



Eddie Harmon-Jones
David M. Amodio
Leah R. Zinner

Social Psychological Methods of Emotion Elicitation

Social psychology has long embraced the study of emotion. In an early experiment, Schachter (1959) induced anxiety to examine its effects on affiliation. Schachter's original description of the anxiety manipulation illustrates many of the methodological features of social psychological experiments:¹

In the high anxiety condition, the subjects, all college girls, strangers to one another, entered a room to find facing them a gentleman of serious mien, horn-rimmed glasses, dressed in a white laboratory coat, stethoscope dribbling out of his pocket, behind him an array of formidable electrical junk. After a few preliminaries, the experimenter began:

Allow me to introduce myself, I am Dr. Gregor Zilstein of the Medical School's Departments of Neurology and Psychiatry. I have asked you all to come today in order to serve as subjects in an experiment concerned with the effects of electrical shock.

Zilstein paused ominously, then continued with a seven- or eight-minute recital of the importance of research in this area, citing electroshock therapy, the increasing number of accidents due to electricity, and so on. He concluded in this vein:

What we will ask each of you to do is very simple. We would like to give each of you a series of electric shocks. Now, I feel I must be completely honest with you and tell you exactly what you are in for. These

shocks will hurt, they will be painful. As you can guess, if, in research of this sort, we're to learn anything at all that will really help humanity, it is necessary that our shocks be intense. What we will do is put an electrode on your hand, hook you into apparatus such as this [Zilstein points to the electrical-looking gadgetry behind him], give you a series of electric shocks, and take various measures such as your pulse rate, blood pressure, and so on. Again, I do want to be honest with you and tell you that these shocks will be quite painful but, of course, they will do no permanent damage. (Schachter, 1959, pp. 12–13)

Social psychology is noted for its use of psychologically meaningful and involving experimental manipulations. These high-impact manipulations are combined with cover stories that mask the deception that is employed. Indeed, this methodology of inducing emotion distinguishes social psychological methods from other methods. Like other types of experimentation, social psychological experiments use random assignment to conditions, and they control extraneous variables and manipulate only the variables of interest. However, unlike other types of psychological experiments, social psychological experiments often use high-impact manipulations designed to create realistic, emotion-eliciting situations, and they typically employ cover stories to mask any deception needed to manipulate a variable.

Designing a Social Psychological Experiment

Planning a social psychological experiment that involves deception requires five basic stages. Excellent, detailed discussions of how social psychological experiments are planned and conducted have been presented previously (e.g., Aronson, Brewer, & Carlsmith, 1985; Aronson & Carlsmith, 1968). The present discussion builds on these past discussions and applies them to the field of emotion research. However, as Aronson and colleagues have noted, it is impossible to specify a set of guidelines that will make someone a *good* experimenter. To become a skilled experimenter, one needs to observe good experimenters and conduct experiments under their guidance (see also Festinger et al., 1959).

Constructing the Cover Story

The first stage involves the construction of the cover story, or the rationale for the experiment, that distracts participants from the experiment's true purpose. A good cover story sets the stage for the entire experiment and smoothly incorporates the manipulation of the independent variable and the collection of the dependent variable. Because participants in experiments are often curious, and sometimes suspicious, adults, the context must make sense to them. In other words, the experimental manipulation and the measurement of the participants' responses must be presented in a situation that is sensible and internally consistent or that tells a logical story. These design elements enhance the impact of the experimental manipulation and provide justification for the collection of data.

As mentioned earlier, social psychological experiments often involve deception. Thus, in experiments employing deception, the experimental situation must include a sensible, logically consistent rationale for conducting the research. It must also include a plausible reason for the collection of the dependent variable(s). Both of these elements of the design should make it almost impossible for participants to detect the true purpose of the experiment.

In addition to explaining all aspects of the experiment in a plausible manner and thus preventing participants from attempting to detect the true (or another) purpose to the experiment, the cover story should capture the attention of the participants so that they will be alert and responsive to the experimental events. If, because of a poor cover story, participants believe that the experiment is concerned with something trivial, they may not be attentive to the experimental manipulation and thus it may have little impact on them. At their essence, good cover stories are like good movies—they actively involve the participant in a kind of drama and thus maximize the impact of the experimental manipulation.

For cover stories to successfully convince participants and for manipulations to have impact, they need to be fully comprehended by participants. To accomplish this, instructions

often need to be presented in different ways, for example, both orally and in written form. Key portions of instructions (for both cover stories and manipulations) need to be repeated or paraphrased. In addition, the tasks used in experiments must attentionally engage the participants, although this should not be much of a problem in a well-designed high-impact experiment.

The ability of a cover story and manipulation to have the intended experiential effects should be ascertained in pretests. Often, readers fail to appreciate the amount of pretesting that went into fine-tuning a good cover story and manipulation. Pretesting is necessary to ensure that the independent variable is manipulating what is intended. For example, it would be impossible to assess the effects of anger on information processing without first assessing whether the anger manipulation was indeed evoking the emotion of anger.

The fine details in the presentation and delivery of the cover story make all the difference in whether or not participants become suspicious. The experimenter must know his or her lines and convey a sense of confidence in the value of the experiment.

The Experimenter's Behavior

In addition to delivering the cover story in a convincing manner, the experimenter also needs to behave consistently over the duration of the months of data collection and to treat each participant equivalently to how others are treated. Moreover, the experimenter should act in a relatively neutral manner toward participants and avoid being too friendly and chatty, so that participants are in a relatively neutral emotional state when the intended emotion manipulation is presented. Experimenters should also avoid drastically altering their appearance during the running of an experiment (e.g., hair color or length should probably not be altered). Experimenters should be encouraged to avoid wearing clothing that is out of the ordinary or that would prime certain ideas (e.g., shirt with skull and crossbones, concert t-shirts, school t-shirts). Such attire could add error variance, as much research has demonstrated the effects of subtle primes on behavior (e.g., see the review by Bargh & Ferguson, 2000) and experimenter attire has been found to alter participants' behavior (e.g., Simon et al., 1997). Moreover, if more than one experimenter is used on a given experiment, steps need to be taken to ensure that the two or more experimenters behave consistently with each other. All of these steps should be taken to reduce error variance.

Constructing the Independent Variable

The third stage of social psychological experimentation involves the design and construction of the independent variable. The independent variable is the experimental manipulation, and it should be independent of all sources of variation except the one that is being manipulated. A particular

conceptual (or theoretical) independent variable may be operationalized in multiple ways. Ideally, replications of experimental results are obtained with a variety of manipulations of the abstract conceptual variable. For example, the abstract concept of anger may be induced through a variety of manipulations, such as goal blocking or the receipt of insults. The manipulation should occur seamlessly in the experiment so that participants are oblivious to the fact that the experimental manipulation is taking place.

Manipulations can be accomplished using within-subjects designs, whereby each participant is exposed to each level of the independent variable, or they can be accomplished using between-subjects designs, whereby each participant is exposed to only one level of the independent variable. In between-subjects designs, participants should be randomly assigned to conditions. Although within-subject designs are preferable for many reasons (e.g., each participant serves as his or her own control and thus reduces unwanted variance), it is often not plausible to use within-subject designs in high-impact/deception experiments, for a few reasons. First, the effects of the emotion induction may be so intense that they would contaminate subsequent manipulations. Second, it may not make sense to participants to respond to a different situation under slightly different conditions, for example, receiving both an insulting and a neutral evaluation of one's performance on a task.

Avoiding Participant Awareness Biases

One important issue that arises in developing the independent variable is the need to avoid participant awareness biases. That is, the design of the manipulation should ensure that participants respond just as they would if they confronted the stimulus or situation outside of the experimental laboratory, in their everyday lives. Participant biases can take many forms—participants may respond in a socially desirable (or undesirable) manner, or in such a way as to confirm (or disconfirm) what they believe are the experimenter's hypotheses. These potential participant biases are the reason that social psychological experimenters frequently use deception and elaborate cover stories.

Experimenter Should Be Blind to Condition

Another potential problem in experiments is that the experimenter's own behavior may provide subtle (or not so subtle) cues that influence the reactions of the participants. The idea that an experimenter who is not blind to condition can influence the participants' behavior has been repeatedly demonstrated (Rosenthal, 1994). Indeed, these experimenter expectancy effects are quite dramatic and can occur even when the experimenter does not intend them. In a profound demonstration of this point, Rosenthal and Lawson (1964) found that rats learn mazes more quickly when the experimenters are led to believe that the rats are good learners, whereas rats learn mazes more slowly when the experimenters are led to believe that the rats are poor learners.

To prevent experimenter expectancy effects, several steps must be taken. The experimenter can be made unaware of the research hypotheses. However, doing such assumes that the experimenter will not form his or her own hypotheses, which, in turn, may affect the participant's responses. Because experimenters are typically members of the research team, participating in the research process for educational purposes, they are likely to form their own hypotheses and may correctly guess the true hypotheses. Making them unaware of the hypotheses would prevent them from participating fully in the research processes and is therefore undesirable. In addition, for experimenters to conduct adequate debriefings (discussed later), the experimenters need to be fully aware of the hypotheses. For these reasons, it is preferable to keep the experimenter aware of the hypotheses but to keep him or her unaware of the condition to which the participant is assigned. However, this may be impossible to do, depending on the nature of the experiment. In such cases, the research should employ two experimenters, one who delivers the manipulation and immediately leaves the participant's room and another who collects the dependent variable while remaining unaware of the condition to which the participant had been assigned. Even in this type of situation, the first experimenter must remain unaware of the condition until the manipulation is delivered, so that his or her pre-manipulation behavior is constant across conditions. A remedy to this issue is the use of instructions or manipulations delivered via computer or tape recordings. However, in employing this remedy, the researcher should ensure that the participants attend fully to the manipulation. Another possibility is to make the experimenter blind to one variable but not another when an interaction between two or more variables is predicted.

The Dependent Variable

When assessing the effects of an emotion induction, behavioral or physiological measures are preferred, although self-reports are often used because of convenience. The use of self-reports may be disadvantageous, however, because they may not produce veridical reports of experience (e.g., because the participant may be unaware of or unable to report an emotional experience or because they may give false responses). Moreover, completion of self-reports of emotional experience can bias later behavior and cognition (e.g., Berkowitz, Jaffee, Jo, & Troccoli, 2000). That is, completing an emotion questionnaire immediately after an emotion induction (and prior to collection of cognitive or behavioral measures of interest) might make participants aware of the hypotheses and/or cause heightened awareness of their feelings, which might alter the subsequent reactions. For example, Berkowitz and colleagues (2000) have found that the simple completion of an emotion questionnaire immediately following a negative affect induction can reduce hostile reactions, as the individuals become more aware of

their negative affect and attempt to prevent it from biasing later cognition and behavior.

In addition, participants may not respond honestly to questions, because of a need to respond in a socially desirable way or because they want to respond in a manner consistent with what they expect the experimenter might want. Disguising the fact that a particular measure is the critical dependent measure can prevent these problems. One way to disguise the measure is to collect it in a setting that seems completely removed from the experiment. This can be accomplished by telling participants that they are participating in multiple studies; in this case, the dependent variable can be collected in a “different” study from the one in which the independent variable was manipulated.

Another way of disguising the measurement of the dependent variable is to use measures over which participants have relatively less cognitive control. For example, Hass, Katz, Rizzo, Bailey, and Moore (1992) used an indirect measure of emotional experience by presenting “words” quickly on a computer monitor and having participants guess which word was quickly presented from a short list of words. In fact, nonsense words were actually presented, and the short list of words included some descriptors of various emotional states. Hass et al. found that participants induced to feel negative affect selected negative-affect words more often than participants not induced to feel negative affect. Measures of recognition, reaction time, and accuracy of recall can also be used as relatively less controllable measures. Finally, measures of behavior and physiological responses also provide means of obtaining valuable information from participants, and many of these responses often occur relatively automatically (see, e.g., in this volume, Coan & Gottman, chapter 16; Cohn, Ambadar, & Ekman, Chapter 13). We often study emotion because we are interested in its effects on behavior and cognition. As such, it is important to measure these outcomes, as well as more traditional measures of emotion, in such studies.

Postexperimental Interview

An experiment does not end abruptly when the last dependent variable is collected. Instead, the experimenter needs to interview the participant, for several important reasons, which are discussed here. Throughout the interview, the experimenter must show sensitivity to and respect for the participant.

Checking for the Clarity of Instructions and Suspicion

The first goal in the interview is to ascertain whether the participant fully understood the instructions, manipulations, and tasks, so that the experimenter can redesign the experiment if needed (early in the conducting of the experiment) or to decide whether the participant’s data should be excluded from data analysis (such data loss should be reported in the write-up of the experiment). The experi-

menter needs to learn whether the deception was effective or whether the participant became suspicious in a way that would invalidate the data collected. If, for example, a particular participant did not believe that he or she was going to be shocked in Schachter’s (1959) experiment, then the data from that person would be invalid and excluded from analysis.²

Often, in a postexperiment interview, the cover story is maintained for a few minutes. That is, the experimenter asks general, open-ended questions about the experimental events. For example, the experimenter might begin by asking, “What did you think about the questionnaires you completed? What did you think about the essay you wrote? What did you think about the evaluation of your essay? What did you think about the other participant involved in the study—how did you decide how to evaluate the other person? Did everything go smoothly? Did anything about the study seem unusual? Do you have any questions?” Then, after a few general questions, the experimenter will ask whether the participant was doubtful of any part of the experiment. For instance, the experimenter might ask, “Based on what has happened thus far, can you think of something that we might be interested in other than what I told you to begin with?” Asking this type of question after the more general questions can assist in determining how suspicious the participant was and whether the participant’s affirmative response to the more direct question might have been due to prompting during the interview. By beginning with very general and nonleading questions about reactions to the experiment and gradually moving toward more specific and leading questions, the researcher is able to assess whether persons had genuine reactions to the experimental situation, whether they doubted the realism of it, and whether they could guess the hypotheses being tested.

Regardless of whether or not the participant was suspicious, the experimenter needs to treat the participant with respect and with sensitivity. If an individual was not suspicious, then she might believe she was duped and might feel bad about herself for being foolish. On the other hand, if an individual was suspicious, he might feel bad about ruining the experiment. Although participants involved in deception experiments are told that the experiments were designed in such a way that they would not know the actual purpose of the research, and although it logically follows that participants should experience no shame in being deceived, it is important to be sensitive to the participants’ concerns, as individuals do not always respond rationally (e.g., Epstein, 1994).³

Educating the Participant About the Purpose of the Experiment

After determining whether the participant understood the instructions and whether he or she was suspicious, the experimenter should ensure that the participant understood the experimental procedures and hypotheses at a level that en-

hances his or her understanding of the scientific process. By actively participating in the research and then learning about it, participants have an opportunity to experience and learn about meaningful and interesting research firsthand. The experimenter should thoroughly explain why deception was needed to address the experimental hypotheses. See appendix A for an example of a debriefing.

Ensuring That the Participant Leaves in a Good State of Mind

Finally, and most important, the experimenter must ensure that the participant leaves the experiment in a good mood and that he or she feels relatively positively about his or her experience in the experiment. If the experimental procedures were particularly stressful, it would be wise for the experimenter to contact the participant a few days later to make certain that there are no residual effects.

Ethical Issues

The use of high-impact experiments involving deception raises questions about the ethics of conducting such research. A complete discussion of ethical issues in research is beyond the scope of this chapter (see Aronson, Ellsworth, Carlsmith, & Gonzales, 2000, for a more complete discussion). However, we offer a few brief comments. When research questions can be adequately answered without the use of deception, such methods should be employed. However, there are times when deception is necessary. The experimental arousal of certain negative emotions—anger, fear, disgust—is an area of research about which many scientists and laypeople express ethical concern. However, understanding of these emotions is very important in improving mental health and society, and deception may be necessary to effectively evoke valid emotions. Moreover, these emotions are routinely experienced in everyday life; thus the experimental evocation of them does not cause reactions that depart from everyday experiences and occurrences. In fact, our participants in high-impact negative emotion studies often say that they found the experience interesting and worthwhile. Then they complain about participating in boring research studies. Might such boring studies be considered more ethically questionable than high-impact negative emotion studies? Individuals often pay to go to movies where negative emotions are aroused, but they rarely pay to be bored. With care and sensitivity, ecologically valid studies on these emotions can be conducted, without harm to participants. Although the methods described here have emotional impact, there is no reason to suspect that they would cause lasting distress. Because other methods of examining emotion may produce invalid results (e.g., hypothetical scenarios that ask how an individual would feel), it is also ethically questionable to conduct such research, as the participants' time would be wasted and the data would be meaningless and misleading. See Table 6.1 for a summary of the preceding information.

Table 6.1

Requirements for a successful social psychological emotion manipulation

Cover Story

- create a context that makes sense
- provide good rationale for the study
- capture the attention of the participant
- ensure participant understands the story
- pretest to confirm effectiveness

Experimenter's Behavior

- behave consistently over duration of data collection
- treat each participant equivalently to how others are treated
- act in relatively neutral manner toward participants
- do not drastically alter physical appearance during experiment
- avoid wearing unusual clothing
- two or more experimenters should behave consistently with each other

Independent Variable

- keep independent variable free from all other sources of variation
- assign participants randomly to condition
- keep experimenter blind to condition
- avoid participant awareness biases
- manipulate independent variable seamlessly so participants are unaware

Dependent Variable

- measure behavior or physiology if possible
- if self-report, disguise the dependent variable
- be careful about placement of self-report emotion measure

Postexperimental Interview

- check for clarity
- check for suspicion
- educate the participant
- ensure participant leaves in a good state of mind

Why Use Social Psychological Manipulations of Emotion?

As is now evident, social psychological methods of inducing emotion are difficult to carry out. They require lots of planning, creativity, and interviewing. They also require that researchers spend lots of time and effort training experimenters to act in a convincing manner. So, one might ask, why should one go through these difficulties to induce emotion? There are a number of answers to this question.

The use of social psychological methods, as described earlier, provides a means of inducing emotions and assessing their consequences that avoids many problems often encountered using other methodologies. For example, social psychological methods assist in preventing responses that are due to demand characteristics, the phenomenon by which the participant responds in a way that confirms (or disconfirms)

the experimenter's hypothesis. Moreover, these methods are designed to elicit realistic responses, that is, responses the participants would make outside the laboratory, unaffected by self-presentational biases or social desirability concerns. These concerns are greatly minimized by masking the purpose of the experiment, the manipulation of the independent variable, and the assessment of the dependent variable.

Another reason to use social psychological methods to evoke emotion is that certain emotions may be impossible to evoke effectively using other methods. Anger, for instance, is an emotion that may be quite difficult to evoke using standardized sets of photographs or films. As is evidenced later in this chapter, anger can easily be evoked using social psychological methods.

The use of cover stories, deception, and the like also permits researchers to evoke emotions that are psychologically real and similar to the emotions that occur outside of the laboratory.⁴ For social animals, emotions are often evoked in social contexts. Thus, to fully understand emotion processes, emotions need to be evoked in the context in which they often naturally occur—the social environment. The use of cover stories, deception, and other social psychological methods allows the researcher to evoke emotions in a controlled manner inside the laboratory. Social psychological methods may be complemented by other methods when researchers want to test the generalizability of their emotion effects.

Examples of Social Psychological Methods of Emotion Evocation

To illustrate the social psychological method of emotion induction, we describe a few examples. We have chosen examples with which we are familiar; we are in no way attempting to provide a comprehensive review of social psychological methods of emotion induction, as such would exceed the space limitations for this chapter (see appendix B for a short list of additional publications that report experiments using social psychological methods to evoke emotions). In what follows, we provide highly detailed descriptions of the experimental procedures in order to convey the depth and detail of the manipulations and cover stories. Details that may seem trivial are included because it is these minor details that give realism to the experimental situation.

Anger

The emotion of anger has been induced in a variety of ways by social psychologists (e.g., Berkowitz, 1962, 1993). In fact, anger is an emotion that typically requires high-impact manipulations and the use of deception to elicit. Whereas other emotions can be induced using film clips or photographs, anger is difficult to induce using such stimuli.

Using Interpersonal Insult to Induce Anger

As an example of an experiment using social psychological methods to induce anger, consider the experiment by Harmon-Jones and Sigelman (2001). The experiment was designed to assess the effects of anger on asymmetrical frontal cortical activity. In addition to measuring brain activity with electroencephalography (EEG), measures of aggressive behavior and self-reported anger were included to verify that anger had indeed been evoked. To induce anger, the researchers manipulated interpersonal feedback to be either neutral or insulting. Aggressive behavior was measured by giving participants the opportunity to deliver a noxious stimulus to the person who had insulted them. However, both the anger induction and the measure of aggression needed to be disguised, because if participants knew of the researchers' interest in manipulating anger and measuring it and aggression, their responses may not have been valid.

The experiment began when the experimenter greeted the participant in a waiting room. When arriving at the door of the lab room, the experimenter pointed to a sign indicating that the room was occupied. He then said that they needed to go to another lab room because the other experimenter and participant were in this room. All of these steps were taken to assist in convincing the participant that another participant was being run through the same experiment at the same time. On arrival at the second lab room, the experimenter presented the participant with the cover story. That is, he explained that the experiment concerned personality, psychophysiology, and perception and that the study would be conducted in connection with the other participant. He then said that there would be two perception studies, the first involving person perception and the second involving taste perception. To enhance the believability of the person-perception study and make it seem plausible, the experimenter explained that people often easily form impressions of others based on articles that they have written and that this research concerned how the reader's perceptions of the writer was related to personality characteristics of both the reader and the writer. The experimenter explained that the two participants never meet each other, to obtain the most reliable and valid indicator of perception of the writer based solely on the written essay, because physical appearance can also influence perception of personality. Many of the preceding details appear very minor, and care was taken to present them in an offhanded way. Taken together, they created a convincing belief in the reality of the "other participant."

Following this oral introduction, participants read a brief written description of the experiment to further ensure that the participant understood the cover story. Participants then completed a baseline affect scale and were prepared for an EEG recording, which was followed by a baseline EEG recording. The baseline measures served three purposes: They allowed for statistical control of individual differences; they

accustomed the participants to these measures, which would be assessed later as dependent variables; and they made subsequent assessment of these measures more plausible. Next, the experimenter further explained the "person perception" study by telling participants that they would be randomly assigned to either write an essay on a personally important social issue or to give their perception of the person who wrote such an essay. In fact, all participants were assigned to the role of writing the essay, but the presentation of the idea of random assignment to condition was used to make participants more likely to believe the entire cover story and not become suspicious when they were later insulted.

After they finished their one-page essay arguing for their position on a personally important social issue, the experimenter collected their essays and ostensibly took them to the other participant (who did not actually exist) for evaluation. The experimenter made sure to open and close the necessary doors and leave the participant for a reasonable amount of time. Again, all of these steps were taken to make all aspects of the experiment more believable to the participants.

Anger Manipulation. The experimenter returned and offhandedly mentioned that the participant could look at the evaluation of his or her essay. Of course, the evaluation would provide the manipulation of insult, and it was given to the participants in an envelope so that the experimenter could remain blind to condition. The evaluation was designed to be relatively positive or relatively negative in tone. The evaluation consisted of ratings ostensibly made by the other participant on a number of bipolar scales (e.g., unintelligent-intelligent). The neutral evaluation consisted of slightly positive ratings. The neutral evaluation was slightly positive because past research had revealed that most individuals view themselves as better than average (e.g., Weinstein, 1980). Indeed, this slightly positive evaluation did not cause any changes in self-reported affect. The negative evaluation consisted of fairly negative ratings. In addition, on the neutral evaluation, the other participant wrote at the bottom of the rating form, "I can understand why a person would think like this." On the negative evaluation, the other participant wrote, "I can't believe an educated person would think like this. I hope this person learns something while at the university." The person providing the evaluation was ostensibly of the same gender as the participant (to avoid any of the complexities associated with male-female interactions). Immediately after the participant finished reading this evaluation, the experimenter indicated over the intercom that he needed to collect more baseline brain wave readings. EEG was acquired for 1 minute.

Aggression Measure. Following the collection of EEG, the experimenter described the second study involving "taste perception." This "second study" was used to obtain a disguised behavioral measure of aggression. The study was supposedly concerned with the relationship between EEG and self-reported indexes of detecting slight differences in tastes.

The experimenter noted that it was very important for experimenters to remain blind to the type of tastes to which participants are exposed in taste-perception studies. He explained that one way to keep experimenters blind to the tastes is to have one participant assign the tastes to the other participant. He also explained that the participant had been randomly chosen to assign the tastes to the other participant, and that the other participant would have to drink the entire amount he or she was given. The experimenter then showed that participant six types of beverages, and each type consisted of three concentration levels (i.e., 11 oz. of water mixed with 1, 2, or 3 teaspoons of sugar, apple juice, lemon juice, salt, vinegar, or hot sauce). The experimenter indicated that most persons find the sugar water most pleasant and the hot sauce most unpleasant and that the other beverages were rated in between these two extremes, with those closer to sugar being more pleasant and those closer to hot sauce being more unpleasant. This was done to ensure that participants "knew" which beverages were noxious and which were not. The beverages were always presented on a tray and in the same order, from very pleasant to very unpleasant (see figure 6.1).

The experimenter then asked participants to select one of the six types of beverages for the other participant, to pour some of each of the three concentrations into cups, and to cover the cups with lids when done. Participants were told to label the concentration level on the bottom of each cup. To further bolster the cover story about keeping the experimenter blind to the type of beverage they chose, participants were given a black sheet to cover the unused beverages with when they were finished administering the beverages. Again, all of these steps were taken to ensure that the cover story was indeed plausible.



Figure 6.1. Experimenter explains "taste perception study," which ultimately provides a behavioral measure of aggression.

Aggression was calculated by assigning each beverage a value that corresponded to its unpleasantness. This measure of aggression is similar to a technique developed by other researchers (Lieberman, Solomon, Greenberg, & McGregor, 1999; McGregor et al., 1998). However, the aggression measure used in the Harmon-Jones and Sigelman (2001) experiment extends the past technique by giving participants more than one type of substance to administer to the other participant. The hot-sauce paradigm described previously effectively eliminates several problems associated with past laboratory aggression measures, such as the administration of electric shock. However, it does not give participants a clear opportunity to choose not to be aggressive. If they were to choose not to administer hot sauce, they might believe that the experimenter would be upset with them, because the taste perception experiment could not be completed. In contrast, the Harmon-Jones and Sigelman (2001) measure does not suffer from this limitation because participants who do not intend to behave aggressively can choose a neutral- or pleasant-tasting beverage.

Emotion Measures. After participants finished with the administration of the beverages, they were asked to complete questionnaires designed to assess emotions they felt during the experiment. This measure was positioned after the aggression measure so as not to reduce aggressive tendencies via self-regulation (Berkowitz et al., 2000). Following the collection of this measure, participants were interviewed and debriefed, as described earlier.

Results. As predicted, individuals who were insulted evidenced greater self-reported anger, more aggression, and greater relative left frontal activity (which has been related to approach motivation; Harmon-Jones, 2003) than individuals who were not insulted.

Using Motivationally Relevant Audiotapes to Induce Anger

The insult methodology just described works for individuals who are not preselected according to certain characteristics. Other ways of inducing anger are available but may require preselecting participants according to certain attitudes or other characteristics. For example, participants could be selected because they possess a particular attitude and then exposed to information that challenges that attitudinal position, as a large body of research has suggested that exposure to such messages evokes negative affect (for a review, see Harmon-Jones, 2000). Care will still need to be taken in designing a compelling cover story and assessing suspicion in the postexperimental interview.

As an example, consider the following experiment (Harmon-Jones, Sigelman, Bohlig, & Harmon-Jones, 2003). Participants were university students who were preselected based on their responses during a mass testing session held early in the semester. Individuals who paid at least 33% of their tuition by themselves or with student loans and who

moderately or strongly disagreed with a statement indicating that tuition should be increased by 10% at the university were invited to participate in the experiment. Such participant selection criteria ensured that the participants would find the message they would hear in the experiment emotionally arousing.

The study was described as being concerned with reactions to pilot radio broadcasts conducted by Professor Harmon-Jones as a service for WERN, an affiliate radio station of Wisconsin Public Radio, which targeted its broadcasting toward students, faculty, and staff at the University of Wisconsin-Madison. WERN was said to be considering introducing two new programs. The experimenter further explained that for several years, Professor Harmon-Jones, an expert on responses to mass media, had pilot-tested new programming ideas for WERN by trying them out on introductory psychology students at the university. He finished the introduction by explaining that the participant would be randomly assigned to listen to two brief pilot broadcasts, one for "Bulletin Board" and one for "News from the Personal Side." It was further explained that there were several tapes for each broadcast and that participants' emotional and evaluative responses to the broadcast would be assessed using questionnaires and brain wave activity. The experimenter then noted that the broadcast tape they would hear was prepared as a pilot for use in this study, so the quality was below normal broadcast standards. After hearing this introduction, participants read an introduction written on WERN letterhead that reiterated this information to ensure that they completely understood all of the details. The description of WERN, the use of WERN's letterhead, the presentation of two new programming ideas, the mention of several tapes of each program, and the fact that it was a pilot study similar to studies that had been conducted on students in the past are important features in the cover story because they make participants more likely to believe that the program is real and less likely to become suspicious when they are later emotionally aroused (i.e., to believe that it is just one of the possible broadcasts).

After baseline EEG and self-reported emotions were recorded and other instructions were delivered (irrelevant to the present discussion), participants listened to the pilot broadcast, in which a trained male speaker made persuasive arguments in favor of a 10% tuition increase. EEG was collected following the broadcast. Then participants completed questionnaires assessing their responses to the broadcast. Finally, to obtain a behavioral measure that would reflect their desire to rectify the anger-producing situation, participants were given an opportunity (in one condition) to sign a petition to protest the tuition increase and to take petitions with them to have others sign. As predicted, the counterattitudinal message caused significant increases in self-reported anger among all participants and greater left frontal activity in participants who expected to be able to

rectify the anger-producing situation. Finally, the greater left frontal activity in the action-possible condition was related to being more likely to sign the petition and to taking more petitions with them for others to sign.

Joy, Sadness

Similar to other emotions, joy and sadness can be elicited effectively using social psychological methods that eliminate concerns that the effects of the emotion manipulations are due to self-presentational concerns or social desirability concerns of the participants. A study by Masters, Carlson, and Rahe (1985) elicited both happiness and sadness by using a social-comparison manipulation. The participants, who were first- and second-grade children, were told that they would be participating in a simple word game that required them to repeat aloud words printed on cards. To reduce the possibility that participants would make their own judgments of success or failure, they were told that there were no right or wrong answers and that the speed with which they said the words would not affect the outcome. Each participant was seated at a table next to a comparison peer. Over the course of the experiment, the participants were awarded plastic chips that could later be exchanged for prizes. Chips were awarded 10 times, with the relative reward outcome manipulated by the experimenter. On each of the 10 trials, participants could either receive more (positive inequality), fewer (negative inequality), or the same number of chips as the comparison peer. During this procedure, participants were videotaped, and affect was assessed using behavioral coding of facial expressions.

During the social-comparison manipulation, behavioral coding data indicated that children who experienced positive inequality appeared significantly happier than children who experienced equality or negative inequality. Similarly, children who experienced negative inequality appeared significantly sadder than those who experienced equality or positive inequality. Moreover, these manipulations of emotion affected the children's behavior, with those who experienced positive inequality giving fewer rewards to themselves and those who experienced negative inequality giving fewer rewards to others.

The authors noted that, although this study used young children as participants, there is no reason to believe that adults would not be similarly emotionally responsive to social comparison. In fact, several other studies (e.g., Forgas, Bower, & Moylan, 1991; Isen & Means, 1983) have used similar manipulations to elicit emotions in adult participants. For example, Forgas (1991; study 1) investigated the effects of mood (happy, sad, and control) on preferences in choosing a partner. Participants were first told that they would participate in two brief but unrelated experiments (ostensibly run together to save time). The first experiment was described as a test of verbal ability that involved completing as

many analogies from a list as possible in 5 minutes. The instructions were manipulated to describe the task as being easy or difficult to complete in the allotted time. In the control condition, participants were told simply to complete as many as they could without worrying about difficult items. After the time period was over, participants were given the correct answers, as well as bogus performance standards that indicated that their verbal skills were either above average (positive mood group) or below average (negative mood group). Participants in the control group were simply thanked for their help. All participants then completed a series of questionnaires, including three mood scales embedded in several distracter items. Results indicated that, indeed, the participants who were told their performance was above average rated their moods as more happy than did controls and that participants who were told their performance was below average rated their moods as more sad than did controls.

Success and failure manipulations are effective methods of inducing general positive and negative affect, respectively (e.g., Nummenmaa & Niemi, 2004). However, such manipulations have yet to be demonstrated to affect discrete emotions. Moreover, they also affect self-esteem (see, e.g., Greenberg et al., 1992). Consideration of these issues by both emotion and self-esteem researchers is important in interpreting the observed findings.

Sympathy

The emotion of sympathy or empathy, which includes feelings of compassion and tenderness, has often been examined in social psychological experiments because of its importance in motivating helping behavior (e.g., Batson, 1991, 1998). The manipulation of sympathy is most cleanly accomplished by using perspective-taking instructions, and past research has revealed that the perspective-taking instructions cause significant differences in emotional arousal (e.g., Coke, Batson, & McDavis, 1978; Stotland, 1969). An experiment using the perspective-taking method of inducing sympathy is described in detail next (Harmon-Jones, Peterson, & Vaughn, 2003).

On a participant's arrival, an experimenter explained that two new programming ideas were being pilot-tested for a local public radio station. Then the participant was given two folders, which allowed the experimenter to remain blind to condition. One folder contained the listening-perspective instructions—the sympathy manipulation. The other folder contained the questionnaires that were to be completed after hearing the broadcast. It was placed next to participants at this point so that the experimenter would not have to return and interrupt or interfere with the participants' emotional experience by giving them the folder immediately after the broadcast. After placing the folders next to the participant, the experimenter left the participant to open the first folder and read the instructions within it, which were the listening-perspective instructions designed to manipulate

sympathy (e.g., Batson et al., 1997; Stotland, 1969). These began with a description of the broadcast, which read:

You will be listening to an interview with Scott Neumann, a 16-year-old and a student at Memorial High School. Recently, Scott has been re-diagnosed with cancer. He had been in remission for the past three years but will be starting a two-month period of treatment in the coming weeks. His parents are struggling to make ends meet due to the additional medical expenses. They are trying to get help through private contributions of time and money. (Harmon-Jones et al., 2003, p. 71)

In the *low-sympathy condition*, participants were instructed to "be as objective as possible about what has happened to Scott and how it has affected his life" while listening to the broadcast. In the *high-sympathy condition*, participants were instructed to "imagine how Scott feels about what has happened and how it has affected his life" while listening to the broadcast.

In the broadcast, a female announcer, ostensibly from a local public radio station, introduced Scott Neumann, a boy who had cancer. Then Scott described how his illness affected his life. At the end of Scott's description, the announcer provided the radio station's phone number, which listeners could call if they wanted to help the family.

Following the broadcast, over the intercom, the experimenter instructed participants to complete the questionnaires within the folder, which assessed self-reported emotions and evaluations of the "News from the Personal Side" radio program. The emotion questionnaire was included to assess self-reported emotions, and the "News From the Personal Side" questionnaire was included to bolster the cover story. It also contained items to assess participants' evaluation of the radio program and to determine the effectiveness of the sympathy manipulation.

After participants indicated that they had completed the questionnaires, they were given a letter from the professor in charge of the research (to obtain a measure of helping), as in previous helping research (Coke et al., 1978). They were left alone to read and respond to it. The letter explained that the broadcast they had heard was not going to be aired but that the professor thought that some participants might have an interest in helping the family, anyway. A volunteer form was attached, asking participants if they were willing to help. They were informed that if they volunteered, they could help the family by watching Katie (Scott's younger sister), by running errands, or by tutoring Scott (the boy with cancer). If they were willing to help, they were asked to indicate how much time or money (to help with medical expenses) they could give. After completion of the helping form, participants were thoroughly debriefed, using methods described earlier.

Results indicated that the perspective-taking manipulation was effective. Participants in the high-sympathy condi-

tion reported feeling more sympathy, reported feeling less objective toward Scott's situation, and reported that they concentrated more on Scott's feelings than did participants in the low-sympathy condition. Moreover, participants in the high-sympathy condition offered more help than participants in the low-sympathy condition. These findings are consistent with past findings using similar manipulations (see reviews by Batson, 1991, 1998).

Guilt

The emotional experience of guilt and of self-directed negative affect more generally has played a central role in much social psychological research on racial prejudice. Theories of prejudice control (e.g., Monteith, 1993) posit that people low in prejudice but not those high in prejudice should experience guilt when they unintentionally respond with prejudice. The experience of guilt, in turn, is theorized to impel regulatory behavior aimed at preventing future unwanted prejudiced behaviors. As such, many prejudice researchers have used inductions of guilt in order to study the processes of prejudice control. A variety of induction methods have been used in the prejudice literature. Here, we describe some high-impact methods used in recent research.

Monteith, Ashburn-Nardo, Voils, and Czopp (2002) used a false physiological feedback procedure to induce guilt among participants who were low in prejudice to study the role guilt plays in promoting the inhibition of prejudiced behavior. As in most high-impact inductions of emotion, a convincing cover story was key. Thus the researchers took several steps to ensure that the feedback that participants received was believable and was interpreted as reflecting negative feelings toward black people. The experiment was introduced as a study of people's ability to control and reduce negative arousal. Participants learned that they would view a series of pictures that varied in negativity while their physiological arousal was monitored via skin-conductance response (SCR). Electrodes used for measuring SCR were then attached to participants' fingers, and these electrodes were connected to amplifiers used for physiological recording. To bolster the cover story, participants were shown a few seconds of fake SCR signal, purported to be their own, on a computer monitor. The experimenter then instructed participants to remain still during a 3-minute period of baseline recording. In continuing with the cover story, participants listened to instructions explaining the important implications of the current study for pain management, stress reduction, depression, and overall mental health. To learn how to control negative arousal, participants were told that they should read an article from *Psychology Today* that provided arousal-control strategies. Participants were then given a copy of the article, along with a summary, and encouraged to look over these materials. Participants were then prepared to view the series of pictures. After viewing each picture, the computer program would display their arousal level. It was explained that the equipment being used was sensitive only to negative

forms of physiological arousal and that any increases in arousal level should be interpreted as reflecting a negative reaction to the preceding picture. The experiment began with a practice block that included neutral and highly negative pictures. After seeing the neutral pictures (e.g., leaves, pepper shaker), participants saw that their arousal levels were low. However, after the negative pictures (e.g., mutilated hand, attacking dog), the bogus display indicated that their arousal level was markedly higher. By initially providing bogus arousal feedback that matched participants' expectations, participants felt confident that the measure reflected their true responses. Finally, participants received one last set of instructions. Following from Dutton and Lake (1973), these instructions emphasized that the content of the pictures would vary considerably and that certain pictures might or might not cause negative reactions among different participants. The instructions went on to give the following example related more directly to prejudice: "Social situations can provoke intense reactions in people. These reactions can include hatred, prejudice, discomfort, and other negative states. . . . Many psychologists feel the autonomic responses are the truest measures of underlying reactions we have about social groups and situations" (Monteith et al., 2002, p. 1034). After going to great lengths to convince participants that the bogus SCR measures of arousal were valid, the experimenters proceeded to show participants a set of pictures that included neutral, negative, racial (e.g., interracial couple holding hands and smiling), and nonracial pictures (abstract art with ambiguous valence). As with the practice trials, bogus arousal feedback was provided following each picture. One group of participants received high arousal feedback following negative and racial pictures, but not neutral and nonracial pictures. The other group received high arousal feedback following the negative and nonracial pictures only. Following this procedure, all participants completed an affect checklist that included 29 different emotion words. Indices were created from these to represent self-directed negative affect (including guilt, self-disappointment, shame, regret), discomfort, positive affect, depressive affect, and other-directed negative affect. Participants who received high arousal feedback to racial pictures reported significantly higher levels of self-directed negative affect than those who received low arousal feedback to these pictures. Participants did not differ in positive, depressive, or other-directed affect (but differed in discomfort). Monteith et al. (2002) went on to show that participants' levels of self-directed negative affect predicted a pattern of more controlled behavior to race-related stimuli.

Like Monteith et al. (2003), Amodio, Harmon-Jones, and Devine (in press) used a false physiological feedback induction of guilt to examine the association of guilt with frontal cortical asymmetry and the role of guilt in producing behaviors aimed at prejudice reduction. Because their study involved several real physiological measures, it was not necessary to build such an elaborate cover story. For their study, Amodio et al. (in press) recruited participants who were high or low in prejudice and described the study simply as one that ex-

amined people's brain wave responses to different types of stimuli. On arrival, participants were prepared for several physiological measures (EEG and facial electromyography [EMG]). After baseline measures of EEG and self-reported affect were collected, participants viewed a series of faces of black, white, and Asian males and then a series of positive, negative, and neutral pictures. The primary purpose of the picture presentation portion of the study was to measure participants' startle eyeblink responses to different types of pictures, as detailed in Amodio, Harmon-Jones, and Devine (2003).

When the picture-viewing portion was completed, the experimenter entered the participant room and explained that, although they were nearly done with the session, additional measures of baseline EEG were required. The experimenter then indicated that the computer program had finished processing some of the data from the picture-viewing portion and that the participants would be able to view these results while the final EEG measures were taken. The instructions continued: "Some graphs will appear on the computer monitor. These graphs will show levels of your brainwave activity. Our measures of brain waves are very sensitive—they're used in a number of labs here—and can measure emotions that you may not consciously feel. I have the results from the second picture set ready first. When they appear, you should see that you had a negative reaction to the unpleasant pictures, and a more positive reaction to the pleasant pictures. I'll have the computer show your results from the first set with the faces after that." As in Monteith et al. (2002), it was important to first show participants a set of responses that were likely to match their expectations. That is, participants were presented with a graph that clearly indicated that they responded more negatively to the negative pictures and more positively to the positive pictures. Next, the experimenter presented the bogus reactions to the white, black, and Asian faces. The graph depicted a very negative reaction to black faces and moderately positive reactions to white and Asian faces. After viewing the feedback, the computer monitor went blank, and participants were instructed to remain still while EEG was recorded for 2 minutes. Immediately following the EEG recordings, participants completed an affect scale that included measures of guilt.

Finally, behavioral reactions to the prejudice feedback were measured. The experimenter explained that there were a few minutes remaining in the allotted time and asked whether the participant would be willing to help with the development of measures for a future study. The experimenter explained that this future study would involve having participants read various newspaper articles and that it was important to pretest the articles so that they could be equated on how interesting they were to undergraduates. All participants agreed to help. Participants were then shown a series of headlines from the articles, presented on the computer screen one at a time, for 6 s each. As indicated by the headlines, some articles were about decreasing one's prejudice level, whereas others involved justifying racial prejudice, affirming one's level of egalitarianism, or topics unrelated to

racial issues. Participants rated each headline according to how interested they were in reading it.

Results indicated that the induction of guilt was successful. Self-reported levels of guilt were significantly greater than baseline following the feedback manipulation for all participants. In addition, examination of frontal EEG asymmetry indicated an increase in right frontal cortical activity compared with baseline levels, consistent with the hypothesis that the feedback would produce an avoidance-related motivational state (e.g., Amodio, Shah, Sigelman, Brazy, & Harmon-Jones, 2004; Harmon-Jones & Allen, 1998). Furthermore, higher levels of guilt predicted greater right frontal cortical activity, as well as participants' interest in reading articles about decreasing one's prejudice and affirming one's egalitarian beliefs. Guilt was not related to an interest in articles that justified prejudice or in articles not related to issues of racial prejudice.

Conclusion

Social psychological methods contribute to the study of emotion by using high-impact manipulations and deception to achieve high levels of psychological realism in the laboratory. Such methods avoid many of the pitfalls (e.g., participant awareness biases) inherent in other methodologies and allow researchers to induce some emotions that may be difficult to induce using other methods (e.g., anger). Social psychological methods of emotion induction are designed to produce emotional responses by placing research participants in psychologically involving situations. As described in this chapter, the construction of a high-impact emotion manipulation involves several important features aimed at masking the nature of the manipulation while maintaining internal validity. The examples we provided showcase just a few of the ways emotion has been induced in this way. Although some emotional processes may be examined using less immersive manipulations (e.g., using picture presentations to study automatic affective processing), we believe that high-impact social psychological methods of emotion induction are essential for investigating emotional phenomena.

Appendix A: Example Debriefing

What do you think about what we have done so far?
 How did you feel when you heard the broadcast concerning tuition increase?
 Did you feel like you had an opportunity to do something about the decision to raise tuition?
 What do you think about the broadcast now?
 Did anything seem odd or unusual?

Based on what has happened thus far, can you think of something that we might be interested in other than what I told you to begin with? [Probe carefully; if someone answers yes,

find out why, when they thought this, and if it affected how they answered the questionnaires]. I ask you that because I am interested in something else. I could not tell you from the beginning because it might have affected how you responded (i.e., you might not have responded in a natural way). I will now tell you what I am interested in.

This study is a test of your emotional reactions to information that is counter to your attitude about a tuition increase. We measure these reactions through self-report (surveys) and your brain activity. Brain activity is an important response for us to analyze because the activity in the frontal lobes of your brain has been found to be associated with different motivations. It has been found that activity in the left frontal brain region is associated with approach, or "moving toward," motivation. Activity in the right frontal brain region is associated with withdrawal, or "moving away," motivation. In other studies, depressed individuals were found to have decreased left frontal brain activity, and angry individuals were found to have increased left frontal brain activity.

Previous studies support the idea anger is associated with increased approach motivation. To further test this idea, we attempted to induce the emotion of anger by exposing you to information that is emotionally relevant to you and then presenting the possibility or impossibility of changing this situation.

In this study you were randomly assigned to a condition and were then exposed to a message about a tuition increase. We created the message to make it emotionally arousing, and we worked very hard to make it convincing to you. The conditions differed in the following way. You were told that a 10% tuition increase was being considered for next year, or that a 10% tuition increase would definitely be implemented next year. We then offered people in the first group the opportunity to sign a petition against the tuition increase and ask them whether or not they would like to take some petitions with them, get them signed, and turn them back in. The other group, who is told the tuition increase is definite, will not be offered this option.

We predicted these reactions. In the group who is told that there may be a tuition increase next year, we predicted feelings of anger more than sadness. We also predicted that the students in this condition would show greater left frontal brain activity and that it would relate to signing the petition, because this condition would increase approach motivation.

In the other group, who believe that tuition is definitely increasing and is not offered the possibility of change through petitions, we expected to see less left frontal brain activation, because approach motivation should be lower.

Of course, we do not know what we will find out, and these are only our predictions. We may find that people do not respond how we think they will, and that is okay, because we, as scientists, will be interested in whatever we discover.

In the beginning of the study, we told you we wanted you to assess different radio broadcasts. But now you know

we are interested in your emotions, motivations, and brain activity. We did not tell you this in the beginning because we thought you might not respond in a natural way and that the broadcasts would not be as involving for you. Do you understand why we did this?

Before you go, I need to ask a favor of you. Will you promise that you will not discuss this study with anyone [ask them to verbally promise]? We should be conducting this study for most of the semester, and the results of the study might be biased if people who participate in the study know about it beforehand. Thank you for your cooperation. Do you have any questions?

Appendix B

This is a short list of publications that report other social psychological methods of emotion induction. To obtain this list, we submitted a request to the Society for Personality and Social Psychology e-mail list. Many thanks to those who responded to our request.

- Albarracín, D., & Kumkale, G. T. (2003). Affect as information in persuasion: A model of affect identification and discounting. *Journal of Personality and Social Psychology, 84*, 453–469.
- Ax, A. F. (1953). The physiological differentiation between anger and fear in humans. *Psychosomatic Medicine, 15*, 433–442.
- Batson, C. D. (1991). *The altruism question: Toward a social-psychological answer*. Hillsdale, NJ: Erlbaum.
- Berkowitz, L., & Holmes, D. S. (1959). The generalization of hostility to disliked objects. *Journal of Personality, 27*, 565–577.
- Brehm, J. W. (1999). The intensity of emotion. *Personality and Social Psychology Review, 3*, 2–22.
- Burris, C. T., Harmon-Jones, E., & Tarpley, W. R. (1997). "By faith alone": Religious agitation and cognitive dissonance. *Basic and Applied Social Psychology, 19*, 17–31.
- Coke, J. S., Batson, C. D., & McDavis, K. (1978). Empathic mediation of helping: A two-stage model. *Journal of Personality and Social Psychology, 36*, 752–766.
- Dolinski, D., Ciszek, M., Godlewski, K., & Zawadzki, M. (2002). Fear-then-relief, mindlessness, and cognitive deficits. *European Journal of Social Psychology, 32*, 435–447.
- Ensari, N., & Miller, N. (1998). Effects of affective reactions by an out-group on preferences for crossed categorization discussion partners. *Journal of Personality and Social Psychology, 75*, 1503–1527.
- Fredrickson, B. L., Mancuso, R. A., Branigan, C., & Tugade, M. M. (2000). The undoing effect of positive emotions. *Motivation and Emotion, 24*, 237–258.
- Griner, L. A., & Smith, C. A. (2000). Contributions of motivational orientation to appraisal and emotion. *Personality and Social Psychology Bulletin, 26*, 727–740.
- Herrald, M. M., & Tomaka, J. (2002). Patterns of emotion-specific appraisals, coping and physiological reactivity during an ongoing emotional episode. *Journal of Personality and Social Psychology, 83*, 434–450.

- Laird, J. D. (1974). Self-attribution of emotion: The effects of expressive behavior on the quality of emotional experience. *Journal of Personality and Social Psychology, 29*, 475–486.
- Manucia, G. K., Baumann, D. J., & Cialdini, R. B. (1984). Mood influences on helping: Direct effects or side effects? *Journal of Personality and Social Psychology, 46*, 357–364.
- Miller, R. S. (1987). Empathic embarrassment: Situational and personal determinants of reactions to the embarrassment of another. *Journal of Personality and Social Psychology, 53*, 1061–1069.
- Schachter, S., & Singer, J. E. (1962). Cognitive, social, and physiological determinants of emotional states. *Psychological Review, 69*, 379–399.
- Stotland, E. (1969). Exploratory investigations of empathy. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 4, pp. 271–314). New York: Academic Press.
- Strack, F., Martin, L. L., & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of Personality and Social Psychology, 54*, 768–777.
- Zanna, M. P., & Cooper, J. (1974). Dissonance and the pill: An attribution approach to studying the arousal properties of dissonance. *Journal of Personality and Social Psychology, 29*, 703–709.

Acknowledgments

We thank John Allen, Jim Coan, Cindy Harmon-Jones, and members of the Harmon-Jones Emotive Psychophysiology Lab for helpful comments on previous versions of this chapter. Preparation of this chapter was supported by grants from the National Science Foundation and the National Institute of Mental Health. Address correspondence to Eddie Harmon-Jones, Texas A&M University, Department of Psychology, 4235 TAMU, College Station, TX 77843; or via the Internet at eddiehj@gmail.com.

Notes

1. Social psychologists use a variety of methods to induce emotion (e.g., recall of past emotional episodes, guided imagery, pictures, film clips). However, the focus of this chapter is on the methodology unique to social psychological experimentation—the use of deception to evoke emotions.
2. Ideally, in pretesting, it should be ascertained that there is relatively little suspicion. If, however, several participants express suspicion, in data analyses, suspicion level can be coded and analyzed to assess whether it exerts a significant effect on the results. An interview is subject to the same participant response biases that might occur in self-report questionnaires, and these biases may contaminate the data obtained in the interview. Care should be taken to attempt to avoid such by asking relatively indirect questions (discussed later).
3. In our debriefings, we avoid use of the term *deception* and other, similar terms with negative meanings. However, we fully explain the deceptions used and the need for them (see appendix A for an example).

4. Determining whether an emotion is psychologically real is best achieved by collecting various measures—self-reports and physiological and behavioral measures. It is also important that the effects on the observed variables cannot be explained away as due to demand characteristics or other participant response biases.

References

- Amodio, D. M., Devine, P. G., & Harmon-Jones, E. (in press). A dynamic model of guilt: Implications for motivation and self-regulation in the context of prejudice. *Psychological Science*.
- Amodio, D. M., Harmon-Jones, E., & Devine, P. G. (2003). Individual differences in the activation and control of affective race bias as assessed by startle eyeblink responses and self-report. *Journal of Personality and Social Psychology*, *84*, 738–753.
- Amodio, D. M., Shah, J. Y., Sigelman, J., Brazy, P. C., & Harmon-Jones, E. (2004). Implicit regulatory focus associated with asymmetrical frontal cortical activity. *Journal of Experimental Social Psychology*, *40*, 225–232.
- Aronson, E., Brewer, M., & Carlsmith, J. M. (1985). Experimentation in social psychology. In G. Lindzey & E. Aronson (Eds.), *Handbook of social psychology* (3rd ed., Vol. 1, pp. 441–486). New York: Random House.
- Aronson, E., & Carlsmith, J. M. (1968). Experimentation in social psychology. In G. Lindzey & E. Aronson (Eds.), *Handbook of social psychology* (2nd ed., Vol. 2, pp. 1–79). Reading, MA: Addison-Wesley.
- Aronson, E., Ellsworth, P. C., Carlsmith, J. M., & Gonzales, M. H. (2000). *Methods of research in social psychology*. New York: McGraw-Hill.
- Bargh, J. A., & Ferguson, M. J. (2000). Beyond behaviorism: On the automaticity of higher mental processes. *Psychological Bulletin*, *126*, 925–945.
- Batson, C. D. (1991). *The altruism question: Toward a social-psychological answer*. Hillsdale, NJ: Erlbaum.
- Batson, C. D. (1998). Altruism and prosocial behavior. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 2, pp. 282–316). Boston: McGraw-Hill.
- Batson, C. D., Polycarpou, M. P., Harmon-Jones, E., Imhoff, H. J., Mitchener, E. C., Bednar, L. L., et al. (1997). Empathy and attitudes: Can feeling for a member of a stigmatized outgroup improve attitudes toward the group? *Journal of Personality and Social Psychology*, *72*, 105–118.
- Berkowitz, L. (1962). *Aggression: A social psychological analysis*. New York: McGraw-Hill.
- Berkowitz, L. (1993). *Aggression: Its causes, consequences, and control*. New York: McGraw-Hill.
- Berkowitz, L., Jaffee, S., Jo, E., & Troccoli, B. T. (2000). On the correction of feeling induced judgmental biases. In J. Forgas (Ed.), *Feeling and thinking: The role of affect in social cognition* (pp. 131–152). Cambridge, UK: Cambridge University Press.
- Coke, J. S., Batson, C. D., & McDavis, K. (1978). Empathic mediation of helping: A two-stage model. *Journal of Personality and Social Psychology*, *36*, 752–766.
- Dutton, D. G., & Lake, R. A. (1973). Threat of own prejudice and reverse discrimination in interracial situations. *Journal of Personality and Social Psychology*, *28*, 94–100.
- Epstein, S. (1994). Integration of the cognitive and the psychodynamic unconscious. *American Psychologist*, *49*, 709–724.
- Festinger, L., Garner, W. R., Hebb, D. O., Hunt, H. F., Lawrence, D. H., Osgood, C. E., et al. (1959). Education for research in psychology. *American Psychologist*, *14*, 167–179.
- Forgas, J. P. (1991). Affective influences on partner choice: Role of mood in social decisions. *Journal of Personality and Social Psychology*, *61*, 708–720.
- Forgas, J. P., Bower, G. H., & Moylan, S. J. (1990). Praise or blame? Affective influences on attributions for achievement. *Journal of Personality and Social Psychology*, *59*, 809–819.
- Greenberg, J., Solomon, S., Pyszczynski, T., & Rosenblatt, A. (1992). Why do people need self-esteem? Converging evidence that self-esteem serves an anxiety-buffering function. *Journal of personality and social psychology*, *63*, 913–922.
- Harmon-Jones, E. (2000). A cognitive dissonance theory perspective on the role of emotion in the maintenance and change of beliefs and attitudes. In N. H. Frijda, A. R. S. Manstead, & S. Bem (Eds.), *Emotions and beliefs* (pp. 185–211). Cambridge, UK: Cambridge University Press.
- Harmon-Jones, E. (2003). Clarifying the emotive functions of asymmetrical frontal cortical activity. *Psychophysiology*, *40*, 838–848.
- Harmon-Jones, E., & Allen, J. J. B. (1998). Anger and frontal brain activity: EEG asymmetry consistent with approach motivation despite negative affective valence. *Journal of Personality and Social Psychology*, *74*, 1310–1316.
- Harmon-Jones, E., Peterson, H., & Vaughn, K. (2003). The dissonance-inducing effects of an inconsistency between experienced empathy and knowledge of past failures to help: Support for the action-based model of dissonance. *Basic and Applied Social Psychology*, *25*, 69–78.
- Harmon-Jones, E., & Sigelman, J. (2001). State anger and prefrontal brain activity: Evidence that insult-related relative left prefrontal activation is associated with experienced anger and aggression. *Journal of Personality and Social Psychology*, *80*, 797–803.
- Harmon-Jones, E., Sigelman, J. D., Bohlig, A., & Harmon-Jones, C. (2003). Anger, coping, and frontal cortical activity: The effect of coping potential on anger-induced left frontal activity. *Cognition and Emotion*, *17*, 1–24.
- Hass, R. G., Katz, I., Rizzo, N., Bailey, J., & Moore, L. (1992). When racial ambivalence evokes negative affect, using a disguised measure of mood. *Personality and Social Psychology Bulletin*, *18*, 786–797.
- Isen, A. M., & Means, B. (1983). The influence of positive affect on decision-making strategy. *Social Cognition*, *2*, 18–31.
- Lieberman, J. D., Solomon, S., Greenberg, J., & McGregor, H. A. (1999). A hot new way to measure aggression: Hot sauce allocation. *Aggressive Behavior*, *25*, 331–348.
- Masters, J. C., Carlson, C. R., & Rahe, D. F. (1985). Children's affective, behavioral, and cognitive responses to social comparison. *Journal of Experimental Social Psychology*, *21*, 407–420.
- McGregor, H. A., Lieberman, J. D., Greenberg, J., Solomon, S., Arndt, J., Simon, L., et al. (1998). Terror management and

- aggression: Evidence that mortality salience motivates aggression against worldview threatening others. *Journal of Personality and Social Psychology*, 74, 590–605.
- Monteith, M. J. (1993). Self-regulation of stereotypical responses: Implications for progress in prejudice reduction. *Journal of Personality and Social Psychology*, 65, 469–485.
- Monteith, M. J., Ashburn-Nardo, L., Voils, C. I., & Czopp, A. M. (2002). Putting the brakes on prejudice: On the development and operation of cues for control. *Journal of Personality and Social Psychology*, 83, 1029–1050.
- Nummenmaa, L., & Niemi, P. (2004). Inducing affective states with success-failure manipulations: A meta-analysis. *Emotion*, 4, 207–214.
- Rosenthal, R. (1994). Interpersonal expectancy effects: A 30-year perspective. *Current Directions in Psychological Science*, 3, 176–179.
- Rosenthal, R., & Lawson, R. (1964). A longitudinal study of the effects of experimenter bias on the operant learning of laboratory rats. *Journal of Psychiatric Research*, 2, 61–72.
- Schachter, S. (1959). *The psychology of affiliation: Experimental studies of the sources of gregariousness*. Stanford, CA: Stanford University Press.
- Simon, L., Greenberg, J., Harmon-Jones, E., Solomon, S., Pyszczynski, T., & Abend, T. (1997). Terror management and cognitive experiential self theory: Evidence that terror management occurs in the experiential system. *Journal of Personality and Social Psychology*, 72, 1132–1146.
- Stotland, E. (1969). Exploratory investigations of empathy. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 4, pp. 271–314). New York: Academic Press.
- Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology*, 39, 806–820.