Classifying Affect-regulation Strategies

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This paper presents a provisional classification of deliberate strategies for improving unpleasant affect based on conceptual judgements concerning their similarities and differences. A corpus of self-reported upward affect-regulation strategies was collected using questionnaires, interviews, and group discussions, in conjunction with an examination of existing literature on related topics. A total of 162 distinct strategies were identified and a preliminary categorisation was developed by the investigators. We then conducted a card-sort task in which 24 participants produced separate classifications of the strategies. The similarity matrix arising from co-occurrence data was subjected to hierarchical cluster analysis and the obtained typology provided independent support for our proposed distinctions between strategies implemented cognitively and behaviourally, between diversion and engagement strategies, and between active distraction and direct avoidance, and for specific lower-level groupings of strategies relating to venting, re-appraisal, and seeking social support. Potential refinements and applications of the resulting classification system are considered.

INTRODUCTION

People do not always regard their moods and emotions as immune to self-control, and make use of a variety of techniques in their efforts to change them. For example, when feeling sad or depressed, we may attempt to distract ourselves from our troubles by engaging in pleasurable, relaxing,

or attention-demanding activities, or alternatively we may try to do some-
thing about our current situation in order to stop ourselves feeling bad
about what is happening. The present article attempts to develop a classi-
fication system for deliberate affect-regulation strategies of this nature.

Affect regulation, in our terms, includes any process directed at modify-
ing or maintaining moods or emotions whose operation depends on
monitoring of affective information (Parkinson, Totterdell, Briner, &
Reynolds, 1996). Two basic varieties seem possible (Morris & Reilly,
1987), distinguished by the explicitness of the control processes involved
(cf. Shiffrin & Schneider, 1977). In *automatic* affect regulation, values of
affect-related variables are registered without awareness and adjustments
are made at a nonconscious level. For example, homeostatic processes may
operate to maintain a dynamic equilibrium in variables that influence affect
(e.g. Headey & Wearing, 1989) and overlearnt coping strategies or defence
mechanisms may be spontaneously deployed.

In *controlled* affect regulation, on the other hand, people exert a
deliberate and intentional influence on their moods and emotions using
strategies which are implemented or terminated as a function of
consciously monitored changes in affect.[1] Although controlled regulation
usually involves attempts to *improve* one's feelings (*upward* regulation),
there may also be occasions when affect is deliberately worsened (*down-
ward* regulation) or when unpleasant states are actively maintained
(Parrott, 1993). In this paper, we concentrate particularly on the deliberate
upward regulation of affect, working on the assumption that people should
be able to provide relatively informed and accurate reports concerning such
familiar and consciously monitored processes (Vallacher & Wegner, 1987;
Wilson, 1994).

The topic of affect regulation has recently been the focus of increased
research attention from a number of quarters. For example, studies have
examined individual differences relating to affect regulation (Catanzaro &
Mearns, 1990; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995; Swinkels
& Giuliano, 1995), the development of regulation competence (e.g. Dodge,
1989; Eisenberg & Fabes, 1992; Kobak, Cole, Ferenz-Gillies, & Fleming,
1993), interactions between automatic and controlled cognitive processes
during ongoing affect-regulation attempts (e.g. Wegner, Erber, & Zanakos,
1993), physiological aspects of emotion suppression (Gross & Levenson,
1995), and the relative effectiveness of specific strategies (e.g. Bonanno,
Keltner, Holen, & Horowitz, 1995; Gross, 1998; Nolen-Hoeksema &
Morrow, 1993; Parkinson & Totterdell, 1996). However, much of this

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[1] In practice, most instances of affect regulation probably involve complex combinations of
automatic and controlled processes (Parkinson et al., 1996). In the present article, however,
our emphasis is on their conscious and deliberate aspects.

research has been hampered by the absence of an established classificatory system that might allow principled distinctions and comparisons between different varieties of affect regulation. For example, most individual-difference measures assess unidimensional propensities to regulate affect rather than investigating how different people might differentially implement different strategies in different situations. Similarly, investigations of relative effectiveness have usually picked out particular examples and compared their effects without considering the broader range of processes that might be brought to bear during affect regulation (Gross, 1998; Nolen-Hoeksema & Morrow, 1993). These apparent limitations of previous research tend to indicate a general need for a more thorough mapping of affect regulation which might facilitate further exploration of this conceptual area.

A small number of attempts to survey the logical geography of the affect-regulation domain have already been made. For example, in the related literature on coping,[2] Pearlin and Schooler (1978) proposed that people may seek to exert influence at three possible stages in the stress process: By acting on the stress-inducing situation itself; by attempting to change the meaning of the situation before it leads to stress; or by controlling the affective reaction that occurs as a consequence of exposure to the stressor. Morris and Reilly (1987) directly adapted this category scheme to cover the area of mood regulation, suggesting corresponding distinctions between *direct action*, *cognitive redefinition*, and *mood management*.

More recently, Thayer, Newman, and McClain (1994) presented a more detailed structural model of mood regulation based on factor analysis of participants' reports about usage of 32 different strategies. A six-factor solution was proposed distinguishing active mood management, seeking pleasurable activities and distraction, passive mood management, social support/ventilation/gratification, direct tension reduction, and withdrawal/avoidance.

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[2] Coping and affect regulation represent related and overlapping areas of investigation, but they are not identical to each other. Coping usually refers to people's ways of dealing with negative life events regardless of whether affect occurs or is registered by the cognitive system. However, a subclass of *emotion-focused* coping responses are specifically intended to modify unpleasant affective reactions and therefore count as affect-regulation processes. Further, when trying to regulate affect, people may also deploy problem-focused coping strategies as indirect ways of influencing how they feel. In general terms, the concept of coping is less tightly defined than that of affect regulation as it makes no assumptions about how the underlying processes operate. Almost any kind of behaviour might count as coping in some circumstances. The dependence of affect regulation on monitoring of affect-relevant information allows greater specification of the construct. An additional advantage of focusing on deliberate affect regulation in the present context is that there are principled arguments for assuming that its intentional basis and the associated conscious monitoring of affective information allow some level of introspective access to the processes involved.

Although Thayer and colleagues' work makes significant and valuable progress towards the goal of developing an empirically based classification of affect-regulation strategies, there are potential limitations to their structural model arising from the specific methods used in its derivation. The first concern is that in selecting items for analysis some distinctive subgroups of strategy may have been excluded. In this regard, the researchers combined and summarised reported strategies so that the resulting items were at a relatively high level of abstraction. For example, the reported strategies *think positively*, *concentrate on something else*, *don't let things bother me*, and *give myself a pep talk* were all integrated in the item "control thoughts". However, this formula omits consideration of whether the individual items referred to strategies that engaged with the current concern or diverted attention from it, and whether the engagement strategies reported were directed at changing affect or changing the associated situation (cf. Folkman & Lazarus, 1980). Combining these items makes it less likely that these subcategories can emerge from the analysis. The present research is guided by the intuition that the area of deliberate affect regulation cannot be comprehensively represented by the 32 items identified by Thayer et al.

A second possible limitation of Thayer, Newman, and McClain's classification arises from the kind of judgements on which it was based. Participants reported which strategies they personally used for mood-regulation purposes, and the resulting data were then subjected to factor analysis. However, the fact that particular people (or people in general) consistently report using (or not using) a set of strategies does not necessarily mean that these strategies are similar in any way apart from their common appeal (or lack of appeal) for these people.

This observation might go some way to explaining why some of Thayer and colleagues' obtained factors seem to have rather disparate content. For example, despite their inclusion in the same category, social support, ventilation, and gratification strategies do not seem to share any common feature except for their being consistently used by people facing similar life situations. One possibility in this connection is that all of these strategies might be deployed selectively when insufficient material or political resources are available for dealing directly with unpleasant events. Partly consistent with such an account is Thayer and colleagues' finding that women were more likely to report using strategies in this grouping than men. The aim of the present research is to investigate conceptual distinctions between affect-regulation strategies directly rather than using indirect evidence about usage or judged effectiveness to infer these distinctions (see also Stone & Neale, 1984).

A third potential concern with the classification implied by Thayer and colleagues' research is that the categories are presented as existing at a

single conceptual level. Although there is obviously potential for breaking down their broad categories into subcategories, the factor analysis procedure used does not facilitate any conclusions concerning such subdivision. As an attempt to solve a similar problem, Mayer and Stevens (1994) separately factor analysed items from conceptually distinct domains of the meta-experience of mood and were thereby able to uncover a more detailed substructure. In the present study, we use hierarchical cluster analysis to generate nested distinctions between kinds of strategies.

The possible limitations of Thayer and colleagues' proposed structural model noted above are not specific to these investigators' classification but also apply to similar studies that have investigated dimensions of coping (e.g. Amirkhan, 1990; Carver, Scheier, & Weintraub, 1989; Endler & Parker, 1990; Folkman & Lazarus, 1985). In general, there are concerns about the representativeness of the activities sampled, and the appropriateness of usage or effectiveness rating procedures for uncovering evidence about conceptual rather than empirical associations and distinctions (Stone & Neale, 1984). In the present study, we attempt to sample more widely from self-reported affect-regulation strategies and to develop our classification on the basis of more direct evidence concerning their semantic similarities and differences. In the next part of this report, we describe the studies we conducted in order to collect a representative corpus of strategies. In the subsequent section, we report our initial attempt to categorise these strategies on the basis of our own observed distinctions. Next, we present data about how the same strategies were classified by a group of independent judges with no prior knowledge of the psychology of affect regulation. Finally, we consider the implications of our findings for future research in this area.

BUILDING A CORPUS OF AFFECT-REGULATION STRATEGIES

The first stage of this research involved collecting together a reasonably comprehensive listing of the strategies people actually report using to improve their affective state during everyday transactions. We employed a range of data-collection techniques on different samples in order to give coverage of the whole domain of deliberate affect-regulation strategies. The potential variety of such strategies is almost infinite: Any activity subject to voluntary control that is believed to have an influence on affect may be deployed in the services of deliberate affect-regulation. However, it seems likely that the kinds of activities people report performing may be categorisable into a manageably small number of groupings. The first part of the research reported in this article aims to capture the diversity

of affect-regulation strategies; the second, to impose some conceptual structure on this diversity.

The relevant data were gathered from our own diary, interview, and questionnaire studies, and supplemented with findings from other independent investigators. The first study was conducted on 64 first-year undergraduate psychology students (11 males and 53 females aged between 18 and 47) at Leicester University, UK, who participated as part of a course requirement. The study was presented as an investigation of "Dealing with the way you feel" and participants were asked to provide an open-ended description of the strategy used on the most recent occasion when they had deliberately tried to improve their feelings when experiencing an unpleasant mood or emotion. In addition to these retrospective reports, participants were also asked to say what strategy they used most commonly when they wanted to improve their feelings, and what technique they believed was most effective for this purpose. Finally, all participants were given a "take-away" diary sheet on which they were asked to report what strategy they used on the next subsequent instance of deliberate affect regulation. A total of 50 participants (9 males and 41 females aged between 18 and 47) returned these prospective diary reports.

The second study used a non-student sample and employed an interview methodology. A total of 12 adult office workers (6 males and 6 females aged between 19 and 49) were approached in the work setting and asked to tell the interviewer about all the different ways in which they tried to improve their moods and emotions, and to rank order them according to which they preferred to use. Each interviewee listed at least three affect-regulation strategies.

The third study involved more in-depth investigation of how people deliberately improved their affect using diaries and group discussions. Seven adults (3 males and 4 females aged between 18 and 50) with no psychological background were recruited from the Consumer Studies Centre's Survey Panel at Unilever Research Port Sunlight Laboratory, UK. Each of these volunteers completed pencil-and-paper diaries every day for a week in which they reported on the most noticeable change in their mood experienced during the previous 24 hours, and described anything they had done either to bring about this change or to correct it. The purpose of this diary procedure was partly to collect reports of affect-regulation incidents in more ecologically valid sessions, and partly to encourage participants to start thinking about changes in their affect and what they did about them in preparation for the discussion sessions. At the end of this diary period, the men and women took part in separate supervised discussions during which they talked about their use of affect-regulation strategies. Both sessions were tape recorded for subsequent analysis. All strategies described in the diary reports or

mentioned during the discussions were added to the investigators' corpus.

The list of strategies arising from these three studies was supplemented with additional self-report data supplied by Swinkels and Giuliano (1995) who had asked 116 undergraduate students (59 females, 57 males, median age = 19) at Loyola Marymount University, USA, to "list some of the specific strategies you use to cheer yourself up when things are not going well and you are feeling down" (p. 944) as part of a larger investigation of mood awareness. We also surveyed the literatures on affect regulation (e.g. Morris & Reilly, 1987; Thayer et al., 1994), antidepressive activities (e.g. Rippere, 1977), and coping (e.g., Amirkhan, 1990; Carver et al., 1989; Parker & Brown, 1982) for any further self-reported affect-regulation strategies that were not already included in our corpus.

Based on the strategies collected from these various data sources, we began to develop a provisional classification. Four categories of affect regulation were identified: *Avoidance* involved diverting attention away from the affect or concern; *distraction* involved finding an alternative focus for attention or action; *confrontation* involved actively working on the affect or concern; and *acceptance* involved adopting a passive attitude to what was happening.

In a final questionnaire study, we provided 88 undergraduate students (17 males and 71 females aged between 18 and 48) with definitions of these four varieties of affect regulation and specifically asked them to report strategies of each kind. Participants also listed all strategies that they felt did not fall neatly under the four headings. Only 29 out of 88 participants (33%) made any use of this "other" category, and the strategies that they included were all easily interpretable either as instances of avoidance, distraction, confrontation, or acceptance or as mixtures of strategies from two or more of these categories. For example, one participant listed the strategy "meditation, exercise, sex", each of which might variously serve distraction or confrontation goals depending on the prevailing situation.

All reported strategies from the foregoing sources were rewritten as active-voice, present-tense sentences omitting personal pronouns, and unnecessary phrases were removed. Some strategy descriptions apparently referred to more than one kind of affect-regulatory activity, so these were broken down into their component parts (e.g. "I usually cry, or feel extremely bad—I let myself do this—then I feel better" was rewritten as two separate strategies: "Cry" and "let myself feel bad"). Strategies that were self-evidently synonymous after rewriting were deleted. Other strategies that were apparently very closely related were also integrated into more general strategies (e.g. "eat chocolate", "eat sweets" and similar items were combined as "engage in comfort eating"). This procedure left us with a set of 304 strategies, which we then attempted to categorise.

INITIAL CATEGORISATION

Our aim in conducting the preliminary classification was to identify distinctions between strategies on the basis of their reported content rather than accommodating them to our preconceptions (partly derived from previous literature) about varieties of affect regulation. In other words, we tried to be attentive to respondents' own meanings and not to impose any preformulated theoretical structure on the data, although obviously we were attuned to any direct evidence for established affect-regulation or coping categories. Both authors independently categorised the strategies starting with broadly defined groupings then working downward. We then discussed agreements and disagreements and pro-duced a series of revised classifications independently and collaboratively until we were able to agree on a general structure. The next stage was to subdivide each of our lowest level groupings until we could find no further meaningful distinctions between strategies represented in the resulting subcategories. This process of iterative subcategorisation allowed us to delete further synonymous or highly similar items leaving a core corpus of 162 relatively distinct affect-regulation strategies. How-ever, if either investigator expressed any doubt about whether two descriptions referred to the same strategy, we preserved both descrip-tions, so that no potentially meaningful distinctions were excluded. According to the resulting classification, the higher-level distinctions between categories were as follows:

1. *Implementation medium*: Some strategies were apparently implemented at the *cognitive* level while others involved *behavioural* interventions (cf. Garber, Braafladt, & Weiss, 1995). Essentially, this distinction hinges on whether the attempt to improve affect was conducted by thinking or by doing something, although clearly many strategies (e.g. use of relaxation tapes) involved a mixture of both cognition and behaviour.

2. *Strategic intention*: A second basic distinction concerned whether strategies were intended as ways of avoiding or addressing the problem at hand (or the related affect). *Diversion* strategies involved redirecting cognition or action away from the current concern (e.g. avoidance, denial, withdrawal, distraction), whereas *engagement* strategies involved sustained attention to, or work on, the problem or affect (e.g. problem solving, reappraisal). Previous investigators have also proposed related concepts and distinctions (e.g. Carver et al., 1989; Endler & Parker, 1990; Nolen-Hoeksema, 1991; Stanton, Danoff-Burg, Cameron, & Ellis, 1994; Thayer et al., 1994; Weinberger, Schwartz, & Davidson, 1979).

3. *Substitution of activity*: Among diversion strategies, some were described as simply avoidant, whereas others explicitly involved actively thinking about (or doing) something else in order to divert attention from the concern (see also Thayer et al., 1994).

4. *Content of substituted activity*: Distraction-oriented thoughts and actions were further distinguished according to whether they were directly pleasurable, directly relaxing, or intended to produce more indirect affective benefits, by leading to mastery, occupying attention, or expending energy, for example. In other words, although some participants reported strategies that involved redirecting attention or effort to any available topic, more commonly, distracting content seemed to have been specifically selected for its anticipated influence on affect (cf. Wenzlaff, Wegner, & Roper, 1988).

5. *Passivity*: Among engagement strategies, some involved actively addressing concerns or feelings (*confrontation*), whereas others implied more passive *acceptance* of what was happening (cf. Carver et al., 1989).

6. *Resource deployment focus*: Within the engagement category, some strategies addressed the situation surrounding the unpleasant feelings (*situation-directed*), whereas others addressed the feelings themselves (*affect-directed*). Clearly, this distinction relates closely to the problem-focused/emotion-focused dichotomy that is prevalent in the coping literature (e.g. Folkman & Lazarus, 1980; Pearlin & Schooler, 1978).

In addition to the categories arising from these basic distinctions, we identified meaningful subgroups of strategies at lower levels depending on their medium, intention, focus, and specific content. However, it should also be noted that some strategies did not fit neatly into any single category because they were apparently capable of fulfilling a number of different affect-regulatory functions (multipurpose strategies). Table 1 presents a summary of our provisional classification scheme including examples of strategies from each category.

PARTICIPANTS' CLASSIFICATION

The next stage of this research was designed to discover what distinctions would be used by participants unfamiliar with the affect-regulation literature when categorising the corpus of strategies, and to assess how closely these distinctions conformed to those specified in our own preliminary classification. If judges were to generate similar categorisations independently, then this would suggest that our preliminary typology was compatible with people's everyday understanding of the strategies' purposes and

TABLE 1
Investigators' Initial Classification of Affect-regulation Strategies

	COGNITIVE	BEHAVIOURAL
DIVERSION		
Avoidance	Mentally switch-off	Remove myself from the situation
	Try to put it out of my mind	Avoid doing chores
Distraction		
Relaxation-oriented	Meditate	Lie in the sun
	Think of what I'll do when I get free time	Take a bath/shower
Pleasure-oriented	Think about things that make me happy	Do the things that I enjoy
	Fantasise about pleasant things	Engage in comfort eating
Mastery-oriented	Think about work	Do something I've been putting off doing
	Plan things to do	Tidy up
ENGAGEMENT		
Confrontation		
Affect-directed	Think about why I'm in a bad mood	Get it out of my system
	Work out if my feelings are justified	Seek sympathy
Situation-directed	Evaluate why things aren't going well	Confront the problem head-on
	Make plans about solving the problem	Seek practical advice
Acceptance		
Affect-directed	Let myself feel bad	Let the down feeling flow out of me
	Try not to force myself to cheer up	Cry
Situation-directed	Try to accept the situation	Get on with things
	Put it down to experience	Wait for things to pick up

content, and confirm that the distinctions identified across both procedures are meaningful ones.

Method

The study used a card-sort procedure to elicit implicit representations of the structure of affect regulation. Twenty-four adults (19 females and 5 males aged between 17 and 55) with no formal training in psychology were recruited randomly from the Consumer Studies Centre's Survey Panel at Unilever Research Port Sunlight Laboratory, UK to perform the sorting

task. Each individual strategy was printed on to a separate card and participants were presented individually with the complete set of 162 cards which were pre-shuffled so that items appeared in a randomised order for every trial. The instructions encouraged participants to put strategies with similar meaning together until all cards had been sorted into categories. Participants were informed that they could use as many categories as they felt necessary and that there were no restrictions concerning the number of cards falling into any single category. Unlike in our preliminary classification procedure, participants were not told to impose any hierarchical structure on their sortings but instead each generated a set of mutually exclusive categories at a single conceptual level. Unlimited time was provided for the task and participants took an average of 75 minutes to complete it. The number of categories they generated ranged from 5 to 26 (mean = 13.17). On average, male and female participants produced similar numbers of categories (means: 13.80 and 13.00, respectively). When participants were satisfied with their classification, they were asked to give labels explaining the common features shared by category members.

Results

Overview.   There were two phases to the analysis procedure. In the first phase, we constructed a similarity matrix based on numbers of participants who categorised strategies together in shared groupings, then examined the reliability of this matrix and its correspondence with distinctions proposed in the preliminary classification described earlier. These procedures provided statistical evaluation of the combined classification data prior to more intensive investigation and interpretation. In the second analysis phase, we subjected the similarity matrix to hierarchical cluster analysis in order to determine the structure of the consensual classification elicited from the participant group. The content of the affect-regulation categories and subcategories obtained using this procedure was examined to determine their meaning, and category allocations were compared with the investigators' preliminary classifications. The overall aim of these procedures was to uncover distinctions between descriptions of affect-regulation strategies that are spontaneously identified by (and therefore meaningful to) non-psychologists.

Construction and Analysis of Similarity Matrix.   Semantic similarity between all possible pairs of strategy descriptions was scored on the basis of how many participants put the two cards into the same category. For example, if two strategies were categorised together by all participants, their similarity was scored as 24 (maximum similarity), and if two strategies were

classified in separate categories by all participants (none of them cate-
gorised the two strategies together), their similarity was scored as 0
(minimum similarity). This procedure produced a 162 × 162 similarity
matrix containing values ranging from 0 to 24.

In order to estimate the reliability of the obtained similarity data, we
calculated the cophenetic correlation coefficient (Sokal & Rohlf, 1962), an
established statistic for assessing the correlation between two symmetrical
matrices, which is provided as a standard option in the CLUSTAN analysis
package (Wishart, 1978). Values are based on product-moment correlation
coefficients calculated for all $N(N-1)/2$ pairs, and can range between -1
and $+1$. The cophenetic correlation was computed between matrices
constructed separately for odd-and even-numbered participants (with
similarity scored from 0 to 12 in both cases). The resulting unadjusted
coefficient was .60 which suggests that the analysed matrix based on twice
this number of participants is acceptably robust. We also checked the level of
correspondence between the combined classifications of males and females,
and of older and younger participants (divided by a median split), using the
same method. Neither of the resulting correlations (r_{cs} = .56 and .55,
respectively) was substantially lower than that obtained for the reliability
analysis.[3]

We also assessed the general level of correspondence between the
combined similarity matrix and our own preliminary classification using
a related procedure. First, a new similarity matrix based simply on our
proposed top-level cognitive/behavioural distinction was constructed in the
same way as an individual participant's card-sort results would have been
processed if that participant had used only these two categories when
classifying the strategies. In other words, similarity between strategies
falling into the same proposed category (i.e. both cognitive or both
behavioural) was scored as 1 and similarity between strategies falling
into different categories (one cognitive, the other behavioural) was scored
as 0. The resulting matrix was then correlated with the matrix for the entire
participant group based on *all* of the distinctions that they had used in the
classification task. The correlation between these matrices was reliable and
positive (r_{cs} = .30). Given that the group-based matrix integrated all

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[3] Although it is likely that women and men differ in their propensities for using certain
kinds of regulation strategy (e.g. Nolen-Hoeksema, 1987), we have no reason to suppose that
their understandings of how different strategies relate to (and contrast with) one another also
differ in any systematic way. In this research, we work from the assumption that people
interpret the meanings of presented strategies by reference to generally shared (but partly
implicit) social representations of the conceptual domain in question (cf. Rippere, 1977) which
are not based solely on their personal experiences of implementing particular strategies.
Indeed, some of our participants explicitly reported that they would not themselves use
certain categories of strategies that they had identified in their own sortings.

distinctions used by participants whereas the constructed one contained only a single distinction, the size of this correlation suggests a reasonable level of consensual support for our proposed cognitive/behavioural distinction.

Next, we used a similar procedure to assess support for our proposed engagement/diversion distinction. Again, a similarity matrix was constructed based only on the proposed groupings using these two categories and its cophenetic correlation with the group matrix was assessed. This coefficient was also reliable and positive (r_{cs} = .27).

In order to determine whether combination of these top-level distinctions resulted in increased correspondence with the group matrix, we constructed a third matrix based on our classifications of strategies using both cognitive/behavioural and engagement/diversion distinctions together. Two unweighted criteria for similarity were coded based on whether strategies were classified by us as cognitive or behavioural and as involving engagement or diversion. Similarity between two strategies falling into the same category at both levels was scored as 2, similarity between two strategies falling into the same category at one level but not the other was scored as 1, and similarity between strategies falling into neither of the same categories was scored as 0. The correlation between the resulting similarity matrix and that derived from participants' combined sortings was again positive and reliable (r_{cs} = .45). Further, it was significantly higher than the correlation between the combined matrix and either the constructed cognitive/behavioural matrix [$t(159)$ = 3.39, $P < .01$] or the constructed engagement/diversion matrix [$t(159)$ = 2.46, $P < .05$], suggesting that closer correspondence with the group matrix was achieved by using both proposed distinctions together. In summary, these findings show significant overlap between the two high-level distinctions independently proposed in our preliminary classification and those implemented by participants when categorising strategies. However, incorporation of our additional lower-level distinctions into the constructed matrix failed to increase the size of the correlation significantly further.

Cluster Analysis. Having established the reliability of the combined similarity matrix, we subjected it to hierarchical cluster analysis using CLUSTAN's average linkage method (Wishart, 1978). Working upwards, the analysis procedure makes a series of binary combinations of individual strategies or groups of strategies which maximise both within-category similarity and between-category differences until all strategies are included under a single cluster. This produces an organised arrangement of clusters of increasing inclusiveness or abstraction. The distinctions between categories specified in this arrangement correspond to those that tended to be used most commonly by participants while performing the sorting

task. A diagrammatic representation of the results of the later stages of the analysis is shown in Figs. 1 and 2. The order of presentation of items within the lowest level of subclusters displayed in these figures preserves their internal structure at all earlier (lower-level) stages of combination. In other words, strategies generally judged to be most similar to each other (but least similar to other strategies) appear closest together in the separate subcategory lists.[4]

Each strategy's centrality to all superordinate clusters was assessed using an index recommended by Shaver, Schwartz, Kirson, and O'Connor (1987), based on differences between two scores: The first was the average number of times participants put each strategy from the cluster in the same category as every other strategy from the same cluster; and the second was the average number of times they put each strategy in the same category as every strategy from outside the cluster. This centrality index allowed us to determine which strategy was closest to a cluster's core meaning (the most central strategies in the lowest-level subclusters shown in Figs. 1 and 2 are presented in bold type).

Additional clarification of cluster meanings was obtained by reference to participants' original sortings. An individual participant's category was considered to correspond to a cluster obtained from the analysis if: (a) it contained the majority of the cluster's strategies, and if (b) the cluster also contained the majority of strategies from the participant's category. Labels provided by participants for categories that corresponded to clusters according to these criteria assisted our decisions about how to define these clusters (see later). Finally, our preliminary classification also contributed to interpretation of cluster meanings in cases where the obtained clusters overlapped substantially with our proposed categories.

To simplify interpretation of the results of the cluster analysis, in this presentation we shall work downwards through the obtained hierarchy starting with the highest-level distinctions that were found, rather than following the course of the analysis upwards through all its earliest stages of combination.

Cognitive/Behavioural Distinction.   The highest-order division of strategies uncovered by the analysis corresponded closely to the top-level cognitive/behavioural distinction from our own preliminary classification (obtained hierarchical representations of "behavioural" and "cognitive" strategies are presented separately in Fig. 1 and Fig. 2, respectively). Indeed, all of the strategies in one of the obtained clusters came from

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[4] The earliest agglomeration stages are excluded from this presentation for reasons of economy, but a full description of the obtained cluster structure is available from the first author on request.

FIG. 1. Hierarchical organisation of obtained behavioural cluster of affect-regulation strategies. *Note*: Most central strategies in each of the lowest-level clusters are shown in bold. Order of strategies within these categories indicates cluster allocation at lower levels.

The diagram branches include the following strategies:

- Laugh
- Smile
- Make people laugh
- Find something to laugh about
- **Act happy**

- Drink alcohol
- Have a cigarette
- Take drugs
- Breathe deeply
- Take a deep breath
- **Sleep**
- Take a nap
- Use relaxation tapes
- Relax body
- Have a rest
- Meditate
- Take a break
- Get dressed up
- Put on make-up
- Do my hair
- Wash hair
- Use perfume/after-shave
- Take a bath/shower
- Look at pictures of my partner/spouse
- Look at my picture albums
- Engage in comfort eating
- Have a cup of tea/coffee
- Watch movie/TV
- Listen to radio/records
- Read a book/magazine
- Lie in the sun
- Sing along to music
- Go shopping
- Spend money
- Do the things I enjoy
- Go to favourite place
- Treat myself

- Have sex
- Masturbate
- Play with children or pets
- Pick up a girl/boy
- **Exercise**
- Do something active
- Play sports
- Go for a walk/drive
- Play musical instrument
- Pursue hobby
- Do something creative
- Take on a difficult opponent at sport
- Do something I've been putting off
- Do something useful
- Focus my energy into some project
- Do something completely different
- Try to do well at a task
- Wash car
- Do house-work
- Do the gardening
- Cook
- Mend things
- Sort out files
- Keep busy
- Do something so I can't think about the problem
- Do something for someone else

- Write my feelings down
- **Write in my journal**

- Talk about what's wrong
- Talk the problem through
- Tell someone how I'm feeling
- Share the problem
- Ask for help
- Ask for advice
- **Seek reassurance**
- Seek sympathy
- Complain to another person
- Call on friend(s)
- Go out with friend(s)
- Get affection from someone who cares
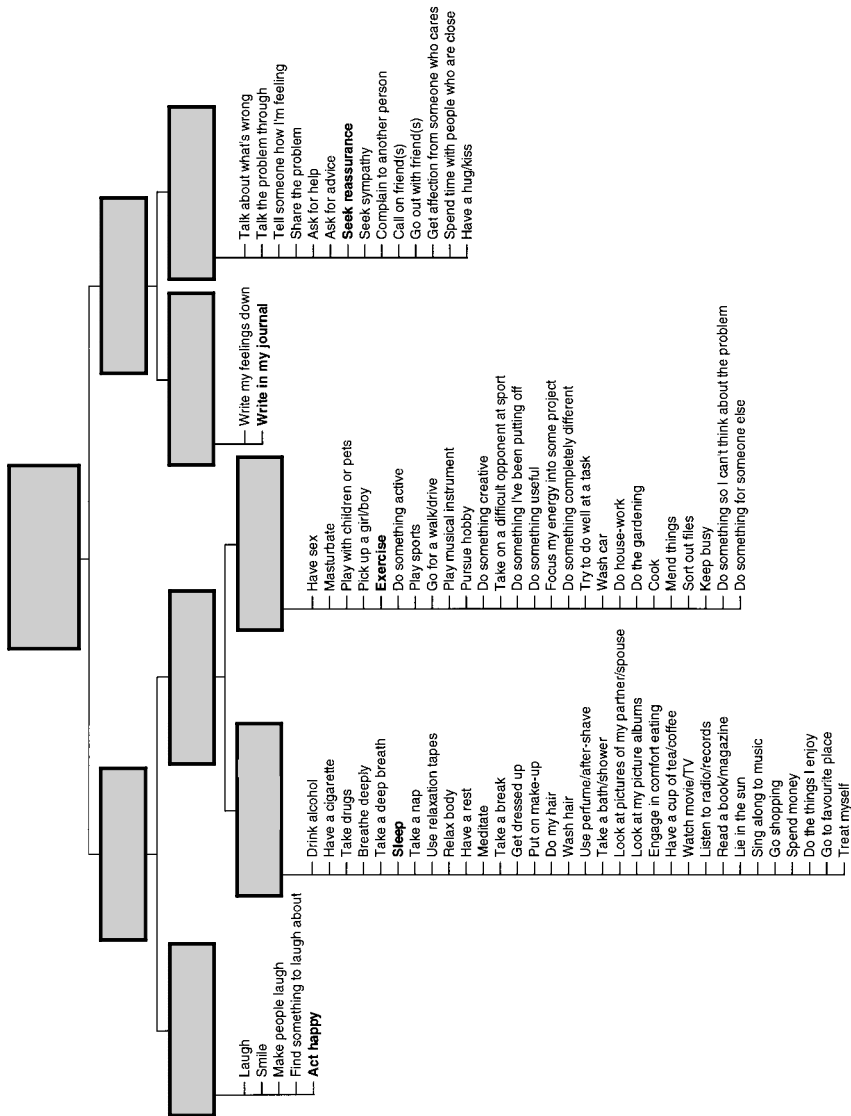- Spend time with people who are close
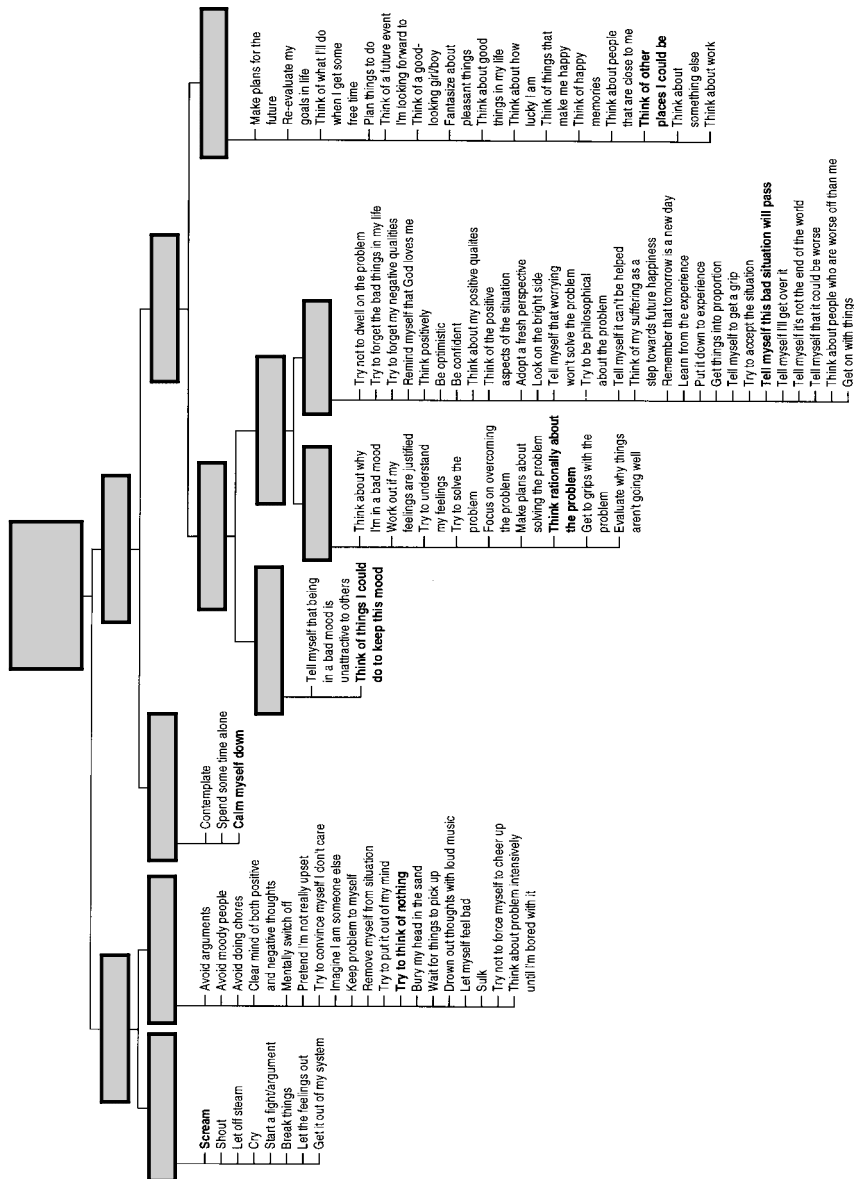- Have a hug/kiss

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FIG. 2. Hierarchical organisation of obtained cognitive cluster of affect-regulation strategies. *Note:* Most central strategies in each of the lowest-level clusters are shown in bold. Order of strategies within these categories indicates cluster allocation at lower levels.

Scream
Shout
Let off steam
Cry
Start a fight/argument
Break things
Let the feelings out
Get it out of my system

Avoid arguments
Avoid moody people
Avoid doing chores
Clear mind of both positive and negative thoughts
Mentally switch off
Pretend I'm not really upset
Try to convince myself I don't care
Imagine I am someone else
Keep problem to myself
Remove myself from situation
Try to put it out of my mind
Try to think of nothing
Bury my head in the sand
Wait for things to pick up
Drown out thoughts with loud music
Let myself feel bad
Sulk
Try not to force myself to cheer up
Think about problem intensively until I'm bored with it

Contemplate
Spend some time alone
Calm myself down

Tell myself that being in a bad mood is unattractive to others
Think of things I could do to keep this mood

Think about why I'm in a bad mood
Work out if my feelings are justified
Try to understand my feelings
Try to solve the problem
Focus on overcoming the problem
Make plans about solving the problem
Think rationally about the problem
Get to grips with the problem
Evaluate why things aren't going well

Try not to dwell on the problem
Try to forget the bad things in my life
Try to forget my negative qualities
Remind myself that God loves me
Think positively
Be optimistic
Be confident
Think about my positive qualities
Think of the positive aspects of the situation
Adopt a fresh perspective
Look on the bright side
Tell myself that worrying won't solve the problem
Try to be philosophical about the problem
Tell myself it can't be helped
Think of my suffering as a step towards future happiness
Remember that tomorrow is a new day
Learn from the experience
Put it down to experience
Get things into proportion
Tell myself to get a grip
Try to accept the situation
Tell myself this bad situation will pass
Tell myself I'll get over it
Tell myself it's not the end of the world
Tell myself that it could be worse
Think about people who are worse off than me
Get on with things

Make plans for the future
Re-evaluate my goals in life
Think of what I'll do when I get some free time
Plan things to do
Think of a future event
I'm looking forward to
Think of a good-looking girl/boy
Fantasize about pleasant things
Think about good things in my life
Think about how lucky I am
Think of things that make me happy
Think of happy memories
Think about people that are close to me
Think of other places I could be
Think about something else
Think about work

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our proposed behavioural category. However, 21 of the strategies we had defined as behavioural were classified in the supposedly cognitive cluster by the analysis. Overall, there was 87% agreement between our proposed categories and those obtained from the cluster analysis at this first level.

The cognitive/behavioural interpretation of the first obtained distinction was supported by the identification of the most central strategies in each of the two top-level clusters (using the centrality index described earlier) and by consideration of category labels provided by participants making similar distinctions. The most central strategy from the cognitive cluster was "tell myself that it could be worse". Although none of our participants used single categories that were as inclusive as this cluster, many of them specified smaller groupings that contained a substantial majority of cognitive items. Examples of the labels they provided for these categories are: "Positive thoughts to make me feel better", "Thinking positively", and "Deep thoughts and memories". The most central strategy from the behavioural cluster was "listen to radio/records" and participants' labels for categories containing mainly behavioural strategies included: "Actions that help you feel better", "Doing something enjoyable", and "Activities to take mind off problems".

Distinctions between Behavioural Strategies. Within the obtained behavioural cluster (shown in Fig. 1), the highest-level division was between strategies that seemed to involve diversion under our proposed definitions and those that related to "sharing feelings" (a subgroup of our proposed engagement category). Comparing the obtained allocation of strategies with the second-level division proposed in our classification, agreement was at 89% (9 out of 79 strategies were classified differently).

The most central strategy of the behavioural diversion cluster was "listen to radio/records" (as it was for the behavioural cluster as a whole). Labels provided by participants for categories with similar content included: "Activities to take mind off problems", "Do something to make you feel happy", and "Things you do to relieve feelings". The most central strategy in the sharing feelings cluster was "seek reassurance". Category labels provided by participants for corresponding groupings included: "Get help from other people", "Sharing the problem", and "Communication and sharing".

Within behavioural diversion, strategies further divided into subclusters depending on the content of the diversionary behaviour and its anticipated consequences for affect. The first division was between a group of four strategies relating to "putting a brave face on things" and "acting happy" ("act happy' was the most central strategy), and a larger set of strategies all of which involved some kind of explicitly distracting behaviour. Because this distraction subcluster is so close in content to the superordinate

behavioural diversion cluster, its central strategy and participants' labels for corresponding categories were similar.

This distraction cluster divided at the next level down into subclusters involving relaxing/pleasant and active/constructive distraction. Seventy-two per cent of strategies from our proposed relaxation/pleasure-oriented distraction category were included in the former subcluster and 75% from our mastery-oriented distraction category were included in the latter. In both cases, these corresponding strategies formed a substantial majority of items in the subclusters.

The most central strategy in the relaxing/pleasant activity cluster was "sleep" and participants' labels for corresponding groupings included: "Relax and enjoy yourself", "Recreation/Relaxation", and "Do something to make you feel happy". The most central strategy in the active/constructive activity cluster was "exercise" and participiants' labels for corresponding categories included: "Do physical tasks", "Exercise", and "Activity".

At the next division down in the sharing feelings branch of the hierarchy, two strategies relating to representing concerns in writing fell into a separate subcluster. The remaining strategies all involved expressing concerns to, or seeking support from, other people ("seeking social support"). As this subcluster only differed by two strategies from the superordinate sharing feelings cluster, it also overlapped substantially with participants' corresponding groupings, making most of the same labels appropriate.

Distinctions between Cognitive Strategies.   Working downwards from the top of the cognitive hierarchy (shown in Fig. 2), the first division distinguishes strategies that involve striving to avoid, break off from, or get rid of the unpleasant concern ("rejection") from those that relate to working more directly on the situation or associated feelings ("accommodation").[5] The most central strategy in the "rejection" cluster was "cry" and the second most central was "try to think of nothing". Participant's labels for categories corresponding to rejection included: "Negative actions which do nothing to solve the problem", "Running away", and "Put it out of my mind". As the word "negative" featured in four out of six of the content descriptions, it seems that the common implicit meaning of this cluster involves participants' rejecting evaluation of the strategies in addition to their shared internal semantic features relating to rejection. In

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[5] An alternative basis for this second-level distinction is that most of the rejection strategies (17 out of 27) were classified as behavioural rather than cognitive in our preliminary categorisation, whereas only 5 of the 56 accommodation strategies were behavioural (81.93% correspondence).

other words, many participants apparently believed that it was generally inadvisable to employ rejection strategies because of their potentially unfavourable consequences.

Conversely, the labels given for categories corresponding to cognitive accommodation ("Positive aspects that make you a better person", "Positive mental attitude", "Positive acceptance", and "Make the best of things") suggest that the strategies included in these groups were seen as constructive and positive attempts to deal with affect or related concerns as well as involving some adjustment on the part of regulators. The most central strategy for the cognitive accommodation cluster was "tell myself that it's not the end of the world".

Working down the rejection branch of the hierarchy, the next division was between strategies that involved "venting" of affect and those that involved "disengagement" from unpleasant concerns. All eight venting strategies came from our proposed affect-directed engagement category, although we had classified all of them as behavioural rather than cognitive. Approximately half the disengagement strategies came from our proposed avoidance category (most of the remaining strategies were originally classified by us as acceptance). "Scream" was the most central strategy from the venting cluster and participants' labels for similar groupings included: "Letting feelings and emotions out", "Physically showing emotion", and "Letting go". "Try to think of nothing" was the most central strategy from the cognitive disengagement cluster and labels for similar groupings included: "Put it out of my mind", "Running away", and "Denying there is a problem".

Within the cognitive "accommodation" cluster, a small subcluster of three "cognitive relaxation" strategies ("contemplate", "spend some time alone", and "calm myself down") first divided from the remaining strategies, all of which involved more active "cognitive work". Under this latter heading, there was a further division which corresponded closely to our proposed diversion/engagement distinction, but with the diversion strategies mostly being those we had classified as distraction (active diversion). Thirteen out of 15 of these strategies came directly from our distraction category, whereas 33 out of the 38 strategies of the obtained engagement cluster were from our proposed cognitive engagement category (87% overall correspondence). The most central strategy from the cognitive distraction subcluster was "Think of other places I could be" and participants' labels for similar groupings included: "think of something else", "positive thoughts to make me feel better", and simply "thoughts". The most central strategy from cognitive engagement was "tell myself this bad situation will pass" and labels for similar groupings included: "It's not that bad: Think positively", "Make the best of things", and "Positive acceptance".

The cognitive engagement cluster broke down into a small subcluster including two strategies involving reconceptualisation at the meta-mood level ("tell myself that being in a bad mood is unattractive to others" and "think of other things I could do to keep this mood", see Mayer & Gaschke, 1988) and a much larger subcluster involving re-evaluation of concerns (broadly similar in content to cognitive engagement in general).

The re-evaluation cluster in turn broke down into rationalisation and reappraisal. The most central strategy from the rationalisation subcluster was "think rationally about the problem" and participant's labels for similar groupings included: "analyse problems", "learn from mistakes", and "not face problem directly, but think about it instead". The most central strategy from the reappraisal subcluster was "tell myself that this bad situation will pass" and participants' labels included: "Getting problem into perspective and getting on with life", "Make the best of things", and "It's not that bad: Think positively".

Correspondence between Proposed and Obtained Classifications. Table 2 summarises the main areas of correspondence between our proposed classification and the clusters and subclusters obtained from the analysis. In this tabulation, the label for an obtained cluster has been placed in the cell or cells of our proposed classification from which the majority of the strategies contained in that cluster came. Only one small subcluster containing three strategies ("cognitive relaxation") is excluded from this presentation because each of its strategies came from a different proposed category. It should also be noted that none of the obtained clusters contained a majority of strategies that we had originally classified as behavioural acceptance. A possible explanation is that participants considered acceptance to involve refraining from action and therefore as nonbehavioural. Finally, although "venting" appears in the behavioural confrontation category in Table 2 because of its close correspondence with this category's content, this cluster actually emerged in the "cognitive" branch of the obtained hierarchy.

DISCUSSION

The present research strongly suggests that people use a wide variety of consciously accessible and deliberate strategies for reducing unpleasant affect which may be distinguished in a number of different ways and at a number of different levels. Many of the categories of affect regulation identified in previous studies also emerged from our analysis. For example, we found evidence for meaningful subgroups of strategy relating to venting (e.g. McCrae, 1984; Stone & Neale, 1984; Thayer et al., 1994), social-support seeking (e.g. Folkman & Lazarus, 1985; Garber et al., 1995;

TABLE 2
Correspondences between Investigators' Proposed Categories and
Clusters derived from Analysis of Participants' Classifications

	COGNITIVE	BEHAVIOURAL
DIVERSION		
Avoidance		DISENGAGEMENT
Distraction		
Relaxation-oriented	COGNITIVE DISTRACTION	BEHAVIOURAL DISTRACTION USING
Pleasure-oriented		RELAXING/PLEASANT ACTIVITIES
Mastery-oriented		BEHAVIOURAL DISTRACTION USING ACTIVE/CONSTRUCTIVE ACTIVITIES
ENGAGEMENT		
Confrontation		
Affect-directed		ACTING HAPPY
Situation-directed	COGNITIVE ENGAGEMENT	VENTING
		SHARING FEELINGS
Acceptance		
Affect-directed		
Situation-directed		

Scheier, Weintraub, & Carver, 1986), rationalisation (e.g. McCrae, 1984), reappraisal (e.g. Billings & Moos, 1984; Folkman & Lazarus, 1985), distraction (e.g. Nolen-Hoeksema, 1991; Parker & Brown, 1982), and avoidance or disengagement (e.g. Carver et al., 1989; Endler & Parker, 1990; Thayer et al., 1994). However, the present study represents a potential advance on previous research in providing a more comprehensive, integrated, and detailed system of classification based on conceptual distinctions rather than ratings of effectiveness or frequency of usage.

Although the categorisation task was performed by only 24 participants, the results of our reliability analysis, together with the substantial correlations obtained between similarity matrices produced by male and female and older and younger participants, suggest that wider sampling would not significantly alter the derived classification. Our confidence in the typology's robustness is further enhanced by the relatively close correspondence found between the results of our two separate classification procedures. In particular, participants independently and spontaneously generated many of the same distinctions between kinds of affect regulation that we had identified in our more intensive preliminary categorisation. For example, our two proposed top-level distinctions between cognitive and behavioural strategies and between engagement and diversion were reliably related to participants' own sorted categories. In addition, corresponding

subclusters of strategies relating to cognitive distraction, relaxation/plea-sure-oriented and active/constructive behavioural distraction, venting, rationalisation, reappraisal, and social support were obtained. In gen-eral, our results are consistent with the interpretation that the semantic distinctions between the presented strategy descriptions were commonly accessible to participants on the basis of culturally shared social represen-tations (e.g. Farr & Moscovici, 1984).

Some of our proposed distinctions failed to emerge from the card-sort procedure, however. In particular, no general categories corresponding to affect-directed or situation-directed strategies were generated by the cluster analysis, nor did participants label any of their categories using similar concepts. One possible explanation for this exclusion arises from the observation that it is often difficult to infer the specific intention underlying an affect-regulation attempt entirely on the basis of a descrip-tion of strategy content. Indeed, near-identical forms of affect-regulatory activity may perform quite different functions on different occasions. For example, people might ''talk about what's wrong'' either to clarify and deal with their affect itself or to make sense of, and map out potential actions for improving, the situation. If this reasoning is correct, the affect-directed/situation-directed distinction would be more likely to emerge if affect-regulation *intentions* were categorised by participants instead of affect-regulation *techniques*. Similarly, more fine-grained clas-sifications of specific conceptually meaningful subsets of regulation stra-tegies might clarify and extend the structure identified in the present research (cf. Mayer & Stevens, 1994).

Our proposed acceptance category also did not feature in participants' classifications. Strategies classified by us as cognitive acceptance were typically included in participants' reappraisal category, strategies classified by us as behavioural affect-directed acceptance were mostly included in the obtained venting category, and strategies classified by us as behavioural situation-directed acceptance mainly fell under the obtained disengage-ment heading. These findings accord with problems we had ourselves experienced in definitively allocating strategies to an acceptance category during the original classification attempt. Like the participants, we often found it difficult to distinguish cognitively taking a decision to accept the situation or the associated feelings from explicitly changing an inter-pretation or evaluation of what was happening. Similarly, choosing to allow the expression of affect (behavioural affect-directed acceptance) seems semantically very close to trying actively to ''get it out of one's system'' (venting), and choosing to allow the situation to proceed without action (behavioural situation-directed acceptance) shades into avoiding engagement with current concerns (disengagement). In the light of these ambiguities and participants' observed classification decisions, we are

inclined to relinquish our earlier proposal for a separate category of acceptance-based affect regulation.

Among the many categories which did show correspondence across the two classifications, there were some more specific discrepancies between participants' allocation decisions and our own. The most obvious of these is that all of the strategies falling in the "venting" subcluster of the "cognitive" hierarchy were classified by us as behavioural. However, this finding does not necessarily mean that participants believed that these strategies involved thinking rather than acting. In fact, none of the fourteen participants who used categories corresponding to venting referred to cognition in any way when labelling these categories, and six used descriptions that specifically implied action or physical movement (e.g. "Negative activity" and "Physically showing emotion").

This apparent inconsistency probably arises from the fact that none of the participants actually used categories as inclusive as the top-level cognitive and behavioural clusters. This means that their categories typically specified additional defining criteria over and above the strategies' medium of implementation. Furthermore, different participants sometimes used different combinations of features to define their categories. Together, these observations make it possible that some of the higher-level categories emerging from the cluster analysis procedure incorporated mixed or over-lapping inclusion criteria. For example, some participants may have classified venting strategies together with cognitive avoidance (or dis-engagement) strategies because both involved some kind of rejection of the current concern, whereas others may have put cognitive avoidance strategies in the same category as cognitive distraction strategies because both involved taking one's mind off the problem. Any superordinate cluster resulting from combining both kinds of classification would not be exhaus-tively definable in terms of cognition in distinction to behaviour. The fact that we found substantial correspondence between the proposed and obtained high-level distinctions despite these limitations again attests to their robustness.

Our revised proposal for a typology of affect-regulation strategies is presented in Table 3. Many of our original categories are preserved in this typology, but others are combined, omitted, or relabelled in response to the results of the cluster analysis. Our hope for this provisional classi-fication system is that it will facilitate principled comparison between different kinds of affect regulation in future studies. One of its main advantages is that it specifies categories that reflect people's spontaneous understandings of affect regulation. This fact means that it provides a solid basis for studies in which participants are asked to provide self-reports of frequency of usage or relative effectiveness of different varieties of strategy (e.g. Parkinson & Totterdell, 1996) or are told to monitor or modify

TABLE 3
Revised Scheme for Classification of Affect-regulation Strategies

		COGNITIVE	BEHAVIOURAL
DIVERSION **Disengagement**		Avoid thinking about the problem	Avoid problematic situation
Distraction	SEEK PLEASURE OR RELAXATION	Think about something pleasant	Do something pleasant
		Think about relaxing thoughts	Do something relaxing
	REALLOCATE RESOURCES	Think about something that occupies attention	Perform a demanding activity
ENGAGEMENT		Reappraise (usually affect-directed)	Vent feelings (usually affect-directed
			Seek help or comfort from others
		Think about how to solve problem (usually situation-directed	Take action to solve problem (usually situation-directed)

specific kinds of affect-regulation strategies prospectively in order to assess their real-time deployment and effects (e.g. Nolen-Hoeksema & Morrow, 1993). In our own work, we have already begun to use the classification for comparing the relative impact on affect of using different strategies. For example, results from a recent diary study suggest that seven out of eight kinds of self-reported strategies derived directly from the hierarchy had significant independent effects on ratings of happiness, calmness, or energy (Totterdell & Parkinson, in press). Implementation of the typology in sub-sequent studies should enable further refinements in the operationalising, measurement, and conceptualisation of affect regulation.

In this research we have generally assumed that people are capable of providing informative reports about the deliberate strategies they use to regulate affect, and can identify from descriptions the important semantic features that distinguish these strategies from each other. However, there are also obvious limits to what can be learned from using these procedures. In particular, it is conceivable that there exist functional similarities and distinctions between affect-regulation strategies that are inaccessible to their everyday users. For example, some deliberate techniques for improv-ing affect may be successful for reasons other than those underlying their conscious selection (e.g. automatic facial feedback effects arising from "acting happy", Strack, Martin, & Stepper, 1988). Different research strategies are required to determine the extent to which supplementary

affect-regulation categories are required as a result of these considerations, but we are optimistic that the present scheme may provide a useful frame of reference even for studies of this kind. The territory of affect regulation still includes several uncharted areas: We trust that the mapping which we have started to sketch out here may at least help to orient their future exploration.

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