ungenerous, unhappy/happy, irritable/good-natured, and humorous/humorless. In keeping with the earlier findings of Thorndike, Asch found that the inclusion of a central characteristic such as warm or cold influenced subjects' overall impression of the person—that is, subjects created a "halo." For example, 75 to 95 percent of the subjects who formed an impression of the warm person thought that such a person would also be generous, happy, good-natured, and humorous (you can compare yourself to these subjects by checking your answer to Item #4 of the Reader Survey). In contrast, only 5 to 35 percent of the subjects who formed an impression of the cold person thought that such a person would have these traits.

These results are not simply a by-product of using simple paper-and-pencil tasks. Harold Kelley (1950) published a study that explored the halo effect using real people instead of lists of traits, and he found much the same halo effect that Asch had observed several years earlier. Students who were led to expect a warm instructor saw the instructor not only as relatively considerate, good-natured, and sociable, but as more popular, humorous, and humane. Moreover, there was a marginal tendency for students to interact more with the instructor when they believed he was warm. Fifty-six percent of the "warm" subjects entered into the class discussion, compared with only 32 percent of the "cold" subjects. These results suggest that the halo effect operates in social interactions and may influence subsequent behavior.

As with the contrast, primacy, and recency effects, the halo effect illustrates that the way people react to a stimulus is context-dependent. Indeed, there is no such thing as a stimulus without a context. Contextual factors strongly influence how people respond—whether the stimulus is a geometric shape, a personality trait, a legal argument, or spinach.

**CONCLUSION**

Context effects are so common they sometimes seem invisible. In fact, it is hard to imagine a world in which perceptions are not context-dependent. What would such a world look like? What would it mean to talk about context-free judgment?

As a student in one of my seminars pointed out, context effects raise profound questions about the nature of social relationships. For example, the contrast effect suggests that it is impossible to "know a person" in any absolute sense. When you judge the honesty of a friend, this judgment is relative and depends to some extent on the honesty of other people you know. According to the contrast effect, you will see your friend as more honest if other people you know deceive you—even if the behavior of your friend remains the same. The judgment you make of a friend’s honesty may seem unrelated to the honesty of other people, but as the research in this chapter shows, social judgments often depend in part on context.

Even happiness is context-dependent. Philip Brickman, Dan Coates, and Ronnie Janoff-Bulman (1978) found this to be the case in a study of Illinois State Lottery winners. Compared with a geographically matched control group of nonwinners, lottery winners reported feeling less pleasure from a variety of daily activities, including watching television, talking with friends, eating breakfast, buying clothes, and so forth. Brickman, Coates, and Janoff-Bulman argued that this difference was partly the result of a contrast effect in which ordinary activities were compared with the thrill of winning a lottery.

Persuasion professionals have long recognized the power of context effects. For instance, real estate agents sometimes exploit the contrast effect by showing buyers a run-down or overpriced property before the home that is under serious consideration. Political candidates often capitalize on the halo effect by painting a picture of wide-ranging ability from one or two previous successes. And advertisers take painstaking care to create appealing contexts for the products they promote.

Of course, the effects of context are not limitless. A pathological liar will not seem honest regardless of how much other people lie, and an incompetent politician can only exploit the halo effect so far. A background of concentric circles can make the edges of a square seem curved, but it cannot make a square into a circle. Nonetheless, any comprehensive analysis of judgment and decision making must take context effects into account. Indeed, some authors have suggested that laboratory demonstrations of context effects underestimate the effects of context in daily life (Hershey & Schoemaker, 1980).