

Appraisal Determinants of Emotions: Constructing a More Accurate and Comprehensive Theory

Ira J. Roseman

Rutgers University, Camden, USA

Ann Alik Antoniou

New School for Social Research, New York, USA

Paul E. Jose

Loyola University Chicago, USA

In order to move toward a more accurate, complete, and integrative theory of the causes of emotions, empirical evidence relevant to a recently proposed appraisal theory was examined, and hypotheses from several alternative appraisal theories were compared and tested. Given questions that focused on the cognitive causes of emotions rather than their phenomenological contents, 182 subjects rated the appraisal determinants of emotion experiences that they recalled. Results suggest that appraisals of unexpectedness (not unexpected/unexpected), situational state (motive-inconsistent/motive-consistent), motivational state (aversive/appetitive), probability (uncertain/certain), control potential (low/high), problem source (non-characterological/characterological factors), and agency (circumstances/other person/self), differentiate a large number of widely-discussed emotions. These results are used to formulate a revised, empirically grounded, and more comprehensive model that specifies which appraisals cause 17 different emotions.

INTRODUCTION

In recent years, a number of theories have been offered which attempt to specify the particular appraisals of events that elicit different emotions (e.g. Arnold, 1960; Frijda, 1986; Lazarus, 1991a; Oatley & Johnson-Laird,

Requests for reprints should be sent to Dr Ira Roseman, Department of Psychology, Rutgers University, Camden, NJ 08102, USA. Email: roseman@crab.rutgers.edu.

We are grateful to Martha Gordon for assistance with data collection, and to D'Arcy Myjer, Roger Tourangeau, Jerry Parrott, and two anonymous reviewers for helpful comments on previous drafts of this paper.

1987; Ortony, Clore, & Collins, 1988; Roseman, 1979, 1984; Scherer, 1984, 1988; Smith & Lazarus, 1990; Weiner, 1985).¹

Given the proliferation of appraisal theories, our understanding of the causes of emotions may now be advanced by careful assessments of empirical evidence. Proponents of any particular appraisal theory may be asked to retain only those portions of that theory which are supported by existing or newly gathered data; discard appraisal dimensions or hypothesised appraisal-emotion relationships that have failed to find support in soundly conducted research; and incorporate appraisals from other theories that can explain the elicitation of unaccounted for emotions whose existence and distinctiveness have been documented, with conflicts among rival appraisal hypotheses resolved empirically. Indeed, results from prior comparative empirical tests (see Roseman, Spindel, & Jose, 1990) suggest that it might be profitable to combine elements from different theories in order to construct the best overall model of the appraisal determinants of emotions.

Reisenzein and Hofmann (1993) note that it has been difficult to evaluate the relative merits of different appraisal theories because the studies establishing their empirical base differ with regard to such factors as the type of data gathered (e.g. remembered vs. hypothetical events), the particular emotions studied, the way in which appraisals and emotions are measured, and the statistical methods used to assess support for hypotheses. As a solution to this problem, Reisenzein and Hofmann (1993, p. 272) point to studies in which competing appraisal dimensions are comparatively evaluated within the same methodological paradigm so as to control potential confounds.

This article reports results from such a study, and shows how these findings can be used to develop a more accurate, comprehensive, and potentially integrative appraisal model.

A Theory of Appraisal-Emotion Relationships to be Evaluated and Revised

Our starting point is the appraisal theory proposed in Roseman (1984), which is diagrammed in Fig. 1. In this figure, the appraisal elements that combine to elicit particular emotions are shown around the borders of the

¹ Other theories of appraisal determinants of various emotions have also been proposed, and empirical investigations of cognition and emotion have made significant contributions to the development of appraisal theory (see, e.g. Kemper, 1978; Manstead & Tetlock, 1989; Mauro, Sato, & Tucker, 1992; Reisenzein & Hofmann, 1990; Smith & Ellsworth, 1985; Solomon, 1976; Stein & Levine, 1987; and others cited in Clore, Schwarz, & Conway, 1994; Reisenzein & Hofmann, 1993; and Scherer, 1988).

chart, and the emotions elicited by the different combinations of appraisals are given in the boxes. As will be discussed later, many, but not all, of the appraisal-emotion interrelationships shown in Fig. 1 are found in several current appraisal theories (for detailed comparisons of this with other theories, see Clore et al., 1994; Roseman et al., 1990; Scherer, 1988).

Which of these Appraisal-Emotion Relationships have been Supported? Research to date has provided evidence that: (a) positive emotions are elicited by events appraised as motive-consistent, and negative emotions are elicited by events appraised as motive-inconsistent (Roseman, Dhawan, Rettek, Naidu, & Thapa, 1995; Roseman et al., 1990; Scherer, 1993; Wallbott & Scherer, 1988); (b) joy and sadness are elicited by events appraised as relevant to appetitive motives, and relief, distress and disgust are elicited by events appraised as relevant to aversive motives (Roseman, 1991; Roseman et al., 1990); (c) hope and fear are elicited by events appraised as uncertain, and joy is elicited by (motive-consistent) events appraised as certain (Frijda, 1987; Roseman, 1991; Roseman, et al., 1990; Smith & Ellsworth, 1985); and (d) pride, shame, guilt, and regret are elicited by events appraised as caused by the self; and love, dislike, and anger are elicited by events appraised as caused by other persons

Positive Emotions				Negative Emotions	
Circumstance-Caused	Motive-Consistent		Motive-Inconsistent		
	Appetitive	Aversive	Appetitive	Aversive	
Unknown	Surprise				
Uncertain	Hope		Fear		Weak
Certain	Joy	Relief	Sadness	Distress, Disgust	
Uncertain	Hope		Frustration		Strong
Certain	Joy	Relief			
Other-Caused	Liking		Dislike		Weak
Uncertain			Anger		Strong
Certain					
Uncertain					
Certain	Pride		Shame, Guilt		Weak
Self-Caused			Regret		Strong
Uncertain					
Certain					
Uncertain					
Certain					

FIG. 1. Hypothesised structure of the emotion system (from Roseman, 1984).

(e.g. Reisenzein & Hofmann, 1990; Roseman, 1991; Roseman et al., 1990; Weiner, Graham, & Chandler, 1982).

Unsupported Relationships, Gaps in Theory, and Alternative Hypotheses. Other appraisal-emotion relationships depicted in Fig. 1 have not been supported. For example, it appears that, contrary to predictions, (a) an appraisal of extreme uncertainty ("unknown" probability of occurrence) does not elicit surprise (see Fridja, Kuipers, & ter Schure, 1989; Roseman et al., 1990); (b) an appraisal of high power (perceiving the self as strong rather than weak in a situation) does not elicit frustration, anger, and regret, rather than other negative emotions (Roseman et al., 1990; Wallbott & Scherer, 1988); and (c) the appraisal that an event was caused by circumstances beyond anyone's control, rather than by other persons or the self, is not necessary for the experience of joy, relief, surprise, disgust, or frustration (Roseman, 1991; Roseman et al., 1990; for similar findings on "situational control" see Manstead & Tetlock, 1989; Smith & Ellsworth, 1985).

The theory shown in Fig. 1 is also incomplete in several respects. For example, it does not specify appraisals that distinguish distress from disgust, or shame from guilt (see Fig. 1; for evidence on the distinctiveness of these emotion states, see, e.g. Fridja et al., 1989; Izard & Malatesta, 1987; Roseman, Wiest, & Swartz, 1994; Tangney, 1993). In addition, the emotion of contempt, which has been shown to have a distinctive cross-culturally recognisable facial expression (Ekman & Friesen, 1986; Ekman & Heider, 1988; Izard & Haynes, 1988), is missing from the theory.

To develop an improved appraisal model, we attempted to incorporate appraisal components proposed in other theories to account for those emotions seen to be inadequately explained by the theory shown in Fig. 1. Because a variety of appraisals have been proposed to explain elicitation of the same emotions, we tested alternative hypotheses from several prominent theories.²

Improving Measurement of the Causes of Particular Emotions

We set out to test hypotheses about appraisal determinants using procedures designed to address a possible methodological problem with prior research. As a number of authors have pointed out (see Fridja, 1993;

² Of course, no one study can examine all the appraisals that have been or might be proposed. From current theories, we selected appraisal components that have attracted particular attention in the literature, and that specifically address the demonstrated inadequacies of the model presented in Fig. 1. In future research, it may be worth examining other appraisals and appraisal-emotion relationships.

Parkinson & Manstead, 1992; Roseman et al., 1990), many widely cited appraisal studies may have failed to identify correctly the causes of emotions because their experimental instructions “asked for ratings characterising the content rather than the cause of the experienced emotion” (Parkinson & Manstead, 1992, p. 129). In the light of this objection, our approach was to ask subjects to rate the cause of an emotion rather than the thoughts that they had once the emotion had begun. Similar procedures have been successfully employed to elicit appraisal-relevant emotion antecedent information in interviews conducted by Reisenzein and Hofmann (1993).

The procedures we followed were also designed to help avoid another pitfall. As Scherer (1993) has observed, emotion episodes described by subjects in appraisal studies often encompass several emotions (see, e.g. Smith & Ellsworth, 1987), each with its own appraisal determinants. Unless the subject is instructed to specify the appraisals that are relevant to the primary emotion under investigation, appraisals relevant to other emotions may be reported, obscuring true appraisal-emotion relationships. For example, Roseman et al. (1990) discuss a subject recalling an experience of relief whose rating scale responses reflected an initial uncertainty about whether her mother might have cancer (which led to an initial fear response) rather than the subsequent certainty that she did not have the disease (which was what elicited relief). Roseman et al. recommended correcting this problem by asking subjects about the *appraisals* that led to their emotion, rather than by asking them about the *event* that led to their emotion, and we pursued this strategy within the present study.

To see whether appraisal-emotion relationships identified in prior research would still be supported given more precise measurement of appraisal causes of particular emotions, we attempted to replicate them in addition to testing new hypotheses. Thus the present study tested all appraisal-emotion relationships proposed as potential components of a revised appraisal theory.

Specific Objectives of this Research

1. *What best explains the elicitation of surprise?* Instead of extreme *uncertainty* (Roseman, 1984), it has been proposed that *unexpectedness* (Izard, 1977; Scherer, 1984; cf. Charlesworth, 1969), *novelty* (Scherer, 1984), or *unfamiliarity* (Scherer, 1988) may be the crucial elicitor(s) of surprise. Which, if any of them, most accurately distinguishes surprise from other emotions?

2. *What differentiates positive from negative emotions?* As mentioned earlier, prior investigations have found that appraisals of situational state

(whether events are consistent vs. inconsistent with a person's motives) appear to determine whether positive vs. negative emotions are experienced. But would this relationship be replicated with techniques that focus subjects on the causes rather than the contents of their emotion experiences?

3. *What differentiates contact-regulating from distance-regulating emotions?* Roseman (1994b) has proposed that the emotions of joy and sadness respectively initiate and terminate movement toward stimuli, whereas the emotions of distress and relief initiate and terminate movement away from stimuli. Here we sought to test whether new appraisal measurement procedures would support prior indications that an appraisal of motivational state distinguishes these two emotion groups, that is, appraising an event as relevant to appetitive (reward-maximising) motives elicits joy or sadness, and appraising an event as relevant to aversive (punishment-minimising) motives elicits distress or relief.

4. *What differentiates reactive from preparatory emotions?* As distinct from the emotions of joy, sadness, distress, and relief, which are claimed to initiate or terminate actions, hope and fear may involve preparatory responses such as anticipation and vigilance. As noted earlier, certainty appraisals have been associated with joy, and uncertainty appraisals with fear and hope. However, it is not clear whether certainty is also an elicitor of sadness, distress, or relief (see Roseman et al., 1990, 1995), and some studies have failed to replicate the relationship between uncertainty and hope (Ellsworth & Smith, 1988; Frijda et al., 1989; Mauro et al., 1992; Smith & Ellsworth, 1987). Would focusing subjects on the appraisals leading to each specific emotion help sort out these appraisal-emotion linkages, as has been suggested?

5. *What best differentiates emotions that contend with stimuli from emotions that accommodate to them?* Instead of an appraisal of one's own power in the face of a negative event (e.g. Kemper, 1978; Roseman, 1984), different theories have proposed that emotions such as anger result in part from an appraisal of either (a) *stimulus powerlessness*, the (low) potency of the object to which one is reacting (see Osgood, May, & Miron, 1975) or noninsurmountable degree of difficulty involved in attaining or rejecting the object (Arnold, 1960); or (b) *stimulus controllability*, the controllability (Scherer, 1988; Seligman, 1975) or modifiability (Frijda, 1986) of an event; or (c) *stimulus controllability by the self*, the extent to which one can control or modify an event by one's own actions (Frijda, 1986; cf. Bandura, 1977); or (d) *coping potential*, the degree to which one can cope with (Lazarus & Smith, 1988; Scherer, 1988), adjust to (Scherer, 1988), or do something about an event. Moderate to high power, or control,

or coping potential, has also been proposed as an antecedent of contempt (Scherer, 1988), disgust (see Rozin & Fallon, 1987), guilt (Scherer, 1988), shame (Scherer, 1988), and frustration (Roseman, 1984), as opposed to emotions such as sadness, fear, dislike, and regret, which may result in part from an appraisal that little can be done about a negative event.

6. *What differentiates "attack emotions" from "exclusion emotions?"*

Roseman (1994b) has argued that frustration, anger, and guilt involve responses that attack a stimulus (move against it), whereas disgust, contempt, and shame involve responses that exclude a stimulus (move it away). According to some theorists, an appraisal of problem source (whether a negative event is attributed to behavioural vs. characterological factors) may help to differentiate these emotions (which were not well distinguished in Fig.1).

For example, Lewis (1971) proposed that the stimulus to guilt is a negative event, act, or thing for which one holds oneself responsible, whereas the stimulus to shame is a perceived deficiency of self (see Janoff-Bulman, 1979, for discussion of a more general behavioural vs. characterological self-blame dimension). Applied to negative events caused by other persons, the behavioural vs. characterological distinction might also differentiate anger from contempt: If another person's action causes a negative event, anger is experienced; but if another person's character causes a negative event, contempt is felt. Applied to impersonal objects and events, if the world "acts" badly perhaps frustration will result; but if an object or event is bad "in character" then disgust ensues. Thus, by utilising the behavioural vs. characterological distinction, we may be able to incorporate contempt into a more comprehensive appraisal model, and parsimoniously differentiate the distinctive causes of guilt vs. shame, anger vs. contempt, and frustration vs. disgust. Alternatively, it may be proposed that appraisals of illegitimacy (moral transgression) characterise emotions such as guilt to a greater extent than emotions such as shame (see, e.g. Ausubel, 1955; Izard, 1991).

7. *Which appraisal best differentiates self-directed and other-person-directed emotions?* Lazarus and Smith (1988), citing studies of guilt by Shaver (1985) and McGraw (1987), have claimed that appraisals of who is responsible for an event, rather than appraisals of who caused an event (Kemper, 1978; Roseman, 1984; Weiner, 1985), determine whether emotions are felt toward the self or other persons. But other studies (e.g. Reisenzein & Hofmann, 1990; Roseman, 1991; Roseman et al., 1990; Weiner et al., 1982) support the agency appraisal; and Frijda (1993) has recently argued that responsibility is not a cause but rather part of the phenomenology of emotions such as guilt, whereas simpler perceptions of

agency are true antecedents. Can new methods for measuring appraisals help resolve this question?

METHOD

Overview

Apart from the procedures introduced to focus subjects on the appraisal antecedents, rather than the cognitive contents, of their emotions (see the later discussion of appraisal measures), we followed a standard approach for studying appraisals and emotions that has been used successfully by other researchers (e.g. Frijda et al., 1989; Manstead & Tetlock, 1989; Mauro et al., 1992; Scherer, 1993; Smith & Ellsworth, 1985). Subjects were asked to recall emotional experiences, describe them in their own words, and answer a series of questions designed to measure their appraisals.

Subjects

Subjects were 49 male and 133 female students enrolled in classes at Loyola University Chicago (177 undergraduates) and the New School for Social Research (5 psychology graduate students).³ They ranged in age from 17 to 55, with a median age of 19. Loyola students chose to participate as one of several alternatives for fulfilling a course requirement. The New School students volunteered in response to a course instructor's in-class solicitation.

Stimulus Emotions

In this study, we investigated appraisals hypothesised to elicit 17 emotions. As in Roseman et al. (1990), to study differences among particular discrete emotions, rather than gross differences between negative and positive emotion classes, each subject was asked to recall either two negative emotions (from among fear, sadness, distress, frustration, disgust, dislike {but not anger} toward someone, anger, contempt, regret, guilt, and shame) or two non-negative emotions (from among hope, joy, relief, affection toward someone, pride, and surprise). We use the term non-negative here to encompass surprise, which might be either positive or negative (see Fig. 1). For presentation to subjects, surprise was grouped with positive emotions because prior research has shown that subjects tend to recall pleasant rather than unpleasant experiences of surprise (Roseman et al., 1990; Smith & Ellsworth, 1985).

³ The results of key hypothesis-testing contrast analyses, shown in Table 1, are unaffected by inclusion or exclusion of the five graduate students.

So as not to overload our subjects, each one was asked for experiences of only two emotions. Within the negative and non-negative emotion groups, all possible pairs of particular emotions were represented with approximately equal frequency, and subjects were assigned at random to an emotion pair. Within a pair, the order of emotions was counterbalanced across subjects. Thus, each emotion was recalled approximately half the time as the first experience on a questionnaire, and half the time as the second experience.

Procedure

Written questionnaires were administered to groups of subjects by an experimenter. For each emotion in a questionnaire, subjects were asked to take a few minutes to recall a time when the emotion was felt, describe what happened on that occasion, tell what it was in the situation they described that caused them to feel that particular emotion, and rate the extent to which each of the hypothesised appraisals caused the emotion. For a more detailed account of these procedures see Roseman et al. (1990).

The emotion experiences described by our subjects were similar to those obtained in other research (e.g. Roseman et al., 1990; Shaver, Schwartz, Kirson, & O'Connor, 1987). For example, here is a recalled experience of anger:

In doing laundry at my sister's I had left my clothes there and asked her to finish them. I'd told her I would come and get them later that night. When I called to tell her I was coming, I got her answering machine telling me she'd gone out, but I could get my clothes at 8 the *next morning*! I was angry because I had virtually no clothes this week and was depending on my clean clothes for the next day. I was also not about to get up early to do something that she should have been around for me to do that night. I was angry with her for not staying in an extra half hour to wait.

In contrast, here is a recalled experience of contempt:

I felt contempt for a classmate when she offered to pay me to write a term paper for her for a high school history class. She had about a month to work on the paper but did nothing about it. She wanted me to jeopardise my reputation for money and to help her out.

Appraisal Measures

As discussed in the Introduction, the present paper examines appraisals of different types of what might be termed "unusualness" (unexpectedness, novelty, and unfamiliarity), situational state, motivational state, probability,

own power, stimulus powerlessness, stimulus controllability, stimulus controllability by self, coping potential, legitimacy, problem source, agency, and responsibility.

Three items were constructed to measure each hypothesised dimension of appraisal. Each item asked whether a particular appraisal had caused the subject to feel the focal emotion in the experience that he or she had recalled. To keep subjects focused on the relevant appraisals, the stem "My {emotion term} was caused by" was given as the first part of each appraisal item. For example, an item assessing the extent to which an appraisal of probability (certainty vs. uncertainty) had caused a subject to feel relief was: "My relief was caused by: *Being certain about the consequences of SPECIFIC EVENT A* (1) . . . *Being uncertain about the consequences of SPECIFIC EVENT A* (9)."⁴ An item assessing the relationship between appraisals of stimulus controllability by the self and the emotion of guilt was: "My guilt was caused by: *Thinking that SPECIFIC EVENT A was controllable by me* (1) . . . *Thinking that SPECIFIC EVENT A was uncontrollable by me* (9). Nine-point rating scales, anchored appropriately at either end, were used for all appraisal items. Wording for the items and response scales was taken from or based on previously used instruments (e.g. Roseman et al., 1990; Smith & Ellsworth, 1985) wherever possible. Items and response scales measuring each appraisal are given in the Appendix.

For each of the two emotion experiences, subjects answered a total of 54 appraisal questions. The items were arranged in a random order, constant across emotions recalled. The number and wording of appraisal items was similar to questionnaires used in previous research (e.g. Frijda et al., 1989; Roseman et al., 1990; Smith & Lazarus, 1993). Judging from subjects' comments, from the paucity of questions asked of the experimenter who was present to provide assistance, and from experience with other, similar questionnaires, subjects had little difficulty answering the appraisal items.

RESULTS

Overview

The same basic analytic strategy was followed as in our previous research (Roseman et al., 1990). We began by calculating appraisal scores for each emotion experience. We then conducted three sets of analyses to determine: (a) whether the emotions we were studying differed in appraisal; (b)

⁴ "SPECIFIC EVENT A" was what the subject had identified as the cause of the emotion recalled in the first part of the questionnaire; "SPECIFIC EVENT B" was the identified cause of the second emotion recalled.

if so, which of the appraisals differed among emotions; and (c) how much each of these appraisals showed the theoretically predicted pattern of differences among emotions.

Calculation of Appraisal Scores

Included in Table 1 are mean appraisal scores for the groups of subjects recalling each emotion. Each of the 19 key appraisal items shown in the table is represented by two rows of means.⁵ The first row gives appraisal item scores for the various emotions recalled by subjects in the first part of the questionnaire ("Experience 1"). The second row shows appraisal item scores for the various emotions recalled by subjects in the second part of the questionnaire ("Experience 2"). As in Roseman et al. (1990), separate analyses of data from the first and second experiences allowed two tests of each theoretical prediction for all appraisal items, providing important information about the replicability of observed relationships.⁶

Were there Differences in Appraisal among Emotions Studied?

To determine whether these emotions differed in appraisal, we ran multivariate analyses of variance on the data for the first and second experiences recalled by subjects. The predictor variable in these analyses was the

⁵ Results for all 39 theory-relevant appraisal items are discussed and evaluated in this paper, but due to limitations of space only the most important of these could be shown in Table 1. Selection of means for inclusion in Table 1 was made empirically. For each hypothesised appraisal dimension discussed in the Introduction, Table 1 shows the appraisal item that maximised prediction accuracy as judged by summed effect sizes (contrast η^2 taken as a positive or negative value depending on fit or lack of fit with predictions) across Experience 1 and Experience 2. That is, Table 1 shows the item that gave each appraisal hypothesis its "best shot" at accounting for the data on predicted differences between emotions. Means and contrast test results for all appraisal items are available upon request from the authors.

⁶ We also evaluated the internal consistency of the three items devised to measure each appraisal dimension (see Appendix). Standardised reliability coefficients (Cronbach's alpha) across experiences of all emotions were 0.18 (for the three items intended to measure different types of "unusualness"), 0.86 (situational state), 0.57 (motivational state), 0.48 (probability), 0.74 (own power), 0.38 (stimulus powerlessness), 0.31 (stimulus controllability), 0.69 (stimulus controllability by self), 0.64 (coping potential), 0.70 (legitimacy), and 0.04 (problem source). According to Nunnally (1967), groups of items with reliabilities greater than 0.5 can be regarded as measuring the same underlying dimension of appraisal. Alphas were not calculated for agency or responsibility items because the self, other persons, and circumstances beyond anyone's control may independently cause or be responsible for an event.

Appraisal Predictors	Emotion Recalled																Contrast t-test	eta ²	Residual F _h
	Su	Ho	Jy	Rl	Af ⁺	Pr	Fe	Sd	Ds	Fr	Dg	DI	An	Ct	Rg	Gu			
Contrast	+16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Unexpected																			
Ex 1	9.00	4.30	6.27	5.10	6.22	5.70	7.08	7.50	6.18	2.92	7.36	6.55	7.55	6.00	7.73	7.91	6.20	3.24***	
Ex 2	8.30	6.55	6.10	7.10	5.60	4.56	7.09	7.64	6.73	6.92	6.50	7.00	6.64	6.67	6.82	6.80	5.92	2.03*	
Unfamiliar																			
Ex 1	7.09	4.80	3.36	3.00	6.25	5.10	6.83	5.90	5.20	4.69	6.73	4.82	5.60	5.30	6.91	5.00	5.80	2.15*	
Ex 2	5.30	4.36	5.40	6.00	4.10	5.22	7.45	5.82	6.40	5.75	6.20	4.75	4.64	3.90	4.90	6.90	5.92	0.20	
Novel																			
Ex 1	5.20	4.78	6.00	4.67	5.00	5.90	5.00	5.90	4.64	4.18	3.91	3.60	4.70	4.70	3.45	4.91	3.40	0.66	
Ex 2	4.89	5.73	6.30	5.20	4.90	6.89	5.82	4.00	5.10	3.92	3.75	4.42	2.64	5.20	4.10	5.67	3.92	0.05	
Contrast	0	+11	+11	+11	+11	+11	5	5	5	5	5	5	5	5	5	5	5		
Improved (Situational State)																			
Ex 1	4.27	6.00	8.64	7.50	6.67	7.70	1.67	2.30	3.10	2.54	2.36	2.82	2.18	3.20	3.36	3.91	1.20	11.51***	
Ex 2	5.00	7.45	8.20	6.50	8.10	8.67	2.27	2.45	3.27	2.33	2.70	3.25	1.73	2.10	2.45	2.80	2.08	15.28***	
Contrast	0	0	+1	1	0	0	0	+1	1	0	0	0	0	0	0	0	0		
Pleasurable (Motivational State)																			
Ex 1	5.18	5.40	8.63	3.30	6.22	6.90	3.45	6.10	5.45	6.08	4.36	5.00	5.18	3.30	5.64	5.00	5.70	3.32***	
Ex 2	7.20	7.55	8.10	5.10	7.20	6.67	2.00	6.45	5.45	4.92	3.70	4.67	5.36	5.50	6.36	4.60	6.25	2.29*	

***p < 0.001, **p < 0.01, *p < 0.05

Dimension 4: Reactive vs. Preparatory Emotions

Contrast	0	2	+1	+1	0	0	2	+1	+1	0	0	0	0	0	0	0	0	0	0	0
Able to Predict (Probability)																				
Ex 1	3.45	3.20	4.45	5.20	2.22	3.70	1.67	2.90	4.00	6.38	3.36	5.18	3.27	3.60	3.36	4.09	5.30	2.44**	0.03	2.01† _a
Ex 2	2.20	2.45	4.70	4.90	4.10	5.89	2.00	4.64	3.36	4.08	3.40	5.67	4.82	4.40	3.27	2.80	3.17	3.09**	0.06	1.49

Dimension 5: Contending vs. Accomodating Emotions

Contrast	0	0	0	0	0	0	6	6	6	+5	+5	6	+5	+5	6	+5	+5			
Powerful (Own Power)																				
Ex 1	3.00	4.40	6.73	5.60	3.44	6.80	1.67	2.00	2.09	2.58	1.91	4.91	2.09	3.60	4.45	5.73	2.50	0.11	0.00	7.15†††
Ex 2	4.00	4.36	6.89	4.30	5.20	8.44	1.27	1.55	2.18	2.83	3.30	3.75	2.18	4.30	3.73	3.40	3.67	1.96*	0.02	6.58††† _a
Easy (Stimulus Powerlessness)																				
Ex 1	4.18	4.90	7.00	5.50	5.67	5.70	2.33	2.50	1.83	4.15	3.73	3.09	3.00	6.90	4.73	5.55	3.50	3.31***	0.06	3.30††† _a
Ex 2	5.30	5.64	5.80	5.00	6.50	6.56	2.00	2.82	4.27	4.08	3.20	3.33	3.64	5.50	4.55	3.10	3.92	1.06	0.01	2.69†††
Someone Could Change (Stimulus Controllability)																				
Ex 1	4.27	5.90	4.18	4.50	4.67	5.10	4.50	3.20	4.82	6.08	5.36	6.27	6.82	5.50	6.00	5.55	4.90	1.38	0.01	0.98
Ex 2	5.30	6.09	4.50	4.20	5.80	5.67	3.64	5.00	4.82	5.25	5.80	6.67	6.36	7.90	5.73	5.40	4.33	1.35	0.01	1.47
Controllable by Me (Stimulus Controllability by Self)																				
Ex 1	3.91	4.90	4.55	6.60	3.89	6.90	2.92	2.00	3.82	5.00	3.64	2.82	3.27	3.30	4.36	7.00	7.00	3.20**	0.06	2.64††† _a
Ex 2	4.10	5.00	5.20	2.90	3.80	8.89	3.91	3.73	4.09	5.92	3.80	4.67	3.55	6.80	6.82	7.40	7.50	2.03*	0.03	3.38†††
Something I Could Do (Coping Potential)																				
Ex 1	3.82	6.60	6.64	6.40	5.00	6.10	3.25	2.50	3.00	4.77	5.36	4.09	4.64	6.90	4.73	6.09	6.40	4.10***	0.10	1.52 _a
Ex 2	5.40	6.82	6.60	5.20	5.20	7.78	2.91	3.36	4.09	4.67	4.00	4.50	4.36	6.20	6.00	4.30	6.92	1.74*	0.02	2.39 _a

Dimension 6: Attack vs. Exclusion Emotions

Contrast	0	0	0	0	0	0	0	0	0	+1	1	0	1	1	+1					
Deserve Good (Legitimacy)																				
Ex 1	5.55	8.10	8.09	6.40	5.67	7.30	4.92	5.50	6.09	4.62	5.45	5.18	6.64	6.60	5.00	3.82	3.80	0.48	0.00	4.12††† _a
Ex 2	3.80	7.36	7.90	5.80	6.60	8.75	4.82	5.09	6.64	6.00	6.40	5.55	6.09	5.30	5.45	3.60	3.25	0.03	0.00	4.78††† _a

Appraisal Predictors	Emotion Recalled															Contrast <i>t</i> -test	<i>eta</i> ²	Residual <i>F</i> _s
	<i>Su</i>	<i>Ho</i>	<i>Jy</i>	<i>Rl</i>	<i>Af</i> ⁺	<i>Pr</i>	<i>Fe</i>	<i>Sd</i>	<i>Ds</i>	<i>Fr</i>	<i>Dg</i>	<i>Dl</i>	<i>An</i>	<i>Ct</i>	<i>Rg</i>			
Dimension 6: Attack vs. Exclusion Emotions (continued)																		
<i>Contrast</i>	0	0	0	0	0	0	0	0	0	+1	1	0	+1	1	0	1	+1	
Basic Nature (Problem Source)																		
Ex 1	5.45	6.89	7.09	7.80	5.78	6.80	6.00	4.90	6.64	6.85	6.27	4.55	6.27	6.67	5.45	5.00	6.10	
Ex 2	6.50	6.55	6.90	5.80	7.80	6.11	6.36	6.45	6.18	3.50	6.10	7.33	6.55	6.90	5.82	3.60	6.00	
Dimension 7a: Self-Directed vs. Other Emotions																		
<i>Contrast</i>	4	4	4	4	4	+13	4	4	4	4	4	4	4	4	+13	+13	+13	
Self-Agency																		
Ex 1	3.45	5.50	5.18	7.70	4.67	7.30	4.75	4.70	4.45	4.77	3.82	3.82	2.00	4.10	7.00	7.82	8.50	
Ex 2	5.70	5.64	6.00	4.90	4.80	8.11	5.55	4.91	4.45	7.08	4.00	4.58	6.09	4.00	7.82	7.20	6.58	
Self-Responsibility																		
Ex 1	3.45	7.00	5.18	7.80	4.44	6.80	5.00	4.80	5.82	6.15	4.91	3.27	3.00	3.00	7.09	8.09	8.60	
Ex 2	5.10	5.55	6.50	4.90	4.30	8.56	6.09	5.36	4.45	7.33	4.30	4.75	5.00	3.60	7.27	7.70	6.00	
Dimension 7b: Other-Person-Directed vs. Other Emotions																		
<i>Contrast</i>	4	4	4	4	+13	4	4	4	4	4	4	+13	+13	+13	4	4	4	
Other-Person-Agency																		
Ex 1	7.73	3.60	7.09	3.40	7.00	4.60	6.50	4.10	5.91	6.15	6.55	6.73	8.09	7.30	5.27	3.45	2.40	
Ex 2	6.40	5.73	4.70	5.10	6.20	3.78	4.45	6.55	6.64	4.25	6.30	7.17	7.82	7.60	3.10	4.20	3.33	
Other-Person-Responsibility																		
Ex 1	7.73	3.40	7.09	3.70	4.89	4.50	5.17	4.20	6.27	6.38	7.45	7.45	8.00	7.60	3.73	4.55	2.40	
Ex 2	6.20	5.73	5.80	5.20	5.80	4.44	4.09	6.45	6.09	4.67	6.60	7.67	7.64	7.50	3.09	4.40	3.42	

Dimension 7c: Event-Directed vs. Other Emotions

[illegible]

Notes. Su, surprise; Hq, hope; Jy, joy; RL, relief; Af, affection towards someone; Pr, pride; Fe, fear; Sd, sadness; Ds, distress; Dg, disgust; Dl, dislike toward someone; An, anger; Ct, contempt; Rg, regret; Gu, guilt; Sh, shame.

Ex 1, Experience 1; Ex 2, Experience 2.

^a*N* per cell (Experience 1, Experience 2): Su, Jy, Dg, Gu (11,10); Ho, Sd (10,11); Rl, Pr, Ct (10,10); Af (9,10); Fe (12,11); Ds, An, Rg (11,11); Fr (13,12); Dl (11,12); Sh (10,12). ^σUsed to measure liking (Roseman et al., 1990). ^c*dfs* = 15,164 unless otherwise noted. ^d*dfs* = 15,165. ^e*dfs* = 15,163. ^f*dfs* = 15,162. ^g*dfs* = 15,158. ^h*dfs* = 15,159. ⁱ*dfs* = 15,160. ^jAs shown by contrast weights, prediction differs from Basic Nature (Problem Source), but contrast is not significant even if Problem Source weights are used.

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$. † $P < 0.05$, two-tailed; ‡ $P < 0.01$, two-tailed; †† $P < 0.001$, two-tailed; ††† $P < 0.001$, two-tailed.

emotion recalled (surprise/joy/relief/hope/affection/pride/fear/sadness/distress/frustration/disgust/dislike/anger/contempt/regret/guilt/shame); dependent variables were all of the appraisal items listed in the Appendix. Results of the MANOVAs showed highly significant differences among emotions, both in the first experience $\{F(624, 1631) = 1.75, P < 0.001\}$, and in the second experience $\{F(624, 1720) = 1.62, P < 0.001\}$. Thus, appraisals clearly differed from emotion to emotion.

Which of the Hypothesised Appraisals Differed among Emotions?

To determine which of these appraisals differentiated these emotions, we then ran univariate analyses. Again, the predictor variable in all of these analyses was the emotion recalled. Each appraisal item served as the sole dependent variable in one of these ANOVAs. Results indicated that most, although not all, of the appraisals we were studying did differentiate these emotions. That is, for most of the items measuring appraisals of situational state, motivational state, probability, own power, stimulus powerlessness, stimulus controllability, stimulus controllability by self, coping potential, legitimacy, agency, and responsibility, the differences among emotions were significant ($P < 0.05$) in both recalled experiences. For certainty of consequences, changeability by self, circumstance-agency, and circumstance-responsibility, significance ($P < 0.05$) was obtained in one recalled experience and marginal significance ($P = 0.06$) in the other. Appraisals of unusualness and problem source differed significantly among emotions in one of the two experiences. Only appraisals of modifiability and changeability showed no significant differences across emotions.

Which Appraisals Differed among Emotions in Theoretically Predicted Patterns?

To test whether the various appraisals differentiated these emotions as predicted, we ran single degree of freedom contrasts (see Rosenthal & Rosnow, 1985, pp. 1–18) on the main effects of emotion recalled on each appraisal. Weights for a given contrast were determined by the way in which a particular appraisal was predicted to differ among emotions (see Fig. 1 and alternative hypotheses discussed earlier), and a directional t -test indicated whether the observed means conformed significantly to predictions. Contrast weights specifying seven hypothesised distinctions among emotions are shown in Table 1 above the various appraisals that might

account for each distinction.⁷ Results of contrast *t*-tests are shown for each row of appraisal means, and the relative success of each appraisal prediction is indicated by the value of η^2 .

Surprise vs. other emotions. Of the three appraisals (unexpectedness, unfamiliarity, and novelty) proposed to differentiate surprise from other emotions, the *Contrast t-test* column of Table 1 reveals that only unexpectedness conformed significantly ($P < 0.05$) to this predicted pattern in both experiences recalled by subjects.⁸ As shown by the appraisal means, events perceived as unexpected elicited higher levels of surprise than of other emotions.

Positive vs. negative emotions. The appraisal of situational state was hypothesised to differentiate positive from negative emotions. Contrast *t*-tests found that all three items designed to measure situational state showed significant correspondence to predictions ($P < 0.001$). Events appraised as relatively consistent with what one wanted (or as wanted, or as improving things) elicited the positive emotions hope, joy, relief, affection, or pride. Events appraised as relatively inconsistent with what one wanted (or as unwanted, or as making things worse) elicited the negative emotions fear, sadness, distress, frustration, dislike, anger, contempt, regret, shame, or guilt. Events eliciting surprise were appraised as intermediate in motive-inconsistency . . . motive-consistency. The item that best accounted for the distinction between positive and negative emotions, shown in Table 1, was an appraisal of whether the emotion-eliciting event improved things or made them worse.

Contact-regulating vs. distance-regulating emotions. An appraisal of motivational state was hypothesised to differentiate joy and sadness from distress and relief. There was significant support for this prediction ($P < 0.05$) in the second recalled experience for all three items designed to measure motivational state. However, only one of the motivational state items received significant support in both experiences. As shown in Table 1, motivation to get or keep something pleasurable was more characteristic of events eliciting joy or sadness; and motivation to get rid of or avoid something painful was more characteristic of events eliciting distress or relief.

⁷ For discussion relating the predicted emotion groupings in our analyses to a unified theory linking patterns of appraisal to patterns of emotional response (including emotion-specific action tendencies and emotion-specific goals), see Roseman (1994a,b).

⁸ As in Roseman et al. (1990), uncertainty also failed to reliably distinguish surprise from other emotions.

Reactive vs. preparatory emotions. An appraisal of probability was proposed to differentiate both (a) joy and relief vs. hope, and (b) sadness and distress vs. fear. Contrast tests indicated that each of the items designed to measure probability corresponded significantly to this pattern in both recalled experiences ($P < 0.05$). Strongest support was obtained for an appraisal of the predictability of events ($P < 0.01$). As shown by the means in Table 1, being able to predict what was going to happen in a situation was more characteristic of events eliciting joy or relief than of events eliciting hope; and more characteristic of events eliciting sadness or distress than of events eliciting fear.

Contending vs. accommodating emotions. Five classes of appraisals from different theories (own power, stimulus powerlessness, stimulus controllability, stimulus controllability by self, and coping potential) were proposed as alternatives for differentiating emotions that contend with a motive-inconsistent event (e.g. frustration, anger, guilt) from emotions that accommodate to it (e.g. sadness, dislike, regret).

Contrast tests revealed that none of the items constructed to measure appraisals of own power, stimulus powerlessness, or stimulus controllability differentiated these emotions in the way that was predicted in both recalled emotion experiences. There was, however, consistent significant support ($P < 0.05$) for predictions made with one appraisal item designed to measure stimulus controllability by the self and one item designed to measure coping potential. That is, perceiving that an emotion-eliciting event was controllable by the self, and perceiving there was something one could do about it, were generally characteristic of frustration and disgust, rather than fear, sadness, and distress; anger and contempt, rather than mere dislike toward someone; and guilt and shame, rather than regret. Thirty-three of the 40 relevant pairwise comparisons of means for these emotions fit this predicted pattern (as shown in Table 1). Predictions made with other items designed to measure stimulus controllability by the self or coping potential did not receive consistent significant support across both recalled emotion experiences.

Attack vs. exclusion emotions. Two appraisals, legitimacy and problem source, were proposed to differentiate guilt from shame, anger from contempt, and frustration from disgust. Contrast tests revealed that none of the legitimacy items fit these predictions in either of the two recalled emotion experiences. Instead, as indicated by the legitimacy means in Table 1, the belief that one deserved a good outcome was rated as a cause of positive emotions more than negative emotions. In addition to this pattern, among the negative emotions legitimacy tended to be lower in events eliciting regret, guilt, and shame, and higher in events eliciting dislike, contempt,

and anger. Among the positive emotions, legitimacy was particularly high in events eliciting pride.

Appraisals of problem source had somewhat greater success in making the hypothesised emotion differentiations. Contrast tests found that predictions for each of the appraisals intended to measure problem source received significant support in one recalled experience. Support was strongest for the item asking whether the emotion-eliciting event had revealed the basic nature of someone or something ($P < 0.01$ in Experience 2). The means in Table 1 indicate that, consistent with predictions, subjects were more inclined to perceive that events revealed the basic nature of someone or something in instances of disgust rather than frustration (in Experience 2), contempt rather than anger (in both experiences), and shame rather than guilt (in both experiences). None of the other appraisals measured in this study reliably differentiated members of these emotion pairs from each other.

Self-directed, other-person-directed, and event-directed emotions. Finally, two sets of appraisals were proposed to differentiate emotions felt toward the self, emotions felt toward other persons, and emotions that can be felt toward impersonal events or objects. The contrast tests in Table 1 show significant support for both agency and responsibility appraisal predictions in each of the experiences recalled by subjects ($P < 0.001$, except for circumstance-agency and circumstance-responsibility, where $P < 0.01$). Combining across the two recalled emotion experiences, effect sizes were slightly higher for self-agency than for self-responsibility, for other-person-agency than for other-person-responsibility, and for circumstance-agency than for circumstance-responsibility. Thus overall, predictions were mostly strongly supported for agency appraisals.

The sources of support for agency predictions are shown in Table 1. With few exceptions, in both experiences recalled by subjects causation by the self was rated highest in events eliciting pride, regret, guilt, and shame; and causation by other persons was rated highest in events eliciting affection, dislike, anger, and contempt. Causation by circumstances beyond anyone's control was generally higher in events eliciting surprise, joy, and relief, than in events eliciting affection and pride; and higher in events eliciting fear, sadness, distress, and disgust than in events eliciting dislike, anger, contempt, regret, guilt, and shame. Contrary to predictions, causation by other persons was consistently high in events eliciting surprise, and causation by circumstances beyond anyone's control was low in events eliciting hope and frustration.

Are there Additional Relationships between these Appraisals and Emotions?

Significant residuals in Table 1 point to other relationships between the appraisals and emotions beyond those that were identified in our hypothesis-testing contrasts. Means for motivational state, own power, and legitimacy appraisals in Table 1 suggest that the extra appraisal variance often corresponds to differences between positive and negative emotions. This fits a pattern, noted in previous research (Roseman et al., 1990), that may reflect appraisal sequences or interactions. That is, being motivated to attain a pleasurable state, or appraising oneself as powerful or deserving of a good outcome, may lead one to appraise a situation as more motive-consistent, and thus generate more positive emotion.

DISCUSSION

Testing and Revising Appraisal Theories

This study tested many specific hypotheses, proposed by different theorists. Results showed that related yet distinct appraisals had differing relationships to particular emotions, and that some appraisals fit predictions more closely than did others. What exactly have we learned from these analyses? How can our findings be used to develop a more accurate and comprehensive theory of the causes of discrete emotions? What questions now need to be answered, and what type of research is needed to address them?

Relationships between Particular Appraisals and Particular Emotions

Unexpectedness, rather than novelty, unfamiliarity, or uncertainty, elicits surprise. Although they may be plausible hypotheses, we found that neither novelty (Scherer, 1984), nor unfamiliarity (Scherer, 1988), nor extreme uncertainty (Roseman, 1984) elicited surprise, as opposed to other emotions, in both recalled experiences. Rather, it was the unexpectedness of a stimulus (Izard, 1977; Scherer, 1984) that reliably evoked surprise. These results suggest that the theories proposed by Roseman (1984) and Scherer (1984, 1988) need to be revised. Judging from our subjects' appraisal ratings, unfamiliarity or uncertainty may elicit fear, and novelty may elicit joy or pride, rather than surprise. It would seem that only when novel, unfamiliar, or uncertain stimuli are unexpected will they produce surprise.

Situational state appraisals differentiate positive from negative emotions. Our data indicate that appraisals of motive-consistency elicit positive emotions, and appraisals of motive-inconsistency elicit negative emotions, as predicted. Whereas previous research may have identified similar appraisals that occur as part of the experiential content of emotions, here motive-consistency vs. motive-inconsistency is reported to be a cognitive cause of emotions.

The situational state results also shed light on the nature of surprise. In prior studies, surprise has been associated with appraisals of pleasantness (Smith & Ellsworth, 1985) or motive-consistency (Roseman et al., 1990). But when we focused subjects on the appraisals that caused their surprise, rather than the contents of the resulting emotional experience, we found that neither motive-consistency nor motive-inconsistency was seen as eliciting surprise. These data fit with the conception of surprise as an emotion that is not inherently positive or negative (Ortony et al., 1988; Roseman, 1984).

Motivational state differentiates contact-regulating from distance-regulating emotions. Only three of the six appraisal theories discussed in Scherer's (1988) review link different emotions to different types of goals, and whether appraisal theories should do so has been a matter of some controversy (see, e.g. Smith & Lazarus, 1993, p. 263). However, data gathered in this study provide some support for the hypothesis that different emotions are felt when a person is appetitively as opposed to aversively motivated (Roseman, 1979, 1984; cf. Spence, 1956). Additional research is required to determine whether distinct emotions also flow from different specific appetitive and aversive concerns, such as enhancement of ego identity (Lazarus, 1991a) or relationship goals (Scherer, 1986).

Our results also suggest refinements in conceptualisation of the motivational state dimension. Predictions were only consistently supported when the distinction was phrased in terms of wanting to get or keep something pleasurable (eliciting joy if events were consistent with this motive, or sadness if they were inconsistent with it) vs. wanting to get rid of or avoid something painful (eliciting distress if events were inconsistent with this motive, and relief if they were motive-consistent).

These findings imply a less cognitively complex conceptualisation of motivational state. It seems that it is not so much *thinking about* a goal state as a benefit or a loss, or *categorising* it as positive or negative, that is crucial; but rather perceiving or simply registering it (see Frijda, 1993) as something potentially pleasurable or painful.

A probability appraisal differentiates reactive vs. preparatory emotions. As noted earlier, it was not clear from prior research that uncertainty was associated with hope as well as fear, and certainty with sadness, distress,

and relief, as well as joy. Here, with subjects focused on the causes rather than the contents of their emotions, each of these hypotheses received empirical support.

A relational appraisal of control potential, rather than appraisals focusing solely on the self or the stimulus event, appears to differentiate contending vs. accommodating emotions. As discussed earlier, many theories claim that an appraisal of one's power, or of an event's controllability, helps determine which of several negative emotions one will feel. Our empirical assessment of these and alternative hypotheses found instead that only a relational appraisal (Lazarus, 1991a), comparing one's own power or control to the potency or controllability of the stimulus, conformed significantly to predictions. Such relational appraisals have been proposed by Bandura (1977), Frijda (1986), Lazarus and Smith (1988), and Scherer (1988). This result is also in accord with findings from the clinical literature (e.g. Garber & Hollon, 1980; Weisz et al., 1989; Weisz, Weiss, Wasserman, & Rintoul, 1987; but see also Weisz, Sweeney, Proffitt, & Carr, 1993) that it is not necessarily perceptions of the intrinsic uncontrollability of negative events, but rather their perceived uncontrollability by the self that is associated with depression (cf. sadness in Fig. 1).

What is the best way to conceptualise this relational judgement? Analyses of specific items revealed that predictions were consistently supported for: (a) an appraisal of an event's controllability by the self (but not its modifiability or changeability); and (b) an appraisal of whether one could "do something about" an event (but not appraisals of whether one could cope or deal with it). On the latter point, the predictive failure (in both recalled experiences) of the item asking specifically about judgements of whether one was "able to cope with" the event cautions against conceptualising the crucial appraisal in terms of coping potential (e.g. Lazarus, 1991a; Smith & Lazarus, 1993). Coping potential includes the capacity to adjust to an event, for example, by such intrapsychic means as changing one's goals, finding meaning in the event, or dealing with one's emotional responses (Scherer, 1988). Our results suggest that it is not one's ability to cope with an event, but rather the perceived ability to control or do something about its motive-inconsistent aspects that elicits an emotion which will contend with a situation (such as frustration or anger) rather than an emotion which will accommodate to it (such as sadness).⁹

⁹ Having an appraisal of high vs. low control potential that determines whether one experiences a contending emotion vs. an accommodating emotion makes sense within a functionalist perspective, in which appraisals serve to elicit the particular emotion whose response tendencies are relatively likely to help a person adapt successfully to the type of situation he or she is facing.

For example, one subject felt frustration because "I knew most of the material I did wrong" on an exam. "If I didn't know the material, I would not have be {sic} frustrated." That is, it was precisely because his potential control over the outcome was high that this subject felt frustrated. In contrast, the same subject felt sad when a friend was diagnosed as having leukaemia. In the latter experience, the subject perceived there was nothing he could do about "the fact that a young man had to be ill . . . and that the family of this young man had to suffer."

The best formulation of the crucial relational appraisal dimension might be termed *control potential* or *influence potential*, which would appear to combine only those subcomponents of "stimulus controllability by self" and "coping potential" that were supported in our data. A similar formulation was proposed by Wortman and Brehm (1975) in a review of the literature on responses to uncontrollable events. They suggested that uncontrollable events produce reactance (a frustration- or anger-like response that aims to restore one's freedom) if a person believes that he or she can still exert control; but learned helplessness (a sadness- or depression-like response that fails to struggle against aversive conditions) if establishing control is thought to be impossible.

Indeed, Roseman (1984) has argued that the reason perceived legitimacy is often associated with anger (see Averill, 1982) is that it confers a kind of "moral power" which can be used to influence harmdoers to change their behaviour, and recruit bystanders or authorities to help change negative events one could not alter by oneself. In the terms used here, having justice on one's side tends to increase one's control potential, and can therefore be an elicitor of anger. Frijda (1993) observes that violations of nonmoral expectations can also give rise to the perception that something "ought" not to have happened, and evoke an angry response. Thus, it would seem that many types of expectations can engender a sense of control potential, and thereby contribute to the elicitation of frustration or anger (see, e.g. the anger story quoted earlier, in which the subject felt her sister "should have been around" so she could do her laundry).

An appraisal related to problem source, rather than legitimacy, may differentiate attack vs. exclusion emotions. Of the two appraisals proposed to distinguish guilt from shame, anger from contempt, and frustration from disgust, we found no support for the legitimacy hypothesis. For example, although several authors have contended that guilt results from wrongdoing or the perception that one deserves a negative outcome (e.g. Izard, 1991; Roseman, 1984), whereas shame need not involve immorality (e.g. Ausubel, 1955), our data showed that events eliciting shame were generally perceived to involve as much or more illegitimacy and blameworthiness as

events eliciting guilt. In contrast, data for each of the three component appraisals designed to measure behavioural vs. characterological problem source significantly fit predictions in one recalled experience.

However, none of the problem source appraisals showed significant correspondence to predictions in both experiences. The significant but inconsistent findings for the problem source appraisal items (along with their low internal consistency) suggest that something resembling the behavioural vs. characterological distinction might succeed in differentiating these emotions, but the conceptualisation of the appraisal dimension must be revised somewhat.

One possible change is to reformulate the behavioural pole of the continuum as "noncharacterological". In our data, the two problem source items for which support was weakest (those with the smallest effect sizes across emotion experiences) were those that asked about behaviour or what someone or something was doing. The items that fitted predictions best made no mention of behaviour. For example, consistent with hypotheses, in the second recalled emotion experience subjects felt shame, rather than guilt, when they believed the "basic nature" of someone or something had been revealed (see Table 1). In contrast, they felt guilt when a negative event was caused, but it did not reveal the basic nature of a person or object.

Analogously, as suggested by the emotion experiences quoted in describing our procedures, one may feel contempt if another person is seen as characterologically bad, whether because of actions (e.g. submitting someone else's paper as her own) or attributes (e.g. selfishness); but feel anger if the person simply causes a motive-inconsistent outcome (e.g. makes it impossible to get the laundry done). And people may feel disgust if some object or event is seen as bad or "rotten" in character; but frustration if the object or event is negative in its impact on them, and yet not fundamentally negative in character.

An appraisal of agency differentiates self-directed, other-person-directed, and event-directed emotions. Results of the present study generally supported hypotheses specifying how causal agency (Roseman, 1984; Scherer, 1988; Weiner, 1985) and responsibility (Smith & Ellsworth, 1985) differentiate emotions. Predictions were most strongly supported for the agency appraisals. In accord with hypotheses, the self was seen as having caused events eliciting pride, regret, guilt, and shame; and other persons as having caused events eliciting affection, dislike, anger, and contempt. Circumstance causation was low when these person-directed emotions were experienced; and relatively high in experiences of surprise, joy, relief, fear, sadness, distress, and disgust.

It is worth noting that although circumstance-causation was generally high in events eliciting emotions such as joy and relief, other-person-agency and self-agency were sometimes higher (see also ratings for hope and frustration). These data are consistent with the hypothesis of Roseman et al. (1990) that the "circumstance-caused" emotions in Fig. 1 (e.g. frustration) can be elicited: (a) when an event (e.g. getting a less than satisfactory exam grade) is attributed to impersonal circumstances (e.g. the difficulty of the course material); or (b) when a causal agent is identified (e.g. the teacher who gave the exam; the student who did poorly) but the agency information is disregarded in a person's focus on the event itself (cf. Ortony et al., 1988); or (c) when no causal attribution whatsoever is made for an event (see Weiner, 1985).

Methodological Issues

As discussed earlier, some authors contend that prior studies on appraisal may have yielded knowledge on the cognitive contents of emotional experiences rather than their causes. When in the present study we therefore asked subjects about the appraisals that *caused* their emotional response, we found some differences from previous results (e.g. we found that motive-consistency is irrelevant to the causation of surprise) and some resemblances (e.g. that consistency vs. inconsistency with motives does differentiate positive vs. negative emotions). Finding similarities as well as differences is understandable because some cognitive dimensions may be both causes and contents of emotions. These findings do suggest, however, that future research on the causes of emotions should focus subjects on the appraisals leading to emotional responses rather than appraisals made while feeling the emotion.

Parkinson and Manstead (1993) have argued that studies of appraisal in which subjects read about or imagine emotion-eliciting situations (e.g. Roseman, 1991; Smith & Lazarus, 1993): Present appraisal information in language that people do not really use to process genuine emotion-eliciting events; make subjects artificially detached observers rather than involved participants; and omit important factors that may influence emotions, such as the responses of interaction partners. In contrast to such scenario studies, in this study of recalled emotion experiences: People described emotion-eliciting events in their own words; were involved participants in those events; and mentioned the responses of others in describing how the events unfolded over time to produce their own emotional reactions. These features counter criticisms of artificiality and enhance the generalisability of our findings to other instances in which real emotions are produced.

We may still have questions as to whether subjects recalling emotion-eliciting events have failed to remember some of their appraisals accurately

or have been unaware of some factors (e.g. physiological processes) that affected their emotions (Parkinson & Manstead, 1992). But failures of recall and omitted true causes would by themselves make it more difficult to find the relationships between appraisals and emotions we have seen. Perhaps this helps explain why measured appraisals do not predict observed emotional responses even more accurately than they do (see Reisenzein & Hofmann, 1993, for a discussion of obstacles to prediction accuracy).

Finally, it is possible that subjects' recollections of the appraisals that caused them to feel an emotion were biased by or reconstructed based on culturally scripted implicit theories (Parkinson & Manstead, 1992). This might happen if people did not remember or know why they felt a particular emotion (cf. Nisbett & Wilson, 1977), or if they used such theories to sort out which of many cognitions in an experience had caused the emotion to occur. All retrospective studies are vulnerable to this possibility. Indeed, even results from studies asking people about their ongoing appraisals and emotions (recommended by Parkinson & Manstead, 1993) may be biased by such cultural scripts.

However, this concern is diminished by data from cross-cultural studies, showing similar appraisal-emotion relationships in many different countries. For example, Wallbott and Scherer (1988) report such similarities across "27 countries on five continents" (see also Mauro et al., 1992; Roseman et al., 1995). The fact that subjects report similar appraisals leading to similar emotions in so many different societies, where different languages are spoken and different religions, philosophies, cultural norms, and explanations for behaviour are dominant (see e.g. Miller, 1984), argues that they are actual appraisal-emotion sequences. If subjects' responses were reconstructed based on implicit theories of the causes of emotions, reported appraisal-emotion relationships should differ widely from culture to culture.

Additional evidence that these appraisals really do cause these emotions comes from studies that manipulate appraisals and measure emotions. For example, Smith and Lazarus (1993) instructed subjects to visualise scenarios in which either they themselves or someone else was accountable for a negative event. Imagined self-accountability resulted in feelings of guilt, and imagined other-accountability resulted in feelings of anger, which parallels our findings for the agency dimension. And in a recent non-scenario experimental study, Roseman and Evdokas (1995) manipulated subjects' appraisals of motivational state and probability in a laboratory setting and found similar effects on joy and relief as those reported here.

In truth, there is no perfect methodology for studying appraisal-emotion relationships—or anything else. Each method has strengths and weaknesses. Scenario and laboratory studies, in which appraisal information is

manipulated and emotional responses measured, provide evidence that appraisals can have a causal impact on emotions (in addition to the impact of emotions on appraisals); but such studies may be weak in generalisability to real-life events. Retrospective studies allow more confident generalisation to actual experiences, but are subject to biased or inaccurate recall. Studies of emotional appraisal in ongoing social interactions are less subject to memory distortion, but are liable to make subjects overly self-conscious and alter normal appraisal processes.

Appraisal theorists can take heart, however, in convergence of results across scenario, retrospective, laboratory, and field methodologies, as well as across cultures. In addition, when Reisenzein and Hofmann (1990) asked people to form their own distinctions among events that had elicited different emotions, most of the distinguishing features they generated corresponded to appraisal dimensions found in scenario and retrospective studies. Although methodological refinements (such as those adopted in the present study) modify and extend our knowledge, it does seem that some important facts about appraisal determinants of emotions are being established by researchers.

Constructing a Revised, Empirically Grounded, Comprehensive Theory of Emotions

The most important aim of this research was to test a number of rival hypotheses proposed by prominent theorists, in order to develop a more accurate, complete, and integrative understanding of the causes of emotions. With improved methods that focused subjects on the causes rather than the contents of emotional experiences, we compared many alternatives and found significant support for particular hypotheses about appraisal dimensions proposed by Frijda (1986), Izard (1977), Lazarus (1991a), Lazarus and Smith (1988), Ortony et al. (1988), Roseman (1984), Scherer (1984, 1988), Smith and Ellsworth (1985), and Weiner (1985). Hypotheses about other often-discussed appraisal dimensions were not supported (see Introduction and Results earlier). All appraisal theorists can be asked to take account of these data.

Based on these findings, a new, empirically grounded, more comprehensive model, with components derived from several theories, is proposed in Fig. 2. The major differences from the model shown in Fig. 1 are as follows:

1. The emotion of contempt has been incorporated into the theory, and appraisal determinants for it have been specified.
2. Instead of extreme uncertainty, it is unexpectedness that elicits surprise.

3. Instead of an assessment of one's power (or the intrinsic controllability of a stimulus), it is a relational appraisal of control potential that determines whether frustration or disgust are experienced, rather than fear, sadness, or distress; anger or contempt, rather than dislike toward someone; and guilt or shame, rather than regret.
4. An appraisal of problem source has been introduced to distinguish three emotion pairs. Appraising a problem as characterological (intrinsic to an object, other person, or the self) elicits disgust rather than frustration, contempt rather than anger, and shame rather than guilt.
5. The emotions of surprise, hope, joy, relief, fear, sadness, distress, frustration, and disgust may result not only from events perceived as caused by impersonal circumstances, but also from events which fail to be attributed to any cause, and from events attributed to self- or other-agency (if that agency information is disregarded in a focus on the event itself). To convey the idea that circumstance-causation can be but is not necessarily a determinant of these emotions, it is placed in parentheses in Fig. 2.

The model shown in Fig. 2 is intended to provide a *systematic* account of appraisal-emotion relationships. It is systematic in that: (a) it specifies how a small number of appraisal dimensions combine to elicit a large number of emotions;¹⁰ (b) it identifies the particular emotions that result from all possible combinations of these appraisals; and (c) it shows how these emotions are related to each other within an emotion system. The system specifies which emotions are closely related (e.g. guilt, shame) and which are more distantly related (e.g. sadness, shame); identifies families of related emotions whose eliciting conditions differ in a single appraisal

¹⁰ Because all emotions (except surprise) result from *combinations* of appraisals, one of which assesses motive-consistency vs. motive-inconsistency, they are all caused by what Lazarus and Smith (1988) regard as true "appraisal" (assessment of the implications of events for an individual's goal commitments) rather than mere "knowledge". The appraisal combinations that lead to particular emotions might also be described at a more molar level, which Smith and Lazarus (1993) term "core relational themes" and define as summaries of relational meaning derived from a configuration of appraisals (for examples of molar level descriptions for each emotion in Fig. 2, see the delineation of emotion-specific phenomenology in Roseman, 1994b). Thus, important advantages of the Smith and Lazarus (1990) and Lazarus (1991b) models are found also in the model shown in Fig. 2, which attempts to be more systematic in its coverage of emotions and relationships between them.

With regard to surprise, based on our data, the model presented in Fig. 2 shows that surprise is independent of motive-consistency vs. motive-inconsistency (Ortony et al., 1988) and is thus elicited by a single dimension of stimulus evaluation, unexpectedness (Scherer, 1984).

		Positive Emotions Motive-Consistent		Negative Emotions Motive-Inconsistent					
		Appetitive	Aversive	Appetitive	Aversive				
Circumstance-Caused	Unexpected	Surprise							
	Uncertain	Hope		Fear				Low Control Potential	
	Certain	Joy	Relief	Sadness	Distress				
	Uncertain	Hope		Frustration	Disgust			High Control Potential	
Other-Caused	Certain	Joy	Relief						
	Uncertain	Liking		Dislike				Low Control Potential	
	Certain			Anger		Contempt		High Control Potential	
	Uncertain								
Self-Caused	Certain	Pride		Regret				Low Control Potential	
	Uncertain			Guilt	Shame	High Control Potential			
	Certain								
					Non-Characterological	Characterological			

FIG. 2. Hypothesised structure of the emotion system, incorporating new revisions.

dimension (e.g. disgust, contempt, shame); and predicts which changes in appraisal are necessary to transform one felt emotion into any other (e.g. ceasing to believe that one has potential to control attainment of a reward changes frustration to sadness {cf. Wortman & Brehm, 1975}; coming to believe that uncontrollable nonattainment of a reward was caused by the self changes sadness to regret).

Further Research and Theory Development

The results of this research, and the appraisal model that has been constructed from them, suggest a number of areas in which further research and theoretical elaboration would be profitable.

First, having tested hypotheses from several theories and clarified many appraisal-emotion relationships, focused investigations are now needed of those appraisal-emotion linkages that have only tentatively been established. For example, proposed revisions of the problem source appraisal need to be tested. Careful studies should examine whether appraising motive-inconsistent aspects of events as characterological vs. noncharacterological problems reliably determines whether a person feels disgust vs. frustration, contempt vs. anger, and shame vs. guilt.

Secondly, there are additional dimensions of appraisal and additional emotions that may merit further investigation (see, e.g. Manstead & Tetlock, 1989; Ortony et al., 1988; Parrott, 1992; Reisenzein & Hofmann, 1990). For example, Reisenzein and Hofmann (1990) claim that an appraisal of whether another person vs. the self is primarily affected by an event differentiates emotions such as pity, from emotions such as anxiety (cf. Ortony et al., 1988).

One issue relevant to this area of research is whether particular states should be considered additional discrete emotions to be explained, or variants of emotions shown in Fig. 2. For example, could pity be a type of sadness—the sadness that one feels at the misfortunes of a positively valued person because one does not want such a person to suffer? And *Schadenfreude* (see, e.g. Ben-Ze'ev, 1994) a variant of joy, felt in response to the misfortunes of negatively valued others (cf. Ortony et al., 1988)? If pity and *Schadenfreude* are subtypes of sadness and joy, they should have the same basic response profiles (e.g. the facial expressions of sadness and joy identified in cross-cultural research; related physiology) and share the same basic appraisal structure (e.g. for pity: certain inconsistency with an appetitive motive, or colloquially, that things are definitely not as good as they could be) perhaps with some added appraisals or situation specifiers (e.g. that the motive-inconsistent event affects primarily another person). If pity and *Schadenfreude* are distinct discrete emotions rather than emotion subtypes, they should have different response profiles and not share common underlying appraisals. In either case, the appraisal determinants of these and other emotion states need to be delineated, and interesting hypotheses may be offered that can add to current knowledge. For example, extrapolating from our data it may be proposed that emotions felt about the fortunes of other people depend on whether their fate is consistent or inconsistent with one's own motives, thus providing a unified explanation of both ordinary and "vicarious" emotions (see, e.g. Batson, Fultz, & Schoenrade, 1987).

Finally, to construct a truly comprehensive and integrative theory of emotion-elicitation, appraisal sequences should be studied. For example, Frijda (1993) has argued that an appraisal of legitimacy is not a necessary antecedent of emotions such as anger; and our legitimacy hypotheses failed to receive support in our analyses. But as discussed earlier, there may be an appraisal sequence in which perceiving that one has justice on one's side tends to elevate appraisals of control potential, and thereby affects emotions. Indeed, we found that legitimacy was high in both anger and contempt, the two other-person-directed negative emotions hypothesised to result from high control potential. Thus, even if legitimacy is not a *necessary* determinant of anger (one may have high control potential for other reasons), it may be a typical influence on the emotion.

Another example comes from juxtaposing our results with those of Scherer (1993). Scherer (1993) found that an appraisal of the time of the emotion-eliciting event (future vs. past or present) did not seem to adequately distinguish fear and anxiety vs. other negative emotions. He notes (p. 349) that "it may be necessary to go beyond the straightforward timing issue and include dimensions such as certainty". Consistent with this observation and the hypothesis of Roseman (1979, 1984), we found that the uncertain vs. certain probability appraisal succeeded in differentiating fear from sadness and distress. This suggests a second appraisal sequence: Typically, perceiving a negative event as existing in the future leads to believing that the event is uncertain, which can lead to feeling fear. But future time-frame is not a *necessary* cause of fear because some future negative events are certain. For example, one may learn that one is certainly going to die in six months from a terminal illness and therefore feel sadness.

These examples indicate that investigation of appraisal sequences may help integrate different appraisal theories within a comprehensive model. That is, different theories may have identified different appraisals because they focus on different points in a sequence of appraisals that elicit emotions. We have suggested here that appraisals of legitimacy (Averill, 1982; Roseman, 1979; Scherer, 1984) tend to influence appraisals of control potential (cf. Bandura, 1977; Frijda, 1986; Lazarus & Smith, 1988; Scherer, 1988); and that appraisals of the time of an event (Scherer, 1984) influence appraisals of its probability. Control potential and probability appraisals in turn affect emotions. In this view, the appraisals in Fig. 2 are the proximal, minimally necessary antecedents of emotions, and the other appraisals we have been discussing are distal, typical determinants (cf. Lazarus & Smith, 1988).

As Frijda (1993) suggests, it is possible that each of the appraisals that are minimally necessary to produce emotions can be processed at a rudimentary cognitive level; and Frijda discusses elementary versions of a number of the appraisals shown in Fig. 2. Indeed, one reason for abandoning legitimacy (Roseman, 1979) in favour of control potential as a necessary antecedent of emotions such as anger (see Fig. 2) is that infants appear to experience anger around four months of age (Stenberg & Campos, 1990)—before they would seem to have the cognitive capacity to make sophisticated judgements of legitimacy. In contrast, a "primitive appraisal" of control potential may be as simple as recognising a situation as one for which an action schema is available; or expecting that a given progression of events is going to occur.

It is of considerable interest, particularly for establishing connections to physiological mechanisms, to know the immediate, necessary, simplest determinants of emotional responses such as sadness, fear, anger, shame,

and guilt (e.g. primitive appraisals of control potential). But it is also important, for the study of emotions in their natural and social context, and for understanding sources of emotional pathology and the possibilities for treatment and self-regulation, to know their typical distal antecedents (e.g. appraisals of legitimacy or blameworthiness). Both distal and proximal appraisals need to be included in a comprehensive theory of the causes of emotions.

Manuscript received 19 January 1995

Revised manuscript received 9 August 1995

REFERENCES

- Arnold, M.B. (1960). *Emotion and personality*. New York: Columbia University Press.
- Ausubel, D. (1955). Relationships between shame and guilt in the socializing process. *Psychological Review*, 62, 378–390.
- Averill, J.R. (1982). *Anger and aggression: An essay on emotion*. New York: Springer-Verlag.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191–215.
- Batson, C.D., Fultz, J., & Schoenrade, P.A. (1987). Distress and empathy: Two qualitatively distinct vicarious emotions with different motivational consequences. *Journal of Personality*, 55, 19–40.
- Ben-Ze'ev, A. (1994). Typical cases of pleasure-in-others' misfortune. In N.H. Frijda (Ed.), *Proceedings of the 8th Conference of the International Society for Research on Emotions* (pp. 190–193). Storrs, CT: International Society for Research on Emotions.
- Charlesworth, W.R. (1969). The role of surprise in cognitive development. In D. Elkind & J. Flavell (Eds.), *Studies in cognitive development*. London: Oxford University Press.
- Clore, G.L., Schwarz, N., & Conway, M. (1994). Affective causes and consequences of social information processing. In R.S. Wyer & T.K. Srull (Eds.), *Handbook of social cognition: Applications*. (Vol. 2, 2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates Inc.
- Ekman, P., & Friesen, W.V. (1986). A new pan-cultural facial expression of emotion. *Motivation and Emotion*, 10, 159–168.
- Ekman, P., & Heider, K.G. (1988). The universality of a contempt expression: A replication. *Motivation and Emotion*, 12, 303–308.
- Ellsworth, P.C., & Smith, C.A. (1988). Shades of joy: Patterns of appraisal differentiating pleasant emotions. *Cognition and Emotion*, 2, 301–331.
- Frijda, N.H. (1986). *The emotions*. New York: Cambridge University Press.
- Frijda, N.H. (1987). Emotion, cognitive structure, and action tendency. *Cognition and Emotion*, 1, 115–143.
- Frijda, N.H. (1993). The place of appraisal in emotion. *Cognition and Emotion*, 7, 357–387.
- Frijda, N.H., Kuipers, P., & ter Schure, E. (1989). Relations among emotion, appraisal, and emotional action readiness. *Journal of Personality and Social Psychology*, 57, 212–228.
- Garber, J., & Hollon, S.D. (1980). Universal versus personal helplessness in depression. *Journal of Abnormal Psychology*, 89, 56–66.
- Izard, C.E. (1977). *Human emotions*. New York: Plenum.

- Izard, C.E. (1991). *The psychology of emotions*. New York: Plenum.
- Izard, C.E., & Haynes, O.M. (1988). On the form and universality of the contempt expression: A challenge to Ekman and Friesen's claim of discovery. *Motivation and Emotion*, 12, 1–16.
- Izard, C.E., & Malatesta, C.Z. (1987). Emotional development in infancy. In J. Osofsky (Ed.), *Handbook of infant development* (Vol. 2, pp. 494–554). New York: Wiley.
- Janoff-Bulman, R. (1979). Characterological versus behavioral self-blame: Inquiries into depression and rape. *Journal of Personality and Social Psychology*, 37, 1798–1809.
- Kemper, T.D. (1978). *A social interactional theory of emotions*. New York: Wiley.
- Lazarus, R.S. (1991a). Progress on a cognitive-motivational-relational theory of emotion. *American Psychologist*, 46, 819–834.
- Lazarus, R.S. (1991b). *Emotion and adaptation*. New York: Oxford University Press.
- Lazarus, R.S., & Smith, C.A. (1988). Knowledge and appraisal in the cognition-emotion relationship. *Cognition and Emotion*, 2, 281–300.
- Lewis, H.B. (1971). *Shame and guilt in neurosis*. New York: International Universities Press.
- Manstead, A.S.R., & Tetlock, P.E. (1989). Cognitive appraisals and emotional experience: Further evidence. *Cognition and Emotion*, 3, 225–240.
- Mauro, R., Sato, K., & Tucker, J. (1992). The role of appraisal in human emotions: A cross-cultural study. *Journal of Personality and Social Psychology*, 62, 301–317.
- McGraw, K.M. (1987). Guilt following transgression: An attribution of responsibility approach. *Journal of Personality and Social Psychology*, 53, 247–256.
- Miller, J.G. (1984). Culture and the development of everyday social explanations. *Journal of Personality and Social Psychology*, 46, 961–978.
- Nisbett, R.E., & Wilson, T.D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review*, 84, 231–259.
- Nunnally, J.C. (1967). *Psychometric theory*. New York: McGraw-Hill.
- Oatley, K., & Johnson-Laird, P.N. (1987). Towards a cognitive theory of emotions. *Cognition and Emotion*, 1, 29–50.
- Ortony, A., Clore, G.L., & Collins, A. (1988). *The cognitive structure of emotions*. New York: Cambridge University Press.
- Osgood, C.E., May, W.H., & Miron, M.S. (1975). Cross-cultural universals of affective meaning. Urbana: University of Illinois Press.
- Parkinson, B., & Manstead, A.S.R. (1992). Appraisal as a cause of emotion. In M.S. Clark (Ed.), *Review of personality and social psychology* (Vol. 13, pp. 122–149). Newbury Park, CA: Sage.
- Parkinson, B., & Manstead, A.S.R. (1993). Making sense of emotion in stories and social life. *Cognition and Emotion*, 7, 295–323.
- Parrott, W.G. (1992). The emotional experiences of envy and jealousy. In P. Salovey (Ed.), *The psychology of envy and jealousy* (pp. 3–30). New York: Guilford.
- Reisenzein, R., & Hofmann, T. (1990). An investigation of dimensions of cognitive appraisal in emotion using the repertory grid technique. *Motivation and Emotion*, 14, 1–26.
- Reisenzein, R., & Hofmann, T. (1993). Discriminating emotions from appraisal-relevant situational information: Baseline data for structural models of cognitive appraisals. *Cognition and Emotion*, 7, 295–323.
- Roseman, I.J. (1979, September). *Cognitive aspects of emotion and emotional behavior*. Paper presented at the 87th Annual Convention, American Psychological Association, New York, NY.
- Roseman, I.J. (1984). Cognitive determinants of emotions: A structural theory. In P. Shaver (Ed.), *Review of personality and social psychology* (Vol. 5, pp. 11–36). Beverly Hills, CA: Sage.

- Roseman, I.J. (1991). Appraisal determinants of discrete emotions. *Cognition and Emotion*, 5, 161–200.
- Roseman, I.J. (1994a, July). *The discrete emotions form a coherent set: A theory of emotional responses*. Paper presented at the 6th Annual Convention, American Psychological Society, Washington, DC.
- Roseman, I.J. (1994b). Emotions and emotion families in the emotion system. In N.H. Frijda (Ed.), *Proceedings of the 8th Conference of the International Society for Research on Emotions* (pp. 171–175). Storrs, CT: International Society for Research on Emotions.
- Roseman, I.J., Dhawan, N., Rettke, S.I., Naidu, R.K., & Thapa, K. (1995). Cultural differences and cross-cultural similarities in appraisals and emotional responses. *Journal of Cross-Cultural Psychology*, 26, 23–48.
- Roseman, I.J., & Evdokas, A. (1995, June). *Appraisals do cause real emotions: Experimental evidence*. Paper presented at the 7th Annual Convention, American Psychological Society, New York.
- Roseman, I.J., Spindel, M.S., & Jose, P.E. (1990). Appraisals of emotion-eliciting events: Testing a theory of discrete emotions. *Journal of Personality and Social Psychology*, 59, 899–915.
- Roseman, I.J., Wiest, C., & Swartz, T.S. (1994). Phenomenology, behaviors, and goals differentiate discrete emotions. *Journal of Personality and Social Psychology*, 67, 206–221.
- Rosenthal, R., & Rosnow, R.L. (1985). *Contrast analysis: Focused comparisons in the analysis of variance*. New York: Cambridge University Press.
- Rozin, P., & Fallon, A. (1987). A perspective on disgust. *Psychological Review*, 94, 23–41.
- Scherer, K.R. (1984). On the nature and function of emotion: A component process approach. In K.R. Scherer & P. Ekman (Eds.), *Approaches to emotion* (pp. 293–317). Hillsdale, NJ: Lawrence Erlbaum Associates Inc.
- Scherer, K.R. (1986). Emotion experiences across European cultures: A summary statement. In K.R. Scherer, H.G. Wallbott, & A.B. Summerfield (Eds.), *Experiencing emotion: A cross-cultural study* (pp. 172–190). New York: Cambridge University Press.
- Scherer, K.R. (1988). Criteria for emotion-antecedent appraisal: A review. In V. Hamilton, G.H. Bower, & N.H. Frijda (Eds.), *Cognitive perspectives on emotion and motivation* (pp. 89–126). Boston: Kluwer.
- Scherer, K.R. (1993). Studying the emotion-antecedent appraisal process: An expert system approach. *Cognition and Emotion*, 7, 325–355.
- Seligman, M.E.P. (1975). *Helplessness: On depression, development, and death*. San Francisco: Freeman.
- Shaver, K.G. (1985). *The attribution of blame: Causality, responsibility, and blameworthiness*. New York: Springer-Verlag.
- Shaver, P., Schwartz, J., Kirson, D., & O'Connor, C. (1987). Emotion knowledge: Further exploration of a prototype approach. *Journal of Personality and Social Psychology*, 52, 1061–1086.
- Smith, C.A., & Ellsworth, P.C. (1985). Patterns of cognitive appraisal in emotion. *Journal of Personality and Social Psychology*, 48, 813–838.
- Smith, C.A., & Ellsworth, P.C. (1987). Patterns of appraisal and emotion related to taking an exam. *Journal of Personality and Social Psychology*, 52, 475–488.
- Smith, C.A., & Lazarus, R.S. (1990). Emotion and adaptation. In L.A. Pervin (Ed.), *Handbook of personality: Theory and research* (pp. 609–637). New York: Guilford.
- Smith, C.A., & Lazarus, R.S. (1993). Appraisal components, core relational themes, and the emotions. *Cognition and Emotion*, 7, 233–269.
- Solomon, R.C. (1976). *The passions*. Garden City, NY: Doubleday.
- Spence, K.W. (1956). *Behavior theory and conditioning*. New Haven: Yale University Press.

- Stein, N., & Levine, L. (1987). Thinking about feelings: The development and organization of emotional knowledge. In R.E. Snow & M. Farr (Eds.), *Aptitude, learning and instruction: Cognition, conation, and affect* (Vol. 3, pp. 165–198). Hillsdale, NJ: Lawrence Erlbaum Associates Inc.
- Stenberg, C.R., & Campos, J.J. (1990). The development of anger expressions in infancy. In N. Stein, B. Leventhal, & T. Trabasso (Eds.), *Psychological and biological approaches to emotion* (pp. 247–282). Hillsdale, NJ: Lawrence Erlbaum Associates Inc.
- Tangney, J.P. (1993). Shame and guilt. In C.G. Costello (Ed.) *Symptoms of depression* (pp. 161–180). New York: Wiley.
- Wallbott, H.G., & Scherer, K.R. (1988). How universal and specific is emotional experience? Evidence from 27 countries on five continents. In K.R. Scherer (Ed.), *Facets of emotion: Recent research* (pp. 31–56). Hillsdale, NJ: Lawrence Erlbaum Associates Inc.
- Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review*, 92, 548–573.
- Weiner, B., Graham, S., & Chandler, C.C. (1982). Pity, anger, and guilt: An attributional analysis. *Personality and Social Psychology Bulletin*, 8, 226–232.
- Weisz, J.R., Sweeney, L., Proffitt, V., & Carr, T. (1993). Control-related beliefs and self-reported depressive symptoms in late childhood. *Journal of Abnormal Psychology*, 102, 411–418.
- Weisz, J.R., Stevens, J.S., Curry, J.F., Cohen, R., Craighead, W.E., Burlingame, W.V., Smith, A., Weiss, B., & Parmalee, D.X. (1989). Control-related cognitions and depression among inpatient children and adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, 28, 358–363.
- Weisz, J.R., Weiss, B., Wasserman, A.A., & Rintoul, B. (1987). Control-related beliefs and depression among clinic-referred children and adolescents. *Journal of Abnormal Psychology*, 96, 58–63.
- Wortman, C.B., & Brehm, J.W. (1975). Responses to uncontrollable outcomes: An integration of reactance theory and the learned helplessness model. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 8, pp. 277–336). New York: Academic Press.

APPENDIX

Stem and Scale Anchors for Items Measuring Appraisals

My {emotion term}^a was caused by:

Unusualness

- (Unexpected) *SPECIFIC EVENT A being expected* (1) to *SPECIFIC EVENT A being unexpected* (9).
- (Unfamiliar*) *Thinking of SPECIFIC EVENT A as something unfamiliar* (1) to *Thinking of SPECIFIC EVENT A as something familiar* (9).
- (Novel) *Thinking of SPECIFIC EVENT A as something that was not novel* (1) to *Thinking of SPECIFIC EVENT A as something that was novel* (9).

Situational State

- (Motive-Consistency) *Thinking that SPECIFIC EVENT A was inconsistent with what I wanted* (1) to *Thinking that SPECIFIC EVENT A was consistent with what I wanted* (9).
- (Wanted*) *SPECIFIC EVENT A being very much wanted by me* (1) to *SPECIFIC EVENT A being very much unwanted by me* (9).
- (Improved*) *Believing that SPECIFIC EVENT A improved things* (1) to *Believing that SPECIFIC EVENT A made things worse* (9).

Motivational State

- (Pleasurable*) *Wanting to get or keep something pleasurable (1) to Wanting to get rid of or avoid something painful (9).*
- (Benefit) *Wanting to minimise some cost in SPECIFIC EVENT A (1) to Wanting to maximise some benefit in SPECIFIC EVENT A (9).*
- (Positive) *My seeking less of something negative during SPECIFIC EVENT A (1) to My seeking more of something positive during SPECIFIC EVENT A (9).*

Probability

- (Able to Predict) *Being unable to predict what was going to happen in this situation (1) to Being able to predict what was going to happen in this situation (9).*
- (Certain*) *Being certain about the consequences of SPECIFIC EVENT A (1) to Being uncertain about the consequences of SPECIFIC EVENT A (9).*
- (Not in Doubt*) *Being not at all in doubt about something that mattered to me (1) to Being very much in doubt about something that mattered to me (9).*

Own Power

- (Powerful*) *Feeling that I was powerful (1) to Feeling that I was powerless (9).*
- (Strong) *Believing that I was weak (1) to Believing that I was strong (9).*
- (Respond Effectively) *Believing that I lacked the power to respond effectively to SPECIFIC EVENT A (1) to Believing that I had the power to respond effectively to SPECIFIC EVENT A (9).*

Stimulus Powerlessness

- (Less Powerful) *Thinking that SPECIFIC EVENT A was something more powerful than I was (1) to Thinking that SPECIFIC EVENT A was something less powerful than I was (9).*
- (Something Weak*) *Believing that in SPECIFIC EVENT A I was dealing with something that was weak (1) to Believing that in SPECIFIC EVENT A I was dealing with something that was strong (9).*
- (Easy*) *Believing that it would be easy to deal with SPECIFIC EVENT A (1) to Believing that it would be difficult to deal with SPECIFIC EVENT A (9).*

Stimulus Controllability

- (Control) *Believing I had no control at all over SPECIFIC EVENT A (1) to Believing I had very much control over SPECIFIC EVENT A (9).*
- (Modifiable) *Thinking that SPECIFIC EVENT A was not modifiable (1) to Thinking that SPECIFIC EVENT A was modifiable (9).*
- (Someone Could Change*) *Thinking that someone could change SPECIFIC EVENT A (1) to Thinking that no one could change SPECIFIC EVENT A (9).*

Stimulus Controllability by Self

- (Controllable by Me*) *Thinking that SPECIFIC EVENT A was controllable by me (1) to Thinking that SPECIFIC EVENT A was uncontrollable by me (9).*
- (Modifiable by Me) *Thinking that SPECIFIC EVENT A was not modifiable by me (1) to Thinking that SPECIFIC EVENT A was modifiable by me (9).*
- (I Could Change*) *Thinking that I could change SPECIFIC EVENT A (1) to Thinking that I could not change SPECIFIC EVENT A (9).*

Coping Potential

- (Not Too Difficult*) *Thinking that it would not be too difficult to deal with SPECIFIC EVENT A* (1) to *Thinking that it would be too difficult to deal with SPECIFIC EVENT A* (9).
- (Able to Cope) *Believing that I was unable to cope with SPECIFIC EVENT A* (1) to *Believing that I was able to cope with SPECIFIC EVENT A* (9).
- (Something I Could Do*) *Thinking that there was something I could do about SPECIFIC EVENT A* (1) to *Thinking that there was nothing I could do about SPECIFIC EVENT A* (9).

Legitimacy

- (Deserve Good) *Believing that I deserved for something bad to happen* (1) to *Believing that I deserved for something good to happen* (9).
- (Morally Right*) *Thinking of myself as morally right* (1) to *Thinking of myself as morally wrong* (9).
- (Praiseworthy) *Thinking that I was blameworthy* (1) to *Thinking that I was praiseworthy* (9).

Problem Source

- (Being) *What someone or something was or was not doing* (1) to *What someone or something was or was not being* (9).
- (Character*) *Someone's or something's character as shown in SPECIFIC EVENT A* (1) to *Someone's or something's behaviour as shown in SPECIFIC EVENT A* (9).
- (Basic Nature) *Thinking that SPECIFIC EVENT A did not reveal the basic nature of someone or something* (1) to *Thinking that SPECIFIC EVENT A did reveal the basic nature of someone or something* (9).

Responsibility

- (Self-Responsibility) *Thinking that I was not at all responsible for SPECIFIC EVENT A* (1) to *Thinking that I was very much responsible for SPECIFIC EVENT A* (9).
- (Other-Person-Responsibility) *Thinking that someone else was not at all responsible for SPECIFIC EVENT A* (1) to *Thinking that someone else was very much responsible for SPECIFIC EVENT A* (9).
- (Circumstance-Responsibility) *Thinking that circumstances beyond anyone's control were not at all responsible for SPECIFIC EVENT A* (1) to *Thinking that circumstances beyond anyone's control were very much responsible for SPECIFIC EVENT A* (9).

Agency

- (Self-Agency) *Thinking that SPECIFIC EVENT A was not at all caused by me* (1) to *Thinking that SPECIFIC EVENT A was very much caused by me* (9).
- (Other-Person-Agency) *Thinking that SPECIFIC EVENT A was not at all caused by someone else* (1) to *Thinking that SPECIFIC EVENT A was very much caused by someone else* (9).
- (Circumstance-Agency) *Thinking that SPECIFIC EVENT A was not at all caused by circumstances beyond anyone's control* (1) to *Thinking that SPECIFIC EVENT A was very much caused by circumstances beyond anyone's control* (9).

Note. Here, hypothesised appraisal dimension names are shown in **bold**, and appraisal item names in parentheses. An asterisk (*) indicates that responses were reverse-coded to measure an appraisal.

^a The name of the emotion being recalled in a particular experience was inserted here.

