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# Phenomenology, Behaviors, and Goals Differentiate Discrete Emotions

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Prior research has typically attempted to distinguish one emotion from another by identifying distinctive expressions, physiology, and subjective qualities. Recent theories claim emotions can also be differentiated by distinctive action tendencies, actions, and *emotivational* goals. To test hypotheses from both older and more recent theories, 100 Ss were asked to recall experiences of particular negative emotions and answer questions concerning what they felt, thought, felt like doing, actually did, and wanted. Results support hypotheses specifying characteristic responses for fear, sadness, distress, frustration, disgust, dislike, anger, regret, guilt, and shame. The findings indicate that discrete emotions have distinctive goals and action tendencies, as well as thoughts and feelings. In addition, they provide empirical support for hypothesized emotion states that have received insufficient attention from researchers.

What makes one emotion different from another? Research on differences in response profiles among hypothetically distinct emotion states (such as fear, anger, sadness, shame, and guilt) plays a central role in the study of emotions and continues to preoccupy investigators for at least three reasons.

First, such research greatly influences how emotions are conceptualized. For example, after early studies (see Cannon, 1927; Landis, 1924) did not find the differentiated patterns of expression and physiology that had previously been predicted (Darwin, 1872; James, 1894), many psychologists came to adopt a unidimensional view of emotion (e.g., Duffy, 1934; Lindsley, 1951). Then, when later research did find evidence of emotion-specific facial displays (e.g., Ekman, Sorenson, & Friesen, 1969; Izard, 1971; Tomkins & McCarter, 1964), a conception of emotions as discretely different states (e.g., de Rivera, 1977; Frijda, 1986; Izard, 1977; Plutchik, 1962; Roseman, 1984; Tomkins, 1962) gained in acceptance, and subsequent theories have often listed facial expression as a characteristic or defining attribute (e.g., Ekman, 1984; Izard, 1991; Leventhal, 1979; Scherer, 1984a). Thus, if research shows additional emotion-specific properties, definitions and theories are likely to again be altered.

This possibility is of added interest now because hypothesized similarities in components of facial expression (Smith, 1989) and in other properties (Davidson, 1984) have led some theorists (e.g., Ortony & Turner, 1990; Scherer, 1984b; Turner & Ortony, 1992) to question anew the discreteness of emotions. Insofar as further differences among emotions cannot be specified, such critiques gain force. On the other hand, if additional differences are empirically established, the case for a discrete emotions view grows stronger.

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Second, evidence on differences helps determine which emotions are regarded as discrete and worthy of research attention. Beyond joy, sadness, fear, and anger, there is significant disagreement on this issue (Ortony & Turner, 1990). Only if an emotion state is shown to have distinctive properties is it necessary to view it as a discrete emotion and study its relationships to other variables.

Third, the attempt to identify responses characteristic of particular emotions is of interest in its own right (Davidson & Cacioppo, 1992). Investigators want to know the subjective state of people experiencing various emotions (e.g., Wallbott & Scherer, 1988), the cognitions that occur to them (e.g., Smith & Ellsworth, 1985), the behaviors they are likely to engage in (e.g., Frijda, 1987), and other distinctive properties that might be specified (e.g., Shaver, Schwartz, Kirson, & O'Connor, 1987).

## Differentiation by Expression, Physiology, and Phenomenology

Most prior research seeking to differentiate emotions has focused on expression, bodily change, or thought and feeling content. For example, studies on expression have yielded evidence that enjoyment, sadness, fear, anger, disgust, surprise, and perhaps contempt, interest, and shame have distinctive facial muscle movement patterns, recognizable across cultures (e.g., Ekman, 1982, 1989; Izard, 1971; Izard & Haynes, 1988).

Physiological studies (for reviews see Frijda, 1986; LeDoux, 1986; Levi, 1975; Panksepp, 1991; Thompson, 1988) have been slower to find differences among emotions (e.g., Frankenhaeuser, 1975). However, recent investigaions may have begun to identify patterns of brain activity (e.g., Gray, 1990; Panksepp, 1989; Siegel & Brutus, 1990; Simonov, 1986), autonomic response (see Levenson, 1992, for a review), or hormonal changes (see Henry, 1986) corresponding to particular emotions, especially those with known facial expressions.

Studies of emotion phenomenology (e.g., Averill, 1975; Davitz, 1969; Wallbott & Scherer, 1988) have investigated a wider range of states. Using a variety of methodologies, these studies have found many different patterns.

## Differentiation by Actions, Action Tendencies, or Goals

In recent years, a number of theorists have proposed that emotions also differ in ways other than expression, physiology, and phenomenology. According to Plutchik (1962, 1980), each basic emotion corresponds to a different pattern of adaptive behavior. For example, fear corresponds to withdrawal and escape, anger to attacking and biting, and sadness to crying for help.

Arnold (1960) claimed that different emotions correspond to different action tendencies, and Frijda (1986) has delineated action tendencies or other forms of action readiness for 17 emotion states. For example, fear is associated with a tendency to avoidance, anger with a tendency to "agonistic" action, and sorrow with a deactivation tendency (Frijda, 1986, p. 88).

Roseman (1984) has proposed that discrete emotions have not only distinctive behaviors but also distinctive motives or goals. The emotional motives are termed *emotivations* to distinguish them from what have traditionally been regarded as motivations, such as hunger, thirst, and need for achievement. Examples of emotivational goals include the following: in fear, wanting to avoid danger; in anger, wanting to hurt someone; and in sadness, wanting to recover from loss.

## Research Needed to Clarify Whether Emotions Are Differentiated by Actions, Action Tendencies, or Goals

Although the definitions and examples used have sometimes overlapped, there are distinguishable claims among the recent theories. For example, the emotion of anger might be characterized by (a) an action (e.g., hitting someone), (b) an action tendency (e.g., an impulse or inclination to hit someone), or (c) a goal (e.g., wanting to hurt someone). If emotions correspond to actions, then the characteristic action or action pattern should be manifest when the emotion is experienced. If emotions correspond only to action tendencies, then an emotion's characteristic action need not actually be performed when the emotion is experienced, but people should feel like taking this action. If emotions correspond to goals, then people need not take or feel like taking a particular action when experiencing a particular emotion but should want to attain the emotion's goal.

Of course, emotions may differ in action, action tendency, and goal as well as phenomenology, physiology, and expression. Each type of response might be equally well able to differentiate among emotions. Alternatively, discrete emotions may in general differ more in one response type than another (say, in goal as compared with action or action tendency) and be more adequately defined in terms of this response type.

Recent research suggests emotions are related to behaviors in some way but does not clearly tell us whether they correspond to actions, action tendencies, or goals. For example, Shaver et al. (1987) reported that subjects' accounts of anger often mentioned verbal or physical attack as actions taken. However, failure to mention action tendencies or goals in free-response descriptions does not allow us to conclude that these properties are absent. Indeed, Shaver et al. remarked that subjects' anger responses "seem designed to rectify injustice" (p. 1078). This would appear to be a goal of angry action. More conclusive evidence on this point could be obtained with closed-ended questions asking all angry subjects whether they had wanted rectification of an injustice. Asking the same questions of subjects recalling different emotions could show whether particular actions, action tendencies, or goals are characteristic of a particular emotion or are found equally in other emotion states.

Frijda and his associates (Frijda, 1987; Frijda, Kuipers, & ter Schure, 1989) have used closed-ended questions to demonstrate that different emotions are associated with different patterns of response. For example, Frijda et al. (1989) had subjects rate the strength of various "action readiness modes" for recalled experiences of different emotions. Fear was characterized by readiness for aversion, avoidance, protection, and approach. Anger was characterized by readiness for aversion, "antagonistic–boiling inwardly," going against or conquering an obstacle or difficulty, and paying attention. However, the wording of closed-ended items in these studies leaves it unclear whether actions, action tendencies, or goals distinguish among emotions. For example, in Frijda et al. (1989), the item measuring the action readiness mode of protection was "I wanted to protect myself from someone or something." This seems to be a goal rather than a tendency to perform a particular action, such as running away. In contrast, the item for the action readiness mode of boiling inwardly ("I boiled inside") may describe an action, but makes no reference to a goal. The item measuring "attending" readiness ("I wanted to observe well, to understand, or I paid attention") seems to include both goals (to observe well, to understand) and actions (I paid attention).

Research by Scherer and colleagues (see Wallbott & Scherer, 1988) has used closed-ended items that more precisely measure emotional behavior. Subjects recalling experiences of 6 emotions checked which of 10 "expressive reactions" they had in each situation. However, these items covered only a small number of actions, and relationships to action tendencies and goals were not explored.

## Research Needed on a Wider Range of Emotion States

With some notable exceptions (e.g., Davitz, 1969; Frijda et al., 1989; Scherer, 1988), research on emotion differentiation has focused on a small number of states, especially joy, sadness, fear, and anger. Yet contemporary theories propose a greater number of emotions as having distinctive properties, such as shame (de Rivera, 1977; Izard, 1991; Lewis, 1971; Roseman, 1984; Tomkins, 1963), guilt (de Rivera, 1977; Izard, 1991; Lewis, 1971; Roseman, 1984), and regret (Landman, 1987; Roseman, 1984; cf. Ortony, Clore, & Collins, 1988, "remorse"). Research on these states is needed to determine whether there is empirical reason to regard them as discrete emotions.

## Systematic Hypothesis-Testing Research Needed

Despite recent advances, there are many gaps in our knowledge of response profiles for frequently and infrequently studied emotions. For some hypothesized emotions, such as regret, few response components have been specified. In other cases, different or contradictory hypotheses about responses have been offered. For example, does sadness motivate people to give up something (de Rivera, 1977, p. 65) or to attempt to regain it (Plutchik, 1984, p. 200)? In still other cases, hypotheses have been proposed but not systematically tested. For example, are there specific actions associated with guilt, such as self-punish-

ment (Lazarus, 1991) or atonement (de Rivera, 1977; Lazarus, 1991)?

Although there have been some studies designed to test theories of emotion-specific responses (e.g., Frijda, 1987; Frijda et al., 1989), findings from much of the empirical work are post hoc. Most researchers do not predict which differences among emotions will occur (e.g., Davitz, 1969; Izard, 1977; Shaver et al., 1987; Wallbott & Scherer, 1988); rather, they report those differences that emerge from subjects' data. This lessens comparability across studies and makes conclusions tentative. Hypothesis-testing research is now needed to evaluate differences in response that have been or may be specified.

## Goals of the Present Study

This study was designed to gather data relevant to the three main issues raised in the foregoing review. Our principal objectives were (a) to test whether emotions are differentiated by action tendencies, actions, or goals; (b) to ascertain whether there are distinctive response profiles for a variety of states proposed to be discrete emotions by some theorists, but not yet investigated adequately; and (c) to test whether hypotheses specifying distinctive thoughts, feelings, action tendencies, actions, and goals for particular emotions, formulated prior to data gathering (rather than post hoc), would be supported.

The research was guided by a conception of emotions as syndromes (Averill, 1980) or prototypes (Fehr & Russell, 1984; Shaver et al., 1987), with thoughts, feelings, expressions, action tendencies, actions, and goals as potential response components. In this framework *action* may be defined as "the result of acting or activity" (Chaplin, 1975, p. 8) and includes purposive behavior (acts), behavior that may or may not be purposive (activities), and complex patterns of behavior (action patterns). *Behavior* includes "any response(s) made by an organism" (Chaplin, 1975, p. 54). An *action tendency* may be defined as an impulse or inclination to respond with a particular action (cf. Arnold, 1960; Frijda, 1986). A *goal* is "the end result toward which the organism is striving or moving" (Chaplin, 1975, p. 218).

Many of the hypotheses we tested were gleaned from prior theory or research (e.g., Davitz, 1969; Hambleton & Roseman, 1987; Horney, 1950; Izard, 1977; Stotland, 1969). In reviewing the literature, we compared responses hypothesized or observed for one emotion state with responses from other emotion states—looking for emotion-specific thoughts, feelings, behaviors, and goals. For example, a majority of Davitz's (1969) subjects endorsed the item "there is a lump in my throat" as characteristic of a sadness experience and "my heart pounds" as characteristic of a fear experience. These served as bases for hypotheses about some distinctive feelings in sadness and fear. Other hypotheses were generated by applying Tolman's (1923) functional perspective (see also Arnold, 1960). In formulating these hypotheses, we sought to specify a distinctive way in which each negative emotion might get less of motive-inconsistent stimuli (Roseman, 1984) and how its particular thoughts, feelings, actions, and goals might fit into such a distinctive coping "strategy" (Roseman, 1993).

To accomplish our objectives, we asked subjects to recall particular emotion experiences and answer open-ended and closed-ended questions concerning what they felt, thought, felt like doing, actually did, and wanted in each case (for examples of studies using this type of methodology, see Frijda et al., 1989; Roseman, Spindel, & Jose, 1990; Shaver et al., 1987; Smith & Ellsworth, 1985).

By gathering data on action tendencies, actions, and goals, we could assess whether emotions differ in each of these ways and get some idea of which properties best differentiate among them. By gathering data on infrequently studied states, we could help to ascertain whether there is reason to regard them as discrete emotions. By formulating explicit hypotheses to cover each response type for each emotion, we hoped to contribute to the specification of differences among emotion states. In testing all hypotheses with planned rather than post hoc comparisons, we could also help determine whether differences observed in exploratory and descriptive research would prove to be robust findings.

## Method

### *Experimental Overview and Design*

The general procedure was to ask subjects to recall, describe, and answer questions about experiences in which they felt a particular emotion. The emotions studied were fear, sadness, distress, frustration, disgust, dislike, anger, regret, guilt, and shame. Selection of these allowed us to examine all the negative emotions proposed in the theories of Izard (1977), Plutchik (1962, 1980), Roseman (1979, 1984), and Tomkins (1962, 1963, 1980), with "dislike (but not anger) toward someone" intended to measure the same portion of the emotion spectrum as "contempt." We studied only negative emotions so that the properties we identified would distinguish particular emotions from each other, rather than negative emotions as a class from positive emotions.

We had initially grouped the emotions into 10 ordered pairs: disgust/frustration, distress/sadness, sadness/fear, fear/distress, frustration/anger, dislike/disgust, anger/dislike, shame/regret, guilt/shame, and regret/guilt. Each subject was assigned at random to one pair and was asked to recall two different experiences (one for each emotion). However, because recall of the first emotion experience might bias recall of the second, only data from the first experiences are presented here. Thus, each subject provided data for 1 of 10 emotions, in a between-subjects design. Two female experimenters each ran half of the subjects recalling each emotion in a randomly determined order.

### *Subjects*

Subjects were 69 women and 31 men, aged 16–71, with a median age of 26. Students from the undergraduate, graduate, and adult divisions of the New School for Social Research, students from nearby universities, and residents of the New York City metropolitan area were recruited with signs, newspaper ads, and solicitations made in classes and at university registration.

Individuals volunteering for psychology studies were asked to take part in a study involving recall of past emotion experiences. From among those willing to participate, we chose people who were native English speakers, were not taking mood-altering medication, and would not wear glasses when reading (because we were also gathering data on emotional facial expressions, which glasses would obscure). Subjects were paid $5 for 1 hr's participation.

### *Procedure*

To help subjects recall emotion experiences, we adapted a procedure from Malatesta and Izard (1984), in which subjects are instructed to vividly recall actual experiences of particular emotions.[1]

[1] We chose this procedure partly to reduce the risk of getting data on emotion language rather than emotion states. Instead of asking subjects

On arrival at the lab, each subject was informed about the nature of the study. For example, a subject assigned to recall an experience of sadness and an experience of fear was told

> In this study we are interested in the kinds of emotion events that are of importance to people. We will ask you to recount emotion experiences in two categories. In other words, we will ask you for one event that made you feel intense *sadness* and for a different event that made you feel intense *fear*. We want this to be as authentic a recreation of your emotion experiences as possible. Try to bring back as much of the actual feeling as you possibly can. We find that it seems to work best if you first think about the experience, then, jot down the highlights, and then try to reexperience it with as much real feeling and intensity as when it first actually happened.

The subject was then asked to think of two different emotion experiences and to write down a title for each one. When he or she had done so, procedures for recalling highlights and relating the first emotion experience were explained:

> I will read a standard set of instructions to you through the speaker, which will consist of presenting you with the first event that you have chosen and having you jot down the highlights for that event only. I will then have you get ready to tell about the experience. On my signal you should tell what made you have the emotion and what it was like. I will ask you to keep the description brief. You might imagine you are on a transatlantic phone call to a friend and don't want to run up the phone bill. We want you to focus on the highlights: the most salient aspect of the experience. Your description should be brief and condensed so that it has as much impact for you and for a listener as the experience originally had. I will be in the next room; I will be able to see and hear you and we can stop at any point. After each episode, I will ask you to fill out certain sections of the questionnaire.

The experimenter then left the room, "because we find that people get distracted from their experiences when someone else is with them." The subject sat facing a one-way mirror, most of which was covered by a blank gray movie projection screen. The experimenter was able to see and videotape the subject through a 14-cm high uncovered area below the screen.

After the subject finished jotting down the highlights of the experience, the experimenter said, over the speaker system

> OK, I am going to ask you to relate the emotion experience. Please try to remember the event that made you feel intense ⟨NAME OF THE EMOTION⟩. Put yourself back into the situation as though you were just experiencing it now. Then prepare to imagine telling the experience to a best friend or relative. As soon as you feel you have recaptured the experience, please relate it. Remember that it is very important that your friend understand exactly how you feel about the incident. Please limit your description to about three minutes.[2]

When the subject finished describing the emotion experience, the experimenter requested a summarizing statement: "And once again, in one sentence, how did you really feel?"

Following the summary, the subject was instructed to fill out the questionnaire on emotional responses for this experience. Procedures for recalling highlights, retelling, and answering questions about emotional responses were then repeated for the second experience.

### *Measures of Emotional Responses*

Seven open-ended questions elicited subjects' own descriptions of their responses in each emotion experience. Then subjects answered closed-ended questions about the particular responses proposed as characteristic of particular emotions.

The closed-ended questions were grouped into five sections, each containing items measuring a given response type (feelings, thoughts, action tendencies, actions, or goals). Within each section were 20 items (2 items measuring hypothesized responses of that type for each of the 10 emotions studied). For example, the feeling items for sadness were "feel a lump in your throat" and "feel very tired." The feeling items for fear were "feel your heart pounding" and "feel your whole body was tense." The 20 items in a section were divided into two subsections, each containing 1 item per emotion. Within each subsection, the order of items was determined at random. All subjects answered the 100 closed-ended questions in the same randomly determined order.

Each page of closed-ended items was headed by a stem specifying the emotion being recalled. Thus, for sadness it was "When you were feeling sadness, how much did the feeling make you . . . " (e.g., "feel a lump in your throat," "feel your heart pounding," etc.). Each item was rated on a 5-point scale (*not at all* [1], *very little* [2], *somewhat* [3], *much* [4], and *very much* [5]) that had been used successfully in prior research (Caplan, Tripathi, & Naidu, 1985; Roseman, Dhawan, Rettek, Naidu, & Thapa, in press).

## Results and Discussion

### *Data Analyses Comparing Responses in Different Emotion States*

Subjects were grouped by emotion recalled, and group means for each closed-ended response item (expressed in standard scores) were calculated. We then used contrast analyses (Rosenthal & Rosnow, 1985) to test hypotheses linking emotions (e.g., sadness) to responses (e.g., "feel a lump in your throat"). For each emotion, 10 contrasts were performed, each testing a hypothesis about a particular response item (feeling, thought, action tendency, action, or goal). The numerical weights used in each contrast specify that the response item mean is predicted to be relatively high (contrast weight = 9) among subjects recalling the hypothetically linked emotion and relatively low (contrast weights = −1) among subjects recalling the other 9 emotions (see Rosenthal & Rosnow, 1985, pp. 11–23). Each contrast generates a value of $t$ that provides a directional (one-tailed) significance test of the difference between the response item

about the feelings, thoughts, action tendencies, actions, and goals that they believed to be associated with an emotion, we asked what they thought, felt, felt like doing, did, and wanted when they actually experienced the emotion (see also Smith & Ellsworth, 1985). Malatesta and Izard's (1984) report that subjects put through such a recall procedure spontaneously made emotion faces (including expressions for the emotion they recalled) also indicates that not just linguistic information but also emotion experiences and their properties are accessed by this technique. In our adaptation, we (a) de-emphasized videotaping and experimenter observation so as to reduce evaluation apprehension, (b) asked for examples of "intense" rather than "extreme" emotions, (c) did not initially direct subjects to choose recent experiences but instead prompted them to think over events of the past week or two if they had difficulty recalling an experience, and (d) reordered instructions and added clarifications to guide subjects as they went through the procedure, rather than relying on recall of an introductory presentation (see text for details).

[2] The few subjects who rambled excessively, or did not discuss the specified emotion, were asked "What about this experience made you feel the most ⟨NAME OF THE EMOTION⟩?"

mean for the hypothetically linked emotion and the mean for other emotions.

*Tests of hypotheses specifying responses for each emotion.* Tables 1–10 present group means and significance tests for the responses predicted to be characteristic of the various emotions. For example, Table 1 shows how subjects recalling each emotion rated the hypothesized feelings, thoughts, action tendencies, actions, and emotivational goals of fear. Those responses having a significant value of $t$ in Table 1 received significantly higher ratings from subjects recalling experiences of fear than from subjects recalling experiences of other emotions. According to the contrast column of the table, as predicted, fear experiences were distinguished by subjects feeling their hearts pounding, thinking about how bad things could get, feeling like running away, and wanting to get to a safe place. Thus, a characteristic feeling, thought, action tendency, and goal had been identified for fear. For one response type, actions actually performed, neither of our hypotheses received support. That is, neither "move away from something" nor "find a way out" got significantly elevated ratings in fear experiences.

Overall, consideration of the hypotheses supported suggests that fear involves heightened awareness of a particular type of arousal (palpitations), attention to danger (vigilance?), and a readiness for an action that can reduce the possibility of harm (preparing for flight?), even if flight is not actually undertaken.

In recalled experiences of sadness, subjects felt tired and felt a lump in the throat, thought about what they were missing, felt like doing nothing, cried, and wanted to be comforted and to recover something (see Table 2), supporting hypotheses for each of the five types of response. Interestingly, in sadness experiences subjects did not much feel like giving up and did not resign themselves to something. Thus, sadness does not seem to involve a decrease in desire (as in depression) but rather a cessation of active pursuit of an unattainable desired end. At the same time, subjects who felt sadness cried—which might induce other people to provide things the subjects could not attain themselves (note that they also wanted to be comforted). Thus, sadness may function to recover something passively, through eliciting caregiving (even if people do not cry deliberately to accomplish this). In this view, giving up and resignation are post-emotional responses that are part of a disengagement process occurring after sadness. For example, in bereavement, perhaps people resign themselves to the loss, not when their sadness is most intense but as the sadness wanes.

As shown in Table 3, distress experiences were characterized by the perception that things were going badly. However, this was the only one of our hypotheses for distress that received support. Why? Could it be that distress is not, in fact, a discrete emotion? Evidence against such an interpretation is the observed occurrence of a distinctive "physical distress" expression or pain face (see Izard & Malatesta, 1987), which suggests a distinct affective state. Alternatively, perhaps *distress* (Tomkins, 1963) is too general a term for this emotion and refers instead to the hedonic quality of any negative emotion. A third possibility is that our hypotheses misspecified most of the distinctive properties of distress.

As shown in Table 4, characteristic thoughts, action tendencies, and goals were identified for frustration. Subjects feeling frustrated thought that they were blocked and thought about an obstacle that was in their way, felt like kicking and lashing out, and wanted to get past something, to overcome an obstacle. Thus, it appears that the emotion of frustration functions to provide heightened awareness of obstacles, and it engages efforts to overcome them by means of vigorous action.

For disgust, a distinctive feeling, thought, and action were identified, and subjects' responses suggest that disgust may function to get something noxious out of the body or out of the perceptual field. As shown in Table 5, in recalled experiences of

Table 1
*Standardized Means of Hypothesized Fear Items for Each Emotion Recalled, With Between-Emotions Contrast Tests*

| Response type and item | Emotion recalled | | | | | | | | | | Raw mean across emotions | Contrast $t$[a] | Residual $F$[b] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fe | Sd | Ds | Fr | Dg | Dl | An | Rg | Gu | Sh | | | |
| Feelings | | | | | | | | | | | | | |
| Feel your heart pounding? | .68 | −.34 | .44 | −.10 | −.65 | −.18 | −.02 | −.34 | −.02 | .52 | 3.53 | 2.36* | 1.50 |
| Feel your whole body was tense? | .21 | −.06 | −.15 | .47 | .03 | −.33 | .47 | −.42 | −.18 | −.06 | 3.87 | 0.69[c] | 0.98[d] |
| Thoughts | | | | | | | | | | | | | |
| Think of how bad things could get? | .48 | −.12 | .03 | −.05 | .11 | .18 | .26 | −.57 | −.05 | −.27 | 3.86 | 3.20** | 0.62 |
| Think of how you could keep away from something? | .38 | −.20 | −.01 | .06 | .25 | .51 | −.59 | −.27 | −.20 | .06 | 2.91 | 1.28 | 1.03 |
| Action tendencies | | | | | | | | | | | | | |
| Feel like running away? | .67 | −.05 | .08 | .34 | −.12 | −.18 | −.58 | −.38 | .08 | .14 | 3.48 | 2.25* | 0.80 |
| Feel like calling out for help? | .42 | .36 | −.10 | .03 | −.23 | −.61 | −.16 | .42 | .36 | −.49 | 2.85 | 1.43 | 1.45 |
| Actions | | | | | | | | | | | | | |
| Move away from something? | .22 | .29 | .35 | −.19 | .02 | −.05 | −.26 | −.30 | −.12 | .02 | 2.78 | 0.72[c] | 0.47[d] |
| Find a way out? | .10 | .36 | −.03 | .04 | −.34 | −.28 | −.41 | .42 | .17 | −.03 | 2.94 | 0.34 | 0.85 |
| Emotivational goals | | | | | | | | | | | | | |
| Want to avoid something? | .11 | −.36 | .04 | .58 | −.36 | .38 | −.43 | −.09 | −.03 | .18 | 3.34 | 0.36 | 1.22 |
| Want to get to a safe place? | .56 | .11 | .43 | .30 | −.34 | −.34 | −.53 | −.34 | −.15 | .30 | 3.43 | 1.91* | 1.31 |

*Note.* Fe = fear; Sd = sadness; Ds = distress; Fr = frustration; Dg = disgust; Dl = dislike; An = anger; Rg = regret; Gu = guilt; Sh = shame.
[a] $df = 90$ unless otherwise noted. [b] $df$s = 8 and 90 unless otherwise noted. [c] $df = 89$. [d] $df$s = 8 and 89.
* $p < .05$, one-tailed. ** $p < .01$, one-tailed.

Table 2
*Standardized Means of Hypothesized Sadness Items for Each Emotion Recalled, With Between-Emotions Contrast Tests*

| Response type and item | Emotion recalled | | | | | | | | | | Raw mean across emotions | Contrast $t$[a] | Residual $F$[b] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fe | Sd | Ds | Fr | Dg | Dl | An | Rg | Gu | Sh | | | |
| Feelings | | | | | | | | | | | | | |
| Feel a lump in your throat? | .03 | .87 | .17 | .03 | −.24 | −.45 | −.03 | .10 | −.24 | −.24 | 3.25 | 2.96** | 0.45 |
| Feel very tired? | −.37 | 1.17 | −.37 | .23 | −.10 | −.70 | −.37 | .44 | −.23 | .30 | 2.35 | 4.36*** | 1.79 |
| Thoughts | | | | | | | | | | | | | |
| Think about what you were missing? | −.33 | .75 | .24 | .58 | −.79 | −.56 | −.10 | .69 | .01 | −.50 | 2.98 | 2.81** | 3.31† |
| Think how things might have been better? | −.15 | .22 | −.29 | .73 | −.44 | −.07 | −.22 | .51 | −.22 | −.07 | 3.40 | 0.75 | 1.57 |
| Action tendencies | | | | | | | | | | | | | |
| Feel like doing nothing? | −.22 | .76 | −.15 | −.08 | −.35 | −.49 | −.84 | .41 | .06 | .90 | 2.31 | 2.35* | 3.21† |
| Feel like giving up? | −.20 | .29 | .22 | .70 | −.34 | −.55 | −.06 | .08 | .01 | −.13 | 2.59 | 0.96 | 1.30 |
| Actions | | | | | | | | | | | | | |
| Cry? | −.42 | .94 | .35 | .23 | −.12 | −.83 | −.07 | .35 | −.30 | −.12 | 2.81 | 3.38*** | 1.74 |
| Resign yourself to something? | −.04 | −.04 | −.39 | .38 | .03 | .38 | −.25 | .17 | −.18 | −.04 | 2.86 | −0.14 | 0.69 |
| Emotivational goals | | | | | | | | | | | | | |
| Want to be comforted? | .20 | .49 | .20 | −.02 | −.61 | −.46 | −.39 | .34 | .27 | −.02 | 3.53 | 1.67* | 1.27 |
| Want to recover something? | −.97 | .68 | .07 | −.12 | −.12 | −.61 | −.12 | .92 | .37 | −.12 | 3.09 | 2.56** | 3.68† |

*Note.* Fe = fear; Sd = sadness; Ds = distress; Fr = frustration; Dg = disgust; Dl = dislike; An = anger; Rg = regret; Gu = guilt; Sh = shame.
[a] $df = 90$ unless otherwise noted. [b] $df$s = 8 and 90 unless otherwise noted.
* $p < .05$, one-tailed. ** $p < .01$, one-tailed. *** $p < .001$, one-tailed. † $p < .01$, two-tailed.

disgust, subjects felt nauseated, thought about the situation as repulsive, and wrinkled their noses (minimizing olfaction, as noted by Collier, 1985). The hypothesized goal, "want to get something away from you," did get elevated ratings in disgust experiences, but not higher ratings than in dislike and anger experiences. It may be that a more precise specification is necessary to differentiate the goal of disgust, such as wanting to expel (Plutchik, 1980), reject (Rozin & Fallon, 1987), or obliterate something (so that one stops perceiving it).

Responses that received elevated ratings in recalled experi-

Table 3
*Standardized Means of Hypothesized Distress Items for Each Emotion Recalled, With Between-Emotions Contrast Tests*

| Response type and item | Emotion recalled | | | | | | | | | | Raw mean across emotions | Contrast $t$[a] | Residual $F$[b] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fe | Sd | Ds | Fr | Dg | Dl | An | Rg | Gu | Sh | | | |
| Feelings | | | | | | | | | | | | | |
| Feel physically uncomfortable? | −.14 | .02 | .19 | .60 | −.06 | −.38 | .11 | .19 | −.47 | −.06 | 3.67 | 0.62 | 0.98 |
| Feel pain? | −.08 | .78 | .12 | .06 | −.47 | −.73 | .40 | .25 | .06 | −.34 | 2.62 | 0.41[c] | 2.33†[d] |
| Thoughts | | | | | | | | | | | | | |
| Think that things were going badly? | .38 | .38 | .63 | .14 | −.27 | −.43 | .54 | −.27 | −.59 | −.51 | 3.73 | 2.22* | 2.13† |
| Think how you could get out of the situation? | .25 | −.30 | −.03 | .38 | −.09 | .11 | −.98 | .25 | −.03 | .31 | 3.44 | −0.05[e] | 1.74[f] |
| Action tendencies | | | | | | | | | | | | | |
| Feel like running back and forth? | −.13 | .15 | −.34 | .84 | −.55 | −.62 | .63 | .56 | .01 | −.55 | 2.39 | −1.25 | 3.71†† |
| Feel like screaming? | −.39 | .41 | .28 | .68 | .15 | −.45 | .55 | .08 | −.72 | −.59 | 3.28 | 1.01 | 3.20†† |
| Actions | | | | | | | | | | | | | |
| Cry out? | −.32 | .41 | .41 | .10 | −.08 | −.57 | .53 | .29 | −.45 | −.32 | 2.53 | 1.41 | 1.68 |
| Pull away from something? | .13 | −.00 | .06 | .20 | −.14 | .34 | −.14 | −.42 | −.14 | .13 | 2.70 | 0.20[c] | 0.50[d] |
| Emotivational goals | | | | | | | | | | | | | |
| Want to get away from something? | −.05 | .29 | .08 | .01 | .22 | .29 | −.26 | −.81 | −.12 | .36 | 3.58 | 0.28 | 1.38 |
| Want to escape? | .15 | .22 | .15 | .50 | −.12 | −.06 | −.40 | −.54 | −.19 | .29 | 3.78 | 0.51 | 1.13 |

*Note.* Fe = fear; Sd = sadness; Ds = distress; Fr = frustration; Dg = disgust; Dl = dislike; An = anger; Rg = regret; Gu = guilt; Sh = shame.
[a] $df = 90$ unless otherwise noted. [b] $df$s = 8 and 90 unless otherwise noted. [c] $df = 89$. [d] $df$s = 8 and 89. [e] $df = 88$. [f] $df$s = 8 and 88.
* $p < .05$, one-tailed. † $p < .05$, two-tailed. †† $p < .01$, two-tailed.

Table 4
*Standardized Means of Hypothesized Frustration Items for Each Emotion Recalled, With Between-Emotions Contrast Tests*

| Response type and item | Emotion recalled | | | | | | | | | | Raw mean across emotions | Contrast $t$[a] | Residual $F$[b] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fe | Sd | Ds | Fr | Dg | Dl | An | Rg | Gu | Sh | | | |
| Feelings | | | | | | | | | | | | | |
| Feel dammed up? | −.21 | .48 | −.14 | .41 | .19 | −.76 | .27 | −.00 | −.35 | .13 | 3.51 | 1.40[c] | 1.45[d] |
| Feel driven to do something? | .07 | −.24 | −.08 | −.08 | .45 | .07 | .53 | −.08 | −.32 | −.32 | 3.71 | −0.28 | 0.95 |
| Thoughts | | | | | | | | | | | | | |
| Think about an obstacle that was in your way? | .24 | −.10 | .24 | .86 | −.23 | .11 | −.03 | −.64 | −.10 | −.41 | 3.04 | 2.97**[c] | 0.90[d] |
| Think that you were blocked? | −.30 | .44 | −.16 | 1.03 | −.16 | −.01 | .51 | .21 | −.75 | −.82 | 3.31 | 3.89*** | 2.82† |
| Action tendencies | | | | | | | | | | | | | |
| Feel like lashing out? | −.22 | −.16 | −.35 | .60 | .73 | .22 | .85 | −.60 | −.79 | −.28 | 2.95 | 2.27* | 4.05†† |
| Feel like kicking? | −.40 | .23 | −.34 | .74 | −.21 | −.21 | 1.06 | .23 | −.65 | −.46 | 2.33 | 2.78** | 3.43†† |
| Actions | | | | | | | | | | | | | |
| Try harder? | .04 | −.59 | −.28 | .16 | −.09 | −.09 | .04 | .35 | .29 | .16 | 2.64 | 0.54 | 0.82 |
| Force something to happen? | −.64 | −.32 | .60 | .34 | .54 | −.38 | −.05 | .14 | .08 | −.32 | 2.38 | 1.18 | 1.93 |
| Emotivational goals | | | | | | | | | | | | | |
| Want to get past something? | .08 | .31 | .16 | .52 | −.21 | −.14 | −.29 | .01 | −.21 | −.21 | 3.69 | 1.73* | 0.40 |
| Want to overcome some obstacle? | −.11 | −.24 | .29 | .70 | .09 | −.17 | −.04 | −.04 | −.24 | −.24 | 3.46 | 2.31* | 0.32 |

*Note.* Fe = fear; Sd = sadness; Ds = distress; Fr = frustration; Dg = disgust; Dl = dislike; An = anger; Rg = regret; Gu = guilt; Sh = shame.
[a] $df = 90$ unless otherwise noted. [b] $df$s = 8 and 90 unless otherwise noted. [c] $df = 89$. [d] $df$s = 8 and 89.
* $p < .05$, one-tailed. ** $p < .01$, one-tailed. *** $p < .001$, one-tailed. † $p < .05$, two-tailed. †† $p < .01$, two-tailed. ††† $p < .001$, two-tailed.

ences of "dislike (but not anger) toward someone" fit a pattern of avoiding contact with or distancing from a negatively evaluated other. As shown in Table 6, these subjects felt cold toward and closed to someone, thought another person unattractive and disapproved of someone, felt like rejecting and not associating with someone, and wanted to be far away from and unlike someone. Thus, characteristic feelings, thoughts, action tendencies, and goals of dislike were identified.

As shown in Table 7, subjects recalling anger experiences felt blood rushing through the body and felt as if they would ex-

Table 5
*Standardized Means of Hypothesized Disgust Items for Each Emotion Recalled, With Between-Emotions Contrast Tests*

| Response type and item | Emotion recalled | | | | | | | | | | Raw mean across emotions | Contrast $t$[a] | Residual $F$[b] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fe | Sd | Ds | Fr | Dg | Dl | An | Rg | Gu | Sh | | | |
| Feelings | | | | | | | | | | | | | |
| Feel nauseated? | −.36 | .28 | −.17 | .15 | .73 | −.55 | −.29 | .34 | −.42 | .28 | 2.46 | 2.52** | 1.30 |
| Feel sick to your stomach? | −.39 | .03 | −.39 | .30 | .30 | −.73 | .23 | .72 | −.46 | .37 | 2.96 | 1.08 | 2.59† |
| Thoughts | | | | | | | | | | | | | |
| Think how repulsive the situation was? | −.55 | −.04 | .04 | .63 | .77 | .11 | .11 | −.48 | −.63 | .04 | 3.75 | 6.01*** | 1.81 |
| Think that something was distasteful? | −.29 | −.08 | −.53 | −.02 | .46 | .53 | .26 | −.35 | −.29 | .26 | 3.22 | 1.57[c] | 1.20[d] |
| Action tendencies | | | | | | | | | | | | | |
| Feel like pushing something away? | .22 | −.02 | −.33 | .28 | −.15 | .58 | .28 | −.57 | −.21 | −.08 | 2.94 | −0.49 | 1.30 |
| Feel like throwing up? | −.25 | .28 | −.17 | −.02 | .42 | −.69 | −.25 | .65 | −.25 | .28 | 1.93 | 1.46 | 1.65 |
| Actions | | | | | | | | | | | | | |
| Turn away from something or someone? | .08 | .08 | .29 | −.06 | −.35 | .36 | .43 | −.42 | −.42 | .01 | 2.79 | −1.15 | 0.93 |
| Wrinkle your nose? | .09 | −.17 | −.59 | −.12 | .77 | .00 | .00 | .26 | .00 | −.25 | 1.69 | 2.60**[c] | 0.60[d] |
| Emotivational goals | | | | | | | | | | | | | |
| Want to get something away from you? | −.09 | .04 | −.21 | −.03 | .35 | .47 | .66 | −.59 | −.40 | −.21 | 2.94 | 1.20 | 1.66 |
| Want to get rid of something? | −.37 | −.37 | .36 | .40 | .24 | .30 | .18 | −.25 | −.25 | −.19 | 2.90 | 0.78[c] | 1.03[d] |

*Note.* Fe = fear; Sd = sadness; Ds = distress; Fr = frustration; Dg = disgust; Dl = dislike; An = anger; Rg = regret; Gu = guilt; Sh = shame.
[a] $df = 90$ unless otherwise noted. [b] $df$s = 8 and 90 unless otherwise noted. [c] $df = 89$. [d] $df$s = 8 and 89.
** $p < .01$, one-tailed. *** $p < .001$, one-tailed. † $p < .05$, two-tailed.

Table 6
*Standardized Means of Hypothesized Dislike Items for Each Emotion Recalled, With Between-Emotions Contrast Tests*

| Response type and item | Emotion recalled | | | | | | | | | | Raw mean across emotions | Contrast $t$[a] | Residual $F$[b] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fe | Sd | Ds | Fr | Dg | Dl | An | Rg | Gu | Sh | | | |
| Feelings | | | | | | | | | | | | | |
| Feel cold toward someone? | −.52 | −.19 | −.52 | .46 | .66 | .79 | .20 | −1.04 | −.06 | .20 | 3.29 | 3.01** | 3.76†† |
| Feel closed to someone? | −.42 | .14 | −.11 | .01 | −.11 | .56 | −.17 | −.05 | −.24 | .45 | 2.88 | 1.75*[c] | 0.60[d] |
| Thoughts | | | | | | | | | | | | | |
| Think that you disapproved of someone? | −.34 | −.27 | −.70 | .34 | −.03 | .64 | .94 | −.40 | −.03 | −.15 | 3.45 | 2.32* | 2.68† |
| Think how unattractive another person was? | −.07 | −.19 | −.43 | .34 | .04 | .69 | .69 | −.72 | −.37 | .04 | 2.53 | 2.44**[c] | 2.02[d] |
| Action tendencies | | | | | | | | | | | | | |
| Feel like rejecting someone? | −.13 | −.07 | −.25 | .12 | −.01 | .79 | .79 | −.80 | −.25 | −.19 | 2.71 | 2.81** | 1.98 |
| Feel like not associating with someone? | .03 | .03 | −.27 | −.09 | −.21 | .81 | .45 | −.45 | −.57 | .27 | 3.15 | 2.81** | 1.16 |
| Actions | | | | | | | | | | | | | |
| Ignore someone? | −.46 | −.07 | .13 | .20 | .07 | .33 | .26 | −.33 | .00 | −.13 | 2.60 | 1.07 | 0.54 |
| Complain about someone? | −.33 | −.20 | −.26 | −.07 | .06 | .18 | 1.33 | −.45 | −.33 | .06 | 2.61 | 0.67 | 3.43†† |
| Emotivational goals | | | | | | | | | | | | | |
| Want to be far away from someone? | −.24 | −.18 | −.12 | −.12 | −.18 | .75 | .44 | −.68 | .01 | .32 | 2.99 | 2.59** | 1.12 |
| Want to be unlike someone? | −.19 | −.41 | −.36 | .20 | .37 | .59 | .26 | .15 | −.52 | −.08 | 2.94 | 2.01* | 1.09 |

*Note.* Fe = fear; Sd = sadness; Ds = distress; Fr = frustration; Dg = disgust; Dl = dislike; An = anger; Rg = regret; Gu = guilt; Sh = shame.
[a] $df = 90$ unless otherwise noted. [b] $df$s = 8 and 90 unless otherwise noted. [c] $df = 89$. [d] $df$s = 8 and 89.
* $p < .05$, one-tailed. ** $p < .01$, one-tailed. † $p < .05$, two-tailed. †† $p < .01$, two-tailed.

plode, thought about how unfair something was and of violence toward other people, felt like yelling and like hitting someone, said something nasty, and wanted to hurt and get back at someone. Overall, though the actual occurrence of physical aggression was rare among our subjects, our data supported the conception of anger as an emotion that involves attacking to hurt another person. Hypotheses were supported for all five response types.

Characteristic feelings, thoughts, action tendencies, actions, and goals were also identified for regret. In regret experiences, as predicted, subjects felt a sinking feeling, thought about a lost opportunity and a mistake that they had made, felt like "kicking" themselves and correcting their mistake, actually did something differently, and wanted to get a second chance and improve their performance (see Table 8). Overall, regret seems to be an emotion in which people seek to distance themselves

Table 7
*Standardized Means of Hypothesized Anger Items for Each Emotion Recalled, With Between-Emotions Contrast Tests*

| Response type and item | Emotion recalled | | | | | | | | | | Raw mean across emotions | Contrast $t$[a] | Residual $F$[b] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fe | Sd | Ds | Fr | Dg | Dl | An | Rg | Gu | Sh | | | |
| Feelings | | | | | | | | | | | | | |
| Feel blood rushing through your body? | .30 | −.10 | .24 | .10 | −.30 | .03 | .51 | −.30 | −.57 | .10 | 3.15 | 1.70* | 0.84 |
| Feel that you'd explode? | −.38 | −.45 | −.06 | .65 | .13 | .13 | .91 | −.45 | −.77 | .20 | 3.09 | 3.35**[c] | 2.22†[d] |
| Thoughts | | | | | | | | | | | | | |
| Think of violence toward others? | .22 | .22 | −.30 | .29 | .49 | .03 | .49 | −.50 | −.63 | −.30 | 2.36 | 1.68* | 1.64 |
| Think how unfair something was? | −.11 | .35 | −.31 | .49 | .22 | −.05 | .55 | −.38 | −.31 | −.45 | 3.67 | 1.89* | 1.22 |
| Action tendencies | | | | | | | | | | | | | |
| Feel like hitting someone? | .13 | .25 | −.42 | .53 | .56 | −.05 | .50 | −.54 | −.60 | −.30 | 2.59 | 1.73*[c] | 2.15†[d] |
| Feel like yelling? | −.23 | .23 | .10 | .81 | .16 | −.49 | .87 | .03 | −.87 | −.61 | 3.05 | 3.31** | 3.36†† |
| Actions | | | | | | | | | | | | | |
| Say something nasty? | −.43 | −.25 | −.49 | .49 | .43 | −.12 | 1.05 | −.31 | −.55 | .18 | 2.50 | 3.84** | 1.89 |
| Strike out at someone? | −.24 | .06 | −.24 | −.16 | .73 | −.46 | .50 | −.01 | −.31 | .13 | 1.82 | 1.31 | 1.25 |
| Emotivational goals | | | | | | | | | | | | | |
| Want to hurt someone? | .13 | .19 | −.38 | .38 | .32 | .00 | 1.02 | −.77 | −.51 | −.38 | 2.20 | 3.76** | 2.02 |
| Want to get back at someone? | −.20 | −.20 | −.38 | .33 | .21 | .21 | .98 | −.67 | −.26 | −.02 | 2.54 | 3.46** | 1.17 |

*Note.* Fe = fear; Sd = sadness; Ds = distress; Fr = frustration; Dg = disgust; Dl = dislike; An = anger; Rg = regret; Gu = guilt; Sh = shame.
[a] $df = 90$ unless otherwise noted. [b] $df$s = 8 and 90 unless otherwise noted. [c] $df = 89$. [d] $df$s = 8 and 89.
* $p < .05$, one-tailed. ** $p < .001$, one-tailed. † $p < .05$, two-tailed. †† $p < .01$, two-tailed.

Table 8
*Standardized Means of Hypothesized Regret Items for Each Emotion Recalled, With Between-Emotions Contrast Tests*

| Response type and item | Emotion recalled | | | | | | | | | | Raw mean across emotions | Contrast $t$[a] | Residual $F$[b] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fe | Sd | Ds | Fr | Dg | Dl | An | Rg | Gu | Sh | | | |
| Feelings | | | | | | | | | | | | | |
| Feel tension in your face? | −.25 | −.03 | −.32 | .64 | −.03 | .41 | .56 | −.25 | −.39 | −.39 | 3.64 | −0.84[c] | 1.78[d] |
| Feel a sinking feeling? | .35 | .69 | −.19 | −.05 | −.53 | −.73 | −.39 | .49 | .28 | .08 | 3.28 | 1.73* | 2.35† |
| Thoughts | | | | | | | | | | | | | |
| Think of what a mistake you made? | −.05 | −.44 | .14 | .21 | −.77 | −.64 | −.38 | .60 | .79 | .53 | 3.48 | 2.22* | 3.52†† |
| Think about a lost opportunity? | −.56 | −.14 | −.02 | .76 | −.50 | −.38 | .16 | 1.18 | −.08 | −.44 | 2.63 | 4.47*** | 2.21† |
| Action tendencies | | | | | | | | | | | | | |
| Feel like kicking yourself? | −.33 | −.45 | −.02 | .11 | −.59 | −.77 | .11 | .61 | .48 | .79 | 2.73 | 2.25*[c] | 3.12††[d] |
| Feel like correcting your mistake? | .02 | −.76 | .02 | .20 | −.64 | −.52 | −.34 | .87 | .56 | .56 | 2.76 | 3.24** | 3.10†† |
| Actions | | | | | | | | | | | | | |
| Dwell on what happened? | −.33 | .27 | −.50 | .27 | −.15 | −.33 | .02 | .27 | .53 | −.07 | 3.78 | 0.92 | 1.15 |
| Do something differently? | −.06 | −.46 | .14 | −.38 | .07 | −.33 | .41 | .61 | −.13 | .07 | 2.79 | 2.05*[c] | 0.78[d] |
| Emotivational goals | | | | | | | | | | | | | |
| Want to improve your performance? | .02 | −.61 | −.04 | −.04 | −.48 | −.23 | −.11 | .89 | .33 | .27 | 2.87 | 3.11** | 1.04 |
| Want to get a second chance? | −.29 | −.23 | .62 | .44 | −.29 | −.78 | −.66 | .99 | .38 | −.17 | 3.18 | 3.75*** | 3.11†† |

*Note.* Fe = fear; Sd = sadness; Ds = distress; Fr = frustration; Dg = disgust; Dl = dislike; An = anger; Rg = regret; Gu = guilt; Sh = shame.
[a] $df = 90$ unless otherwise noted. [b] $df$s = 8 and 90 unless otherwise noted. [c] $df = 89$. [d] $df$s = 8 and 89.
* $p < .05$, one-tailed. ** $p < .01$, one-tailed. *** $p < .001$, one-tailed. † $p < .05$, two-tailed. †† $p < .01$, two-tailed.

from what they had done previously, for example, by changing their behavior to improve on past performances.

In recalled experiences of guilt, subjects who thought that they were in the wrong and should not have done something, felt like undoing their actions and punishing themselves, apologized, and wanted to make up for their misdeeds and be forgiven (see Table 9). Thus, support was found for hypotheses identifying thoughts, action tendencies, actions, and goals for guilt. Overall, guilt seems to be an emotion in which people think about their transgressions and may attack themselves to rectify the situation.

In shame experiences, subjects felt self-conscious and small, and they blushed (see Table 10). Hypotheses specifying thoughts, action tendencies, and goals for shame were not supported. Overall, shame seems to be a state of heightened awareness of the self (Lewis, 1971), increased, perhaps, by blushing (Tomkins, 1963). It differs from guilt, in which one thinks more about one's transgressions (Lewis, 1971) and feels like punishing the self for them.

*Residual variability in responses among different emotions.* Following the contrast analyses that tested our hypotheses, we performed omnibus $F$ tests on the residual variance for each response. As shown in Tables 1–10, in a number of instances these tests indicated significant differences among emotions beyond those that had been predicted.

There were seven responses for which the contrast test was not significant but for which the residual $F$ test was. These were instances in which a response might be characteristic of a different emotion or emotions than the one that was predicted. In one such instance, a Newman-Keuls multiple comparison test revealed that the action "complain about someone" got significantly higher ratings in anger experiences than in dislike experiences. Perhaps complaining about someone should be understood as more of an anger-related attack (see also Shaver et al., 1987) than a dislike-related distancing response. Newman-Keuls tests also suggested that the action tendency "feel like running back and forth" may be more characteristic of frustration than of distress ($p < .10$). Apart from these two, there were no responses for which subjects recalling another emotion gave significantly higher ratings than subjects recalling the hypothetically linked emotion (even with the significance level set at .10 to make the post hoc multiple comparisons as sensitive to differences as the planned comparison tests of our hypotheses).

## Summary and General Discussion

### *Variation in Emotion Differentiation by Response Type*

Table 11 summarizes the most important findings of the present study. It lists hypothesized thoughts, feelings, action tendencies, actions, and emotivational goals that were characteristic of the different emotions recalled by subjects. As shown in Table 11, each of the hypothesized response types did differentiate emotions.

The horizontal sections of Table 11 show the number of hypotheses supported for each type of response. Variation in the number of hypotheses supported per type suggests that emotions can be most easily distinguished from each other by characteristic thoughts (14 of 20, or 70% of hypotheses supported), goals (65% supported), action tendencies (60% supported), and feeling qualities (55% supported). It was more difficult to distinguish among emotions by the actions that actually occurred (30% supported).

Table 9
*Standardized Means of Hypothesized Guilt Items for Each Emotion Recalled, With Between-Emotions Contrast Tests*

| Response type and item | Emotion recalled | | | | | | | | | | Raw mean across emotions | Contrast $t$[a] | Residual $F$[b] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fe | Sd | Ds | Fr | Dg | Dl | An | Rg | Gu | Sh | | | |
| Feelings | | | | | | | | | | | | | |
| Feel on guard? | .53 | −.39 | −.04 | −.60 | .38 | .24 | .10 | −.46 | −.08 | .31 | 3.56 | −0.25[c] | 1.74[d] |
| Feel tension in your head? | −.32 | .37 | −.32 | .75 | −.09 | −.02 | .52 | −.40 | −.32 | −.17 | 3.42 | −1.11 | 1.82 |
| Thoughts | | | | | | | | | | | | | |
| Think that you were in the wrong? | −.61 | −.23 | .16 | .03 | −.61 | −.49 | −.42 | .68 | 1.00 | .49 | 2.65 | 3.80*** | 2.96†† |
| Think that you shouldn't have done what you did? | −.06 | −.49 | .19 | −.06 | −.43 | −.62 | −.25 | .56 | .86 | .31 | 2.80 | 3.08**[c] | 1.77[d] |
| Action tendencies | | | | | | | | | | | | | |
| Feel like undoing what you have done? | −.06 | −.70 | .13 | .13 | −.63 | −.89 | −.38 | 1.02 | .70 | .70 | 2.80 | 2.84** | 6.19†† |
| Feel like punishing yourself? | −.55 | −.21 | .40 | .53 | −.68 | −.41 | −.28 | .13 | .67 | .40 | 2.31 | 2.39** | 2.34† |
| Actions | | | | | | | | | | | | | |
| Apologize? | −.20 | −.33 | .20 | −.07 | −.65 | −.46 | −.26 | .65 | .52 | .59 | 2.20 | 1.84* | 2.28† |
| Avoid meeting people's gaze? | .39 | .19 | .12 | −.43 | −.16 | −.02 | −.36 | −.16 | −.09 | .53 | 2.53 | −0.30 | 1.05 |
| Emotivational goals | | | | | | | | | | | | | |
| Want to make up for what you have done wrong? | −.41 | −.28 | .10 | .10 | −.64 | −.35 | −.67 | .80 | .74 | .55 | 2.44 | 2.79**[c] | 3.28††[d] |
| Want to be forgiven? | −.15 | −.41 | −.03 | −.15 | −.48 | −.61 | −.48 | 1.13 | .88 | .30 | 2.44 | 3.38*** | 3.90†† |

*Note.* Fe = fear; Sd = sadness; Ds = distress; Fr = frustration; Dg = disgust; Dl = dislike; An = anger; Rg = regret; Gu = guilt; Sh = shame.
[a] $df = 90$ unless otherwise noted. [b] $df$s = 8 and 90 unless otherwise noted. [c] $df = 89$. [d] $df$s = 8 and 89.
* $p < .05$, one-tailed. ** $p < .01$, one-tailed. *** $p < .001$, one-tailed. † $p < .05$, two-tailed. †† $p < .01$, two-tailed.

### *Discrete Emotions Differ Qualitatively in Feeling*

Prior work (e.g., Abelson & Sermat, 1962; Russell, 1980) has shown that subjects can distinguish among emotions in terms of pleasantness–unpleasantness and degree of arousal. Our study showed additional qualitative differences: for example, in fear, feeling the heart pound; in sadness, feeling a lump in the throat; in disgust, feeling nauseated; and in anger, feeling ready to explode. A number of these replicate differences identified in exploratory or descriptive research using different methods or measures (Davitz, 1969; Russell, 1991; Wallbott & Scherer, 1988). These data urge us to adopt a richer conceptualization of emotional phenomenology, in line with current theories positing a larger number of discrete emotions.

### *The Phenomenology of Discrete Emotions Includes Distinctive Thoughts as Well as Feelings*

A popular conception of emotions holds that they are fundamentally noncognitive. However, our findings indicate that discrete emotions have distinctive idea elements, perceptions, or cognitions, as proposed by such psychologists as Wundt (1897/1969), Leeper (1948), Frijda (1986), and Lazarus (1991). Indeed, it was at least as easy to identify distinctive thoughts for these emotions (14 hypotheses supported) as distinctive feelings (11 hypotheses supported).

One aspect of this issue that may require clarification involves distinguishing cognitive components of emotion phenomenology from cognitive causes, correlates, or consequences of emotions. For example, in anger our subjects tended to have thoughts about how unfair something was (a cognitive determinant of anger, according to Averill, 1982, and Roseman, 1979) and thoughts of violence toward others (which seem not a cause of anger but rather part of its phenomenology). Some cognitions may be both causes and components (or correlates or consequences) of emotions. For example, perceiving injustice could cause anger, heightened awareness of injustice could be part of anger's phenomenology, and readiness to perceive new injustices could be an effect of anger.

### *Discrete Emotions Are Associated With Distinct Behaviors*

Our data provide support for theories (e.g., Frijda, 1986; Lazarus, 1991) claiming that particular emotions are linked to characteristic patterns of behavior. For example, there seems to be a tendency to run away when feeling fear, to reduce interaction with someone when feeling dislike, and to correct a mistake when feeling regret.

It should be emphasized that these findings link emotions to something other than expressions. This, of course, is not to deny that emotions have an expressive component. It is rather to distinguish responses such as emotion-specific facial muscle movements, vocalizations, and postures from responses such as running, reducing interaction, and correcting a mistake. Expressions (e.g., lowering the brows in anger) are communications, voluntary or involuntary, that influence the social world when

Table 10
*Standardized Means of Hypothesized Shame Items for Each Emotion Recalled, With Between-Emotions Contrast Tests*

| Response type and item | Emotion recalled | | | | | | | | | | Raw mean across emotions | Contrast $t^a$ | Residual $F^b$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fe | Sd | Ds | Fr | Dg | Dl | An | Rg | Gu | Sh | | | |
| Feelings | | | | | | | | | | | | | |
| Feel self-conscious? | −.14 | .02 | .39 | −.14 | .02 | −.29 | −.74 | −.14 | .39 | .62 | 3.58 | 2.13* | 1.27 |
| Feel small? | .05 | .44 | .18 | −.34 | −.41 | −.54 | −.28 | −.28 | .50 | .69 | 3.03 | 2.42** | 1.57 |
| Thoughts | | | | | | | | | | | | | |
| Think that you were a failure? | −.02 | .29 | .17 | .35 | −.70 | −.39 | −.64 | .23 | .79 | −.08 | 2.73 | −0.29 | 2.81†† |
| Think of being rejected by others? | −.01 | .06 | .31 | .12 | −.70 | −.39 | −.45 | −.13 | .76 | .44 | 2.61 | 1.53 | 2.11† |
| Action tendencies | | | | | | | | | | | | | |
| Feel like hiding from people? | .10 | .42 | .23 | −.23 | −.16 | −.55 | −.42 | −.03 | .29 | .36 | 2.85 | 1.20 | 1.10 |
| Feel like shrinking away? | .10 | .48 | .10 | −.27 | −.40 | −.27 | −.40 | −.11 | .48 | .31 | 2.84 | 0.99[e] | 1.21[f] |
| Actions | | | | | | | | | | | | | |
| Look down toward the ground? | −.26 | .79 | .16 | −.26 | −.46 | −.33 | −.29 | .51 | −.05 | .16 | 2.87 | 0.56[c] | 1.91[d] |
| Blush? | −.20 | −.34 | .09 | −.27 | −.63 | .16 | −.20 | .01 | .58 | .80 | 2.08 | 2.78** | 1.32 |
| Emotivational goals | | | | | | | | | | | | | |
| Want to disappear? | .13 | .44 | .32 | .01 | −.12 | −.49 | −.68 | .07 | .13 | .19 | 2.79 | 0.65 | 1.35 |
| Want to conceal your inadequacies? | −.13 | −.26 | .25 | .69 | −.51 | −.20 | −.64 | .12 | .25 | .43 | 2.81 | 1.51 | 1.86 |

*Note.* Fe = fear; Sd = sadness; Ds = distress; Fr = frustration; Dg = disgust; Dl = dislike; An = anger; Rg = regret; Gu = guilt; Sh = shame.
[a] $df = 90$ unless otherwise noted. [b] $df$s = 8 and 90 unless otherwise noted. [c] $df = 89$. [d] $df$s = 8 and 89. [e] $df = 88$. [f] $df$s = 8 and 88.
* $p < .05$, one-tailed. ** $p < .01$, one-tailed. † $p < .05$, two-tailed. †† $p < .01$, two-tailed.

perceived by other organisms. Actions (e.g., running away in fear) need not be perceived in order to have effects and can influence the physical or social world directly (e.g., by increasing distance from some danger).[3]

What do our data reveal about the nature of relationships between emotions and behaviors? First, it is clear that emotions have distinctive action tendencies. It was as easy to differentiate emotions by their action tendencies (12 hypotheses supported) as by their feeling qualities (11 hypotheses supported).

Second, there was some evidence that particular emotions are associated with particular actions actually taken (6 hypotheses supported). However, it could be argued that three of these should be regarded as expressions (crying in sadness, wrinkling the nose in disgust, and blushing in shame). If so, then emotions were even less differentiable by actions taken than by action tendencies. Thus, it may be best to conceptualize the behavioral component of emotions as consisting of specific action tendencies rather than actions that must be performed when the emotion is felt.[4]

If one can feel emotions without performing their characteristic actions, should behavior still be considered a component of emotion syndromes? Well, one can feel an emotion without showing its characteristic expression, as implied by the existence of display rules (Ekman, 1972; Friesen, 1972, cited in Ekman, 1973; Saarni, 1979, 1984). Despite this, as noted earlier, many contemporary theorists regard expression as part of an emotion. As with expression in Ekman's (1972) neocultural theory, the claim here is that emotions should be thought of as having a behavioral component, which may be masked, suppressed, controlled, or overridden by nonemotional processes on particular occasions. The looser link between an emotion and its characteristic actions may result from actions (e.g., striking out in anger) being more constrained by situational conditions required for the action to be carried out (e.g., the physical presence of a target) and by social sanctions imposed to regulate real-world consequences (e.g., harm to persons or property) than are feelings, thoughts, expressions, or goals.

There is at least one other way to understand the relatively loose link of emotion to behavior: Emotional behavior may have evolved to be dependent on the joint occurrence of an emotion and specific external or internal stimulus conditions. For example, perhaps striking out when angry is only likely to occur in the presence of a particular type of target, such as a member of one's species, or a particular cognitive representation, such as a perception of the target's vulnerability. The term *action readiness* (Frijda, 1986) rather than *action tendency* (Arnold, 1960) is suggestive of such joint determination: An emotion makes one ready to respond to particular stimuli with particular actions. This conception also allows for an emotion to increase readiness to perform several different actions depending on stimulus conditions. For example, perhaps flight occurs in fear if escape seems possible, and immobility occurs if not.

### *Discrete Emotions Have Distinct Emotivational Goals*

A major finding of this study is support for the thesis that emotions have distinctive goals (Roseman, 1984; cf. Frijda,

[3] However, some responses (e.g., opening the eyes in fear) may both communicate an emotion to others and have direct effects on one's situation (increasing awareness of dangers; see Frijda, 1986).

[4] This conceptualization helps reconcile our findings with prior viewpoints, which seem to have rejected a behavioral component of emotions because the specified actions did not always occur when the emotions were experienced (see James, 1894, for an example).

Table 11
*Hypothesized Responses That Were Supported in Between-Emotions Contrast Tests for Each Emotion*

| | Emotion recalled | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Response type | Fear | Sadness | Distress | Frustration | Disgust | Dislike | Anger | Regret | Guilt | Shame |
| Feelings | Feel your heart pounding | Feel a lump in your throat | | | Feel nauseated | Feel cold toward someone | Feel blood rushing through your body | Feel a sinking feeling | | Feel self-conscious |
| | | Feel very tired | | | | Feel closed to someone | Feel that you'd explode | | | Feel small |
| Thoughts | Think of how bad things could get | Think about what you were missing | Think that things were going badly | Think about an obstacle that was in your way<br>Think that you were blocked | Think how repulsive the situation was | Think that you disapproved of someone<br>Think how unattractive another person was | Think of violence toward others<br>Think how unfair something was | Think of what a mistake you made<br>Think about a lost opportunity | Think that you were in the wrong<br>Think that you shouldn't have done what you did | |
| Action tendencies | Feel like running away | Feel like doing nothing | | Feel like lashing out | | Feel like rejecting someone | Feel like hitting someone | Feel like kicking yourself | Feel like undoing what you have done | |
| | | | | Feel like kicking | | Feel like not associating with someone | Feel like yelling | Feel like correcting your mistake | Feel like punishing yourself | |
| Actions | | Cry | | | Wrinkle your nose | | Say something nasty | Do something differently | Apologize | Blush |
| Emotivational goals | Want to get to a safe place | Want to be comforted | | Want to get past something | | Want to be far away from someone | Want to hurt someone | Want to improve your performance | Want to make up for what you have done wrong | |
| | | Want to recover something | | Want to overcome some obstacle | | Want to be unlike someone | Want to get back at someone | Want to get a second chance | Want to be forgiven | |

1986). Moreover, these goals (e.g., wanting to get to safety when feeling fear, wanting to overcome an obstacle when feeling frustration, and wanting to hurt someone when feeling anger) were particularly useful in distinguishing one emotion from another—they differentiated emotions at least as well as feeling qualities or action tendencies.

Establishing the existence of emotivational goals, and specifying what they are, enables us to understand the seemingly infinite and disparate behavioral manifestations of each emotion. A punch in the nose, praise that is too faint, the "silent treatment," and air let out of automobile tires may have no physical properties in common, but they can all be recognized as actions with the common goal of getting back at someone toward whom one is angry.[5]

Identifying the goal-directedness of disparate emotional behaviors also helps us understand their correlated probability of occurrence (e.g., as emotion intensity varies), substitutability, alternative occurrence (as situations dictate which specific action is needed to attain an emotion's goal), and sequential occurrence (as when one emotional behavior fails to attain the goal and is replaced by another). The explanatory power of emotivational goals is nicely illustrated (for just one emotion) by Freud's (1936/1959) construction of a wide-ranging theory of psychopathology around the insight that a myriad of seemingly unrelated and often bizarre behaviors could all be understood as defensive actions, engendered by anxiety, and aimed at avoiding some perceived danger.

Finally, establishing that emotions have distinctive goals that can guide behavior shows the inadequacy of some conceptions that have shaped psychologists' and laypersons' understanding of emotional phenomena: that emotions merely disorganize behavior (e.g., Young, 1961), interrupt behavior sequences (Pribram, 1984), or produce behavior that is simply irrational or uncontrolled.

### *There Appear to Be More Discrete Negative Emotions Than Have Been Generally Recognized*

Each of the 10 emotions in Table 11 was found to have a different response profile. This is a larger number of distinct negative emotions than the three (sadness, fear, and anger) most commonly studied by emotion researchers.

These findings continue the trend away from a unidimensional concept of emotion (e.g., Duffy, 1934; Lindsley, 1951) and toward identification of a greater number of discrete emotions. For example, Plutchik (1962, 1980) has proposed a system of 8 primary emotions, Tomkins (1962, 1963, 1980) postulated 9 primary affects, and Izard (1977, 1991) has suggested 10 or 11 fundamental emotions. Note that these totals include both positive and negative emotions, whereas the present study found evidence for 10 negative emotions (cf. Roseman et al., 1990). Other investigators also have reported empirical evidence of distinct response profiles for an increasing number of emotions (e.g., Frijda, 1987; Frijda et al., 1989; Scherer, 1988).

Why have researchers now been able to identify more discrete emotions than were previously known? Prior research (e.g., Ekman et al., 1969; Izard, 1971) had focused on facial muscle movements to determine whether any emotions might exist pan-culturally. In concentrating on clear cases, however, these researchers were not necessarily being exhaustive. For example, Ekman and Oster (1979), reviewing the empirical literature, noted that "further study might reveal universal facial expressions for other emotions" (p. 531).

It is also possible that some emotions have facial expressions that are not facial muscle movements. For example, perhaps shame has not been more widely regarded as a discrete emotion because it is expressed more by blushing than by movement of the brows, eyes, or mouth. In his later writings, Tomkins (1980) contended that changes in facial blood flow (e.g., flushing, blushing, or pallor), rather than facial muscle movements, are the primary responses in emotion. However, most research on emotion expression has not yet followed this change in theory. Blushing would be difficult to detect in the static black-and-white photographs used by many investigators, though quite noticeable in actual experiences.

Another possibility is that some emotions have expressions not located in the face. For example, dislike may be expressed by a turning away from someone or increased interpersonal distance (see Collier, 1985, on distance as an emotional expression). Again, these responses are noticeable in ongoing interactions but not in facial expression photographs. Note that although theorists and researchers (e.g., Darwin, 1872; Goldbeck, Tolkmitt, & Scherer, 1988; Tomkins, 1980) have observed that emotions may be expressed by vocal or postural signals in addition to facial responses, the idea that these may identify emotions without distinctive facial expressions has not been much considered (but see Ekman, 1993).

### *Future Research and Theory Development*

Our results suggest a number of directions for research. First, although we found support for many hypothesized emotion-specific responses, some hypotheses were not supported. These represent gaps in our knowledge of the phenomenology, behaviors, or goals characteristic of particular emotions. Sources of alternative hypotheses include examination of unpredicted residual variation in the responses shown in Tables 1–10 as well as subjects' descriptions of emotion experiences and answers to our open-ended questions (see also Izard, 1991; Scherer, 1988; Shaver et al., 1987). Future research can systematically test these hypotheses.

In pursuing such research, investigators might consider changes from procedures that we used in order to deal with possible methodological objections and seek converging evidence from approaches having different advantages and disadvantages. For example, subjects in this study knew from the outset that they would be recalling two emotions. This could have led them to overemphasize differences between similar states (e.g., shame and guilt). Future investigators might eliminate this possibility by using a completely between-subjects design. Methodological arguments can also be made against data from retrospective accounts because recall and self-report are subject to bias. Of course, retrospective self-reports are commonly used in emotion research because they allow for gathering data on real and intense emotional experiences that cannot easily or ethi-

[5] Such variability, in which emotional behavior is flexibly guided by emotivational goals (rather than by tendencies to perform particular actions), might be especially likely at lower levels of emotion intensity.

cally be studied in the laboratory or in settings where they naturally occur and because there are few alternatives to self-report for assessing emotional feelings, thoughts, and goals. However, investigators may wish to gather data from ongoing emotion experiences where possible (see Larsen, Diener, & Emmons, 1986 for an example) and make direct observations or seek observer reports to assess emotional behavior.

A second direction for further research is to determine whether there are in fact distinct expressions for some underresearched emotions whose phenomenological, behavioral, and emotivational profiles we have helped identify: frustration, dislike, regret, guilt, and shame. As noted earlier, such expressions may include facial muscle movements, changes in facial blood flow, and distinctive vocalizations, postures, or movements of the body.

A third direction for research is to examine whether distinct responses can be identified for other emotions, especially positive emotions. Are states such as joy, relief, hope, love, and pride as different from each other as the negative emotions we studied? Do positive emotions have emotivational goals, like negative emotions, or does the fact that they occur in situations that are motive consistent (Roseman, 1984; cf. Lazarus, 1991) mean that goal-directed action is not needed?

Finally, further theoretical elaboration would be valuable. Our findings attest to the existence of distinctive response profiles for 10 negative emotions. But why has each of these emotion states evolved and why with its particular phenomenology, expression, behaviors, and goals? It would be helpful now to expand on prior theory (e.g., Ellsworth & Smith, 1988; Lazarus, 1991; Plutchik, 1980; Roseman, 1984; Scherer, 1984b) to understand the functions of each of the discrete emotions and the significance of the particular properties that we have observed.

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