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The cognitive regulation of emotions: The role of success versus failure experience and coping dispositions

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Attention deployment and generating specific types of cognitions are central cognitive mechanisms of emotion regulation. Two groups of hypotheses make contradicting predictions about the emotion-cognition relationship. The mood-congruency hypothesis expects the emergence of mood-congruent cognitions (i.e., negative mood leads to negative and positive mood to positive cognitions). Similarly, a substantial body of research suggests that negative mood induces self-focus, whereas positive mood elicits an external focus of attention. The mood-repair hypothesis, on the other hand, assumes that persons in a negative mood state summon thoughts incongruent with that state and divert attention away from the self. However, the temporal sequence of cognitions assessed as well as coping dispositions, such as vigilance and cognitive avoidance, may moderate these relationships. Positive and negative emotional states were elicited by exposing the participants to the experience of success or failure in a demanding cognitive task. Cognitions that were present after emotion induction were assessed by means of a thought-listing procedure. For the total sample, results clearly confirmed the mood-congruency hypothesis. Thought order was a critical factor only for changes in self-focus. Thought valence (positive, neutral, negative) as well as self-focus were substantially influenced by coping dispositions.

The topic of emotion regulation has been of interest since Freud (1923) began to examine the relationship between the control of affective impulses and psychic health. Emotion regulation involves *neurophysiological responses*, the *cognitive processes* of attention, information processing, and encoding of internal cues, as well as *behavioural mechanisms*, such as response selection or regulating the

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demands of familiar settings (see Gross, 1998; Thompson, 1994; Walden & Smith, 1997). These mechanisms serve to solve two basic regulatory tasks that are set up by the situation: *stabilisation* (or maintenance) and *modification*. Stabilisation means that a person tries to ''defend'' an emotional state appraised as adequate against influences that work toward changing that state. Modification aims at changing an emotional state appraised as inadequate into the desired direction. In this paper we will concentrate on the analysis of two central cognitive mechanisms to regulate emotional states (cf. Derryberry & Tucker, 1994; Erber, 1996; Gross, 1999; Parrott, 1993): *Generating emotion-congruent or -incongruent cognitions* and *attention deployment* (i.e., the regulation of emotions by shifting one's attentional focus).[1]

A central mechanism to regulate emotional states may be generating and processing specific types of thoughts or memories (cf. Parrott, 1993). Bower's network theory of affect (Bower, 1981) provides a theoretical framework to study the relationship between emotional states and certain cognitive processes (e.g., recall of emotional material). Applied to emotion regulation, this theory predicts that individuals' thoughts, free associations, and judgements are thematically congruent with their current emotional state (Bower & Mayer, 1991). Evidence for this *congruency effect* is mixed, however (reviews in Rusting, 1998; Singer & Salovey, 1988). Isen (1984), for example, found that good moods reliably produce mood-congruency effects, while bad moods frequently failed to do so.

Maintaining a negative mood is probably not a goal for most people. They therefore try to counter this process and change the undesired state. By introducing this motivational aspect, Isen (1985) extended the congruency assumption and integrated mood-maintenance with mood-modificatory variables. The motivation to change an unpleasant emotional state and to employ certain regulatory strategies (e.g., summoning thoughts *incongruent* with this state) implies that negative emotion states are generally less extended than positive states. Consequently, both states are structurally different and have asymmetric effects (cf. Isen, 1985): For most people, positive material is better integrated and more extensive in memory than negative material, which allows a positive emotion to cue a wider range of associations than a negative emotion. For negative emotional states, the first mood-congruency phase should soon be replaced in most people by a subsequent mood-incongruency phase called ''mood repair'' (cf. Clark & Isen, 1982). This mood repair should be facilitated by the comparatively low integration of negative material in the memory of most people.

In addition to generating specific cognitions, emotional processes may also recruit attentional mechanisms to regulate perceptual and conceptual processes

[1] The terms emotion, mood, feeling, and affect are used interchangeably throughout this article.

(for an overview, see Blaney, 1986; Derryberry & Tucker, 1994; Sedikides & Green, 2000). Several theories about emotion-related phenomena have concentrated on changes in attentional focus after induction of emotional states (cf. Salovey, 1992). Tomkins (1962, 1963), for example, assumed that positive emotions result in an increased tendency to focus attention on other persons, while negative emotions direct attention to the self and to internally generated cues (for experimental tests of this hypothesis see Cunningham, 1988; Sedikides, 1992). Especially with respect to emotion regulation, Wood and colleagues proposed the ''distinctiveness'' hypothesis: Positive and negative emotional states are distinctive and unexpected events, because they are a departure from baseline states. Events that are unexpected or distinct capture one's attention. Hence, any emotional experience may result in an increased self-focus of attention (Wood, Saltzberg, & Goldsamt, 1990a; Wood, Saltzberg, Neale, Stone, & Rachmiel, 1990b). Contrary to their hypothesis, however, Wood et al. (1990a) found that negative affect (sadness) elicited self-focused attention to a greater extent than either neutral or happy affect. Salovey (1992), on the other hand, was able to confirm this hypothesis. He registered that mood states, whether pleasant or unpleasant, induced more self-focused attention than a neutral condition.

Whereas this hypothesis regards attentional change caused by emotional arousal as an automatic process, the mood-repair hypothesis considers attention deployment as another effective strategy (besides generating specific cognitions) to regulate emotional states (cf. Boden & Baumeister, 1997; Erber & Tesser, 1992). From the perspective of this hypothesis, the primary goal of emotion regulation is to stabilise positive and to reduce negative moods. Consequently, success should lead to an enhanced concentration on one's own positive state. When experiencing failure, on the other hand, shifting attention away from failure by focusing on *positive aspects of the self* may be a strategy that is trickier than one might think. Retrieving happy memories when feeling bad may, in fact, even become a new source of unhappiness, which likely will foil one's attempts at ''repairing'' a negative mood. Consequently, diverting attention away from the self should be the more efficient strategy. Corresponding with this prediction, Nix, Watson, Pyszczynski, and Greenberg (1995), for example, reported that tension and depressive mood may be reduced through an external attentional focus.

When investigating mood-repair processes, the *temporal sequence of cognitions* may become a critical factor with respect to the observation of congruency or incongruency effects (cf. Sedikides, 1994). Repair processes need time in order to become efficient, which means that mood-repair should become obvious only in later stages of cognition generation (at least in some people; cf. Josephson, Singer, & Salovey, 1996). Regarding this argument, the following general hypothesis can be put forward for the cognitive consequences of a *negative* emotional state: Whereas mood-congruency effects and attentional

self-focus dominate the phase immediately following induction of a negative emotion, at least some individuals may be able to terminate this phase by generating certain (mood-incongruent) cognitions or by shifting attention to an external source.

Individual differences in emotion regulation

So far, few approaches explicitly consider individual differences as moderators of the influence of emotional arousal on cognitive change and attention deployment (see also Rusting, 1998). Investigations on self-esteem and depression, however, demonstrated the importance of individual differences as moderators of the emotion-cognition relationship. Individuals high in self-esteem, for example, recalled positively valenced material after induction of a negative mood state (mood-incongruent recall), while persons low in self-esteem exhibited mood-congruent recall (Dodgson & Wood, 1998; Smith & Petty, 1995; for a more general review see also Rusting, 1998). Similarly, Josephson et al. (1996) induced a sad mood and observed that individuals who after mood induction followed a first negative memory with a second positive one (mood-repair) scored lower in trait depression than participants who recalled two consecutive negative memories. In addition, Rusting (1999) found that extraversion and positive affectivity were related to retrieval of positive memories, while neuroticism and negative affectivity were related to retrieval of negative memories. Pyszczynski and Greenberg (1985, 1987) observed that depressive individuals tend to increase their self-focus after failure but not after success, whereas the opposite strategy is employed by nondepressives. In contrast, Ingram and Wisnicki (1999) reported that dysphoric persons showed higher self-focus than control individuals after positive and negative mood induction.

Among the relevant personality variables, *coping styles* (Boden & Baumeister, 1997; McFarland & Buehler, 1997) are most directly related to emotion regulation (see the concept of ''emotion-focused coping''; Lazarus & Folkman, 1984). Especially vigilance and cognitive avoidance (Krohne, 1989; Roth & Cohen, 1986) may be moderators of the mood-cognition relationship. Both dimensions are the central constructs in the model of coping modes (MCM; Krohne, 1993). The MCM describes and explains individual differences in coping with stressful conditions. It concentrates on those aspects of information processing that can be observed when a person is confronted with threat cues. To describe these processes, the constructs vigilance and cognitive avoidance have been introduced.

Cognitive avoidance is characterised by inhibiting the processing of information associated with threat. In general, this inhibition is achieved by turning attention away from threat-related cues. This conception of avoidance implies that, at least, some early-stage, preconscious (automatic) form of processing threatening information exists (cf. Erdelyi, 1974; Krohne, 1978). *Vigilance*, on

the other hand, means the increased intake and exhaustive processing of threatening information. The MCM extends approaches to these constructs that are largely descriptive (see Roth & Cohen, 1986, for an overview) in that it relates vigilance and cognitive avoidance to an explicative cognitive-motivational basis. According to a number of theoretical conceptualizations and empirical studies (for overviews see Epstein, 1972; Krohne, 1996), most anxiety-evoking situations are characterised by two central aspects: the presence of aversive stimulation, and a high degree of ambiguity. The experiential counterparts of theses features, which are conceived as basic ingredients of emerging anxiety states, are emotional arousal and an elevated state of uncertainty. The MCM assumes that arousal stimulates the tendency to cognitively avoid (or inhibit) the further processing of cues related to the aversive encounter, whereas uncertainty activates vigilant tendencies. Other researchers (e.g., Breznitz, 1984) have referred to these processes as fear control (for avoidance) and danger control (for vigilance).

These two coping processes are conceptually linked to personality by the hypothesis that the habitual preference for avoidant or vigilant coping strategies reflects individual differences in the susceptibility to emotional arousal or uncertainty. It is assumed that individuals who are dispositionally high in cognitive avoidance are susceptible to states of stress-induced emotional arousal. In order to reduce this aversive state, they turn their attention away from (external or internal) threat-related cues. Avoidant coping strategies primarily aim at shielding the person from an increase in emotional arousal. Consequently, this type of coping behaviour is called arousal motivated. Individuals who are high in vigilance are supposed to be especially affected by the uncertainty experienced in most aversive encounters. In order to reduce this state, they intensify their intake and processing of threatening information, even if this would imply increasing their emotional arousal. The primary regulatory goal of vigilant persons is not to dampen their emotional arousal but to reduce their threat-related uncertainty. Their coping behaviour thus follows a plan that is aimed at minimising the probability of unanticipated occurrences of aversive events (''negative surprise'') and at construing a detailed schema of the to-be-expected encounter. Consequently, this type of coping behaviour is called uncertainty motivated.[2]

Whereas most approaches in research on coping see vigilance and avoidance as ends of a continuum (Byrne, 1964) or are not specific with regard to the

[2]In terms of the classification scheme developed by Lazarus and colleagues (Lazarus & Folkman, 1984), cognitive avoidance represents a specific form of emotion-focused coping. Concerning vigilance, however, the Lazarus model does not directly address the reduction of uncertainty as a basic coping function. Instead, it introduces problem-focused coping as the functional alternative to emotion regulation. This function implies attempts to alter harmful conditions by applying direct behavioural interventions. Vigilance, however, cannot be called problem-focused in this specific sense. Instead, it is assumed that vigilant persons strive to avoid or reduce uncertainty. In relating our terminology to the Lazarus model, we could call this form *uncertainty-focused* coping.

relationship between these variables (Miller, 1987), the MCM conceives these tendencies as independent personality dimensions. This means that *aggregated across a multitude of threatening situations* the employment of vigilant strategies and of avoidant ones do not preclude each other. Thus, four groups (called *coping modes*) can be identified on the basis of a median split of vigilance and cognitive avoidance scores. (1) Repressers are defined by high cognitive avoidance and low vigilance scores. (2) Sensitisers score high on vigilance and low on cognitive avoidance. (3) Nondefensives have low scores on both dimensions. They are characterised by comparatively low employment of intrapsychic (vigilant and avoidant) strategies. Instead, they prefer to act instrumentally in most situations. (It should be stressed, however, that extremely low scores on both dimensions could also indicate a general deficit in coping resources.) (4) High-anxious individuals have high scores on both dimensions. (For a more detailed description of the MCM see Krohne, 1993, in press.)

Individual differences on the dimensions of vigilance and cognitive avoidance are assessed by the Mainz Coping Inventory (MCI; Krohne, 1989; Krohne et al., 2000). The MCI is a stimulus-response inventory that describes a number of threatening scenarios and assigns a repertoire of vigilance and cognitive avoidance reactions to each scenario. More details about the MCI are given in the Methods section.

A procedure that is frequently employed for the definition and assessment of coping styles is the one presented by Weinberger, Schwartz, and Davidson (1979), who proposed the simultaneous application of anxiety and social desirability (SD) scales. In a more recent approach, Weinberger and colleagues have replaced these variables with the dimensions of distress (or negative affectivity) and self-restraint (e.g., affect inhibition; cf. Weinberger & Schwartz, 1990). Although the classification of coping styles by the MCM and the Weinberger et al. pattern differ in their theoretical foundation and measurement approach (stimulus-response inventory vs. global trait scales), they aim at assessing related constructs. Thus, it is important to clarify whether there is a correspondence that is substantial enough to compare results obtained from both procedures. Findings reported by Egloff and Hock (1997, 1999) indicate indeed a significant overlap between classifications based on the MCM and the approach by Weinberger et al. with respect to the identification of repressers, sensitisers, and nondefensives.

The MCM postulates that negative emotional states, especially those caused by the perception of danger cues, lead to cognitive avoidance behaviour in *dispositionally avoidant persons* (see also Baumeister & Cairns, 1992; Bonanno & Singer, 1990). We therefore expect a predominance of mood-repair strategies in avoidant individuals. These strategies include the avoidance of cognitions related to the negative event and their replacement by non-negative thoughts as well as the employment of self-distraction, that is, a shift of attention to external (nonself-related) information (cf. Boden &

Baumeister, 1997; Erber & Tesser, 1992). *Dispositionally vigilant persons* should exhibit a strong orientation toward danger cues and the negative emotions elicited by these cues. We therefore expect a predominance of mood-congruent cognitions and an increased attention to the self and to internally generated cues in vigilant individuals.[3] Because these individuals have no inclination to employ self-distraction in aversive situations, the tendency of negative, affect-laden memories to bring other aversive episodes to memory will dominate these persons' cognitive processes. This tendency implies the generation of many negative thoughts related to the aversive event. Furthermore, negative emotions may frequently add to the uncertainty triggered by aversive information. In cases where no further external information for reducing this uncertainty is available, vigilant individuals should direct their attention toward the self, that is, they search for stored information related to this specific type of aversive event (e.g., from autobiographical memory). In this way, they could clarify the meaning of this affective experience and make predictions concerning its future course (cf. Hock, Krohne, & Kaiser, 1996; Scheier, Carver, & Gibbons, 1981).

Findings that are in accordance with predictions derived from the MCM are reported in a study by Boden and Baumeister (1997). By presenting an unpleasant (disgusting) film to their participants, the authors were able to observe mood-incongruency effects (recall of happy memories, generation of pleasant thoughts) in repressers (as defined by the method of Weinberger et al., 1979). In contrast, nonrepressers (who also included sensitisers as conceptualised by the MCM) displayed mood-congruency effects. Based on a model of affect acknowledgment and subsequent mood repair, McFarland and Buehler (1997) derived a hypothesis that contradicted Boden and Baumeister's assumption. The authors proposed that individuals must first achieve an undistorted acknowledgment of their negative mood before they can adopt a certain mood-repair strategy. They predicted that sensitisers, as compared to repressers, have a more open access to their negative mood and are, thus, capable of recruiting more positive memories to alleviate this state. Although the assumption that sensitisers have a more open access to their negative emotions is in accordance with central predictions from the MCM, the hypothesis concerning mood-repair in sensitisers is at variance with predic-

[3]There has been some recent theoretical debate over the distinction of anxiety and fear (cf. Barlow, 1991; Rachman, 1991). Empirical evidence supports the conclusion of both overlap and differentiation between these constructs (cf. Gray, 1982). One area where the two are differentiable is attentional focus. Fear is related to relatively unambiguous danger cues. It therefore involves the sustaining of an external focus which serves the immediate discharging of the fight-or-flight mechanism. Anxiety is caused by ambiguous situational cues (cf. Epstein, 1972). It therefore implies preparation for discharging the fight-or-flight mechanism, which, again, involves a temporary inhibition of instrumental responses (Zinbarg, Barlow, Brown, & Hertz, 1992). This constellation should leave room for a greater variation in attentional focus.

tions made in the MCM and with findings reported by Boden and Baumeister. The major finding of McFarland and Buehler (1997, study 2) was that after failure feedback sensitisers' recall of life events was more positive than that of repressers, while after exposure to emotionally neutral feedback the reverse was true. So far, no satisfactory explanation for the contradictory results in these two investigations can be offered. The current study aims at finding some answers to this issue.

THE PRESENT STUDY

The aim of the present research was twofold: *First*, we wanted to examine the *general* effects of negative and positive mood states on self-focus and the valence of cognitions generated during these states. Two contradicting hypotheses were tested: (1) The mood-congruency hypothesis expects that negative mood leads to negative and positive mood to positive cognitions. Similarly, a substantial body of research suggests that negative mood elicits self-focused attention, whereas positive mood induces an external focus of attention. (2) The mood-repair hypothesis, on the other hand, postulates that persons in a negative mood state summon thoughts incongruent with that state and divert attention away from the self.

Second, we wanted to investigate the *moderating* effects of vigilance and cognitive avoidance on the relationship between mood states and cognitive processes. Three hypotheses were examined with respect to coping dimensions. (1) When in a negative emotional state, vigilant individuals exhibit negative (mood-congruent) cognitions, whereas avoidant persons preferably manifest non-negative (mood-incongruent) cognitions. (2) Negative emotions result in an increase in self-focus in vigilants and in an attenuation of self-focus in avoiders. (3) Repair processes (generation of mood-incongruent cognitions and attenuation of self-focus after failure experience) dominate later stages of emotion-related information processing. This will become especially obvious in avoidant individuals.

Compared to investigations with a similar objective (e.g., Boden & Baumeister, 1997; McFarland & Buehler, 1997), the present study shows the following modifications. First, we induced emotions through the experience of success or failure on a demanding cognitive task. Second, we studied self-regulatory consequences for positive *and* negative emotions. Third, we measured different emotional states *before* and *after* the emotional experience by means of scales with established psychometric quality. Fourth, emotional regulation was assessed by employing a technique designated to elicit *self-generated cognitive responses*. By coding these responses according to several criteria (e.g., self-focus, valence, relatedness to the preceding experience), this technique should provide a differentiated picture of the mechanisms involved in emotion regulation.

METHOD

Overview

Compared to other methods of emotion induction (for overviews, see Gerrards-Hesse, Spies, & Hesse, 1994; Gross & Levenson, 1995; Martin, 1990; Philippot, 1993), provision of success or failure experience has the advantage of being highly standardised and well controlled. There is a number of ways to create a success or failure experience in the laboratory, for example, unsolvable items (Krohne & Hock, 1993), incorrect performance feedback (McFarland & Buehler, 1997; Mischel, Ebbesen, & Zeiss, 1973), or manipulated time measurement (Meyer, 1973). The crucial point is to make it as difficult as possible for the participant to realise the deception inherent in the task. A quite simple but effective approach is the variation of item difficulty (cf. Brown & Dutton, 1995; Egloff & Krohne, 1996): Items of ostensibly average difficulty (alleged probability of 50% correct solutions) can in fact be rather difficult (e.g., 25% solution probability) or easy (75% solution probability). We employed this procedure in the study to be reported.

Participants

A total of 84 female students were recruited from the campus and paid for participation. Only women were included because the experiment was run by a female experimenter. However, previous studies have shown no gender effects on the emotion-related variables under study (cf. Boden & Baumeister, 1997; Hansen, Hansen, & Shantz, 1992; Philippot, 1993). Participants were randomly assigned to a condition designed to induce positive mood (success, n = 42) or negative mood (failure, n = 42).[4]

Measures

Coping dispositions. Vigilance and cognitive avoidance were assessed by administering the subtest Ego-threat of the Mainz Coping Inventory (MCI). The MCI describes four ego-threatening (e.g., important exam) and four physically threatening (e.g., visiting the dentist) scenarios of varying controllability and predictability. Depending on the purpose of the investigation (such as coping with an important test or with aversive medical procedures), only scenarios that involve ego-threat (subtest MCI-E) or physical threat (subtest MCI-P) are presented. In the revised version (Krohne et al., 2000) descriptions of five vigilance (e.g., information search) and five cognitive avoidance (e.g., attentional diversion) reactions are assigned to each scenario. Participants

[4]Since we demonstrated in a previous study (Egloff & Krohne, 1996) that emotion scores remained unaffected when participants worked on a neutral task (involving neither success nor failure), we did not include a control group in our present experiment.

indicate on a true-false scale which of the coping reactions listed they *generally* employ in a given situation. The answers are summed up separately with regard to vigilance and cognitive avoidance items across the four scenarios of one subtest, thus yielding four scores of dispositional coping: Vigilance in the subtests ego-threat (VIG-E) or physical threat (VIG-P), and cognitive avoidance in both subtests (CAV-E and CAV-P). Psychometric properties of the scales are satisfactory, with alpha and retest reliabilities (time-span two weeks) around .75 (Krohne et al., 2000). Exploratory and confirmatory factor analyses established a two-factor structure with a clear separation of VIG and CAV coping strategies (Krohne, Schmukle, Burns, Egloff, & Spielberger, 2001). In our sample, VIG-E and CAV-E yielded alpha reliabilities of .78 and .73, respectively, and were slightly negatively correlated ($r = -.26$, $p < .05$).

Emotion measurement. In order to assess emotional states before and after emotion induction, participants responded to four scales of the Positive and Negative Affect Schedule (PANAS-X; Watson & Clark, 1994) containing 20 emotion terms. Joviality and the negative emotions of anxiety, hostility, and shame were each assessed with five items. The length of each scale was restricted to five items to make the measurement of different emotions more comparable. Participants were asked to indicate ''how you feel at the present moment''. They rated each emotion term on a 5-point unipolar response scale (from 1 = *very slightly or not at all*, to 5 = *extremely*).

Assessment of cognitions and attentional focus. Cognitions that appeared during elevated emotional states were assessed by administering a thought-listing procedure (TLP; cf. Amsel & Fichten, 1990; Cacioppo & Petty, 1981). This procedure has been successfully used, among others, in research on depression, anxiety, anger control, or creative problem solving (cf. Ellis, Seibert, & Herbert, 1990; Meichenbaum & Butler, 1980; Meichenbaum, Henshaw, & Himel, 1982). Participants were instructed to write down any thoughts that occur to them ''right now'', using a separate sheet of paper for each thought. The TLP protocols were coded by a trained rater who was blind to experimental groups according to the following categories (cf. Amsel & Fichten, 1998; Boden & Baumeister, 1997; Fichten, 1986): the *total number of thoughts*, the number of *positive*, *negative*, and *neutral thoughts*, the number of *positive thoughts related to the experiment* (e.g., ''interesting test''), the number of *positive thoughts unrelated to the experiment* (''finally, a nice, sunny day''), the number of *negative thoughts related to the experiment* (''this whole experiment is upsetting''), and the number of *negative thoughts unrelated to the experiment* (''I have headache''). In order to adjust for individual differences in the number of thoughts produced, scores were divided by the total number of thoughts (cf. Amsel & Fichten, 1990). These scores are multiplied by 100, thus giving the percentage of thoughts for each category.

In addition to these percentage scores, two rating scores were calculated: *self-focus* was determined by rating the thoughts on a unipolar 5-point scale, ranging from 0 (no self-focus, e.g., ''nice weather today'') to 4 (high self-focus, involving one's own emotional reactions, e.g., ''I am upset about my poor performance''). Similarly, the *valence* of each thought was rated on a 5-point scale ranging from 0 (very negative valence) to 4 (very positive valence). The introduction of an additional valence score (besides the percentages of positive, neutral, or negative thoughts) was necessary for the analysis of temporal sequences in the valence of thoughts.

Inter-rater reliability was determined by calculating correlations of these codings and the codings of a second trained rater for the listings of 20 randomly selected participants. Reliabilities for the percentage scores varied from .73 (for negative thoughts unrelated to the experiment) to .96 (for the total number of negative thoughts), while the rating scores yielded reliabilities of .88 (for self-focus) and .87 (for valence; see also Table 2).

Procedure

All participants were tested individually. On arrival at the laboratory, participants responded to the MCI-E to provide the VIG and CAV scores used in the analyses. Following this measure, baseline values for positive and negative emotions were assessed by administering the PANAS-X.

Positive or negative emotional states were then induced by means of a *success* or *failure experience*. Participants had to solve tasks similar to the Raven Progressive Matrices. To ensure plausibility, they were told that the test was being developed to predict academic success and that the ''average'' student should solve at least 50% of the items. Participants first received four practice items, two easy and two difficult ones, and were then asked to estimate how

TABLE 1
Means of emotion change scores

	Emotion			
Condition	*Joviality*	*Anxiety*	*Hostility*	*Shame*
Success	1.24_a (11.79)	-0.88_b (8.14)	-0.79_b (6.10)	-0.93_b (6.79)
Failure	-2.28_a (13.56)	0.53_b (7.50)	$0.78_{b,c}$ (5.58)	1.75_c (5.67)
$F(1,70)$	23.94**	5.83*	15.49**	17.33**

Note: Baseline scores are in parentheses. Emotion change scores with different subscripts in each row are different at $p<.05$ (paired t-tests, two-tailed). The difference between the means of hostility and shame in the failure condition was significant at $p<.08$.

* $p<.02$; ** $p<.001$.

many items they expected to solve. The final task contained 12 items with a time limit of 30 s each. Participants in the success condition received 9 easy and 3 difficult items, while the failure condition yielded the opposite ratio. Item difficulty was empirically determined in a pilot study. Success or failure was announced after each item; in addition, verbal feedback [''your performance was above (below) average''] was given after completion of the total task.

After having completed the matrices task, participants were again given the PANAS-X items to measure the emotional state following the experimental manipulation. Next, the TLP was administered. For a period of 3 minutes, the participant was free to list as many thoughts as she wished to. When she had finished writing, the experimenter debriefed her and answered any questions she might have had concerning the experiment.

RESULTS

Manipulation check

Experience of success or failure. First, we examined whether a success or failure experience was actually induced. Six participants in the failure condition solved between 6 and 9 items and, thus, deviated from the intended ratio of solved to unsolved tasks. Because, in these cases, no trustworthy failure feedback could be communicated, these participants were excluded from further analyses, and the sample in the failure condition was thus reduced to 36 participants. In the success condition we observed a mean of 9.0 solved matrices (range: 8–12). The failure condition showed a mean of 4.1 correct solutions (range: 3–5). Participants' estimation of their performance before the task revealed no differences between experimental conditions; success: $M = 5.7$, failure: $M = 5.5$, $t(76) = .40$, n.s.

To examine whether coping modes differed in their estimated or actual performance on the matrices task, we conducted separate ANOVAs for each condition with performance scores as dependent variables and vigilance and cognitive avoidance (dichotomised by median splits) as independent variables. These analyses yielded no significant results, ps $> .05$. Thus, participants with different coping modes estimated and actually experienced about the same amount of success or failure within the emotion induction task.

Emotion induction. In order to estimate whether the success or failure experience produced the intended effects on emotions as assessed by the PANAS-X scales, change scores were computed by subtracting baseline responses from those obtained following the experimental manipulation. Alpha reliabilities calculated for baseline scores, for post-experimental scores, and for change scores yielded the following coefficients: joviality, .85, .91, .76; anxiety, .77, .83, .67; hostility, .47, .80, .77; and shame, .79, .90, .84. To assess whether the experimental conditions and the coping variables VIG and CAV produced

effects on emotions, we conducted 2 (Condition) × 2 (VIG) × 2 (CAV) ANOVAs on the emotion change scores. These ANOVAs yielded significant main effects for conditions; anxiety, $F(1, 70) = 5.83$, $p < .02$, all other emotions, Fs > 15, ps < .001 (cf. Table 1).[5] Joviality increased after success and decreased after failure, while anxiety, hostility, and shame showed the opposite pattern. Additional MANOVAs with repeated measures revealed that joviality was the *dominant* emotion after success, Wilks' $\Lambda = .71$, $F(3, 39) = 5.33$, $p < .01$, whereas shame was the dominant emotion after failure, Wilks' $\Lambda = .46$, $F(3, 33) = 12.93$, $p < .001$ (shame vs. joviality, $p < .001$; shame vs. anxiety, $p < .001$; shame vs. hostility, $p < .08$, cf. Table 1).

To determine possible effects of coping dispositions on emotion change scores, we inspected the main and interaction effects involving VIG and CAV. These analyses yielded a marginally significant main effect of cognitive avoidance on shame, $F(1, 70) = 3.61$, $p = .06$. Whereas low avoiders exhibited an increase in shame after mood induction ($M = 0.92$), high avoiders showed a modest decrease ($M = -0.24$). In addition, we observed significant VIG × CAV interaction effects on joviality and hostility, Fs(1, 70) = 4.83, $p < .04$, and 3.98, $p = .05$. After task performance, nondefensives (low VIG and CAV) tended toward a decrease in joviality ($M = -1.75$) and an increase in hostility ($M = 0.75$), whereas sensitisers (high VIG and low CAV) showed the opposite pattern (joviality, $M = 0.32$; hostility, $M = -0.56$). Subsequent Tukey HSD tests, however, failed to show significant differences between coping modes, ps > .05.

Thought-listing variables

Descriptive statistics. An inspection of the number of thoughts revealed that participants produced a minimum of 2 and a maximum of 14 thoughts ($M = 6.38$; SD = 2.75). Of these thoughts 19.5% were positive and 34.3% negative, while the majority of thoughts (46.2%) had a neutral content. The mean valence score tended toward the negative pole ($M = 1.76$), whereas self-focus was somewhat above the scale centre ($M = 2.28$; cf. Table 2). Positive and negative thoughts (divided by the total number of thoughts) were negatively correlated ($r = -.54$, $p < .01$). Positive and negative thoughts related to the experiment showed a moderate negative correlation ($r = -.28$, $p < .05$), while positive and negative thoughts unrelated to the experiment were uncorrelated ($r = .03$, n.s.). The valence rating score was unrelated to self-focus ($r = .01$).

[5] We performed additional analyses of covariance (ANCOVAs) with baseline scores as covariates. Significance levels were unaffected by this procedure, and thus for presentation purposes we only report the ANOVA results.

TABLE 2
Descriptive statistics of TLP variables (N=78)

Variable	*Total*	*M*	(SD)	*Range*	r_{tt}
All thoughts	498	6.38	(2.75)	2–14	–
Positive thoughts	97	1.24	(1.37)	0–7	.92
Negative thoughts	171	2.19	(1.73)	0–8	.96
Neutral thoughts	230	2.95	(2.46)	0–13	.91
Positive thoughts, experiment-related	59	0.76	(1.20)	0–7	.88
Positive thoughts, unrelated	38	0.49	(0.89)	0–4	.86
Negative thoughts, experiment-related	124	1.59	(1.67)	0–6	.93
Negative thoughts, unrelated	47	0.60	(0.96)	0–5	.73
Valence	–	1.76	(0.58)	0–3.2	.87
Self-focus	–	2.28	(0.74)	0–3.7	.88

Note: r_{tt} = inter-rater reliability.

Effects of condition and coping dispositions on thought valence and self-focus. Effects of experimental condition and coping dimensions on the *percentage* scores were tested by employing 2 (Condition) × 2 (VIG) × 2 (CAV) ANOVAs. We first report *main effects for condition.*

The mood-congruency hypothesis postulates that the negative-mood condition elicits more negative thoughts than the positive-mood condition, whereas the positive-mood condition should produce more positive thoughts than the negative-mood condition. The mood-repair hypothesis, on the other hand, assumes that a negative-mood condition leads to an increase in positive thoughts, thus resulting in a comparatively small, and presumably insignificant, difference in thought valence between the negative- and the positive-mood conditions.

Although the total number of thoughts and the number of neutral thoughts did not differ across conditions, Fs < 1, highly significant differences were observed for negative and positive thoughts. The failure condition produced more negative thoughts than the success condition, $F(1, 70) = 8.34$, $p < .01$ ($M = 46.43$ vs. 28.55). An inspection of the subcategories revealed that this effect was caused by negative thoughts related to the experiment, $F(1, 70) = 10.01$, $p < .01$ ($M = 39.41$ vs. 18.68). Negative thoughts unrelated to the experiment showed no significant difference, $F < 1$ ($M = 7.03$ vs. 9.87). Conversely, the success condition generated more positive thoughts than the failure condition, $F(1, 70) = 11.38$, $p < .001$ ($M = 26.90$ vs. 11.97). Again, this effect was confined to thoughts related to the experiment, $F(1, 70) = 6.47$, $p < .02$ ($M = 17.14$ vs. 7.07), whereas positive thoughts unrelated to the experiment did not differ significantly across condition, $F(1, 70) = 1.64$, n.s. ($M = 9.76$ vs. 4.90). In sum, these results clearly support the mood-congruency hypothesis.

The influence of experimental condition, coping dimensions, and thought order (mean of the first two versus mean of the last two thoughts)[6] on *valence* and *self-focus* was tested by employing 2 (Condition) × 2 (VIG) × 2 (CAV) × 2 (Thought Order) ANOVAs, with the last factor being within-subjects. Again, we first report effects for *condition* and *thought order*.

A hypothesis based on a substantial body of research postulates that negative mood elicits more self-focused attention than a positive mood state. The mood-repair hypothesis, on the other hand, expects that negative mood leads to an attenuation of self-focus. In accordance with the concept of mood repair, we therefore expect this attenuation of self-focus after failure for a later stage of thought listing.

Whereas analysis of the valence score showed no effects involving condition (success: $M = 1.74$, failure: $M = 1.54$, $F(1, 70) = 2.20$, $p = .14$) or thought order (first thoughts: $M = 1.65$; last thoughts: $M = 1.63$), self-focus revealed a significant effect for condition. Attention was significantly more self-focused after failure ($M = 2.38$) than after success ($M = 1.96$), $F(1, 70) = 5.40$, $p < .03$. The comparison of thought order, however, failed to reach the standard level of significance (first thoughts: $M = 2.29$; last thoughts: $M = 2.02$, $F(1, 70) = 1.89$, $p = .17$). In addition, no interactive effect of condition and thought order could be registered, $F \approx 1$. Findings reported for self-focus are in accordance with the majority of empirical studies. These investigations found that negative mood elicits more self-focused attention than positive mood. Again, however, we were unable to obtain support for the mood-repair hypothesis.

Next, we report effects involving *coping variables*. Again, we begin with the *percentage* scores. As outlined above, our hypotheses refer to the experience of failure and the *negative* mood state caused by this encounter. We expected that high vigilants produce more negative cognitions than low vigilants, whereas high avoiders should list more non-negative (positive or neutral) and fewer negative cognition than low avoiders. In addition, high vigilants are expected to exhibit a stronger self-focus than low vigilants. High avoiders, however, should be less self-focused than low avoiders. Concerning thought order, we assumed that thought negativity and self-focus attenuate as the thought listing progresses. This should especially become obvious in highly avoidant individuals.

Regardless of condition, high cognitive avoiders produced more positive thoughts, $F(1, 70) = 4.42$, $p < .04$ ($M = 24.19$ vs. 15.37) and less negative thoughts than low avoiders, $F(1, 70) = 4.71$, $p < .04$ ($M = 30.12$ vs. 44.21). The latter difference could be traced back to negative thoughts related to the experiment, $F(1, 70) = 5.28$, $p < .03$; unrelated negative thoughts did not differ between groups, $F < 1$. Main effects for vigilance were less marked than those observed for avoidance. Compared to low vigilants, highly vigilant individuals

[6]For those participants ($n = 8$) who listed less than four thoughts, a comparison of first thought versus last thought was performed.

exhibited a (marginally significant) tendency to produce more positive thoughts, $F(1, 70) = 3.38$, $p = .07$ ($M = 22.60$ vs. 16.99), especially more positive thoughts unrelated to the experiment, $F(1, 70) = 2.74$, $p = .10$. As indicated by the nonexistence of significant condition by coping disposition interactions (all Fs < 1.5), the effects reported were about equally strong in both conditions.

A VIG × CAV interaction, which qualified the reported main effects for these variables, was observed for positive thoughts, $F(1, 70) = 6.87$, $p = .01$. To locate this effect, we performed a Tukey HSD test. This test indicated that high-anxious individuals (high scores in VIG and CAV) listed significantly more positive thoughts ($M = 34.67$) than persons of the other coping modes (non-defensives, $M = 17.43$; sensitisers, $M = 14.39$; repressers, $M = 16.76$). As a (marginally significant) effect indicated, it was the number of positive thoughts unrelated to the experiment which was mainly responsible for this difference, $F(1, 70) = 2.98$, $p < .09$. A CAV × Condition interaction was registered for the number of neutral thoughts, $F(1, 70) = 3.54$, $p < .07$. Although high and low avoiders showed similar, intermediate, levels of neutral thoughts after success, high avoiders listed more and low avoiders less of these thoughts after failure (cf. Figure 1). The latter contrast, however, failed to reach the standard level of significance, $F(1, 34) = 2.61$, $p < .12$.

Results obtained with the percentage scores partly confirmed our hypotheses. In accordance with expectations, high avoiders listed more non-negative (positive and neutral) and fewer negative thoughts than low avoiders. Although the difference in neutral thoughts was restricted to the failure condition, differences in positive and negative cognitions were equally strong in both conditions. Results registered for vigilance, however, did not confirm our hypotheses. Contrary to expectations, high vigilants, especially those of the coping mode high anxiety (high score in vigilance and avoidance) generated more positive cognitions than low vigilants.

Next, we report results involving *thought order*. Whereas analysis of the dimensional valence score showed no effects involving coping dispositions, self-focus revealed a number of significant effects for these variables. High vigilants ($M = 2.26$) exhibited a stronger self-focus than low vigilants ($M = 2.03$), $F(1, 70) = 3.18$, $p < .08$. This main effect, however, was qualified by a highly significant interaction of vigilance and thought order, $F(1, 70) = 11.04$, $p < .001$. The first thoughts of high vigilants were significantly more self-focused ($M = 2.57$) than the thoughts in any other group (Ms between 1.95 and 2.10). In addition, a significant VIG × Condition × Thought Order interaction was registered, $F(1, 70) = 3.72$, $p < .06$ (cf. Table 3). In the first thoughts, high vigilants experiencing negative emotions revealed significantly more self-focused attention than any other group. (Means of the three other groups did not differ significantly.) In the last thoughts, high vigilants in a positive emotional state showed a significantly lower self-focus than low vigilants in this state and high vigilants in a negative state. High vigilants in both

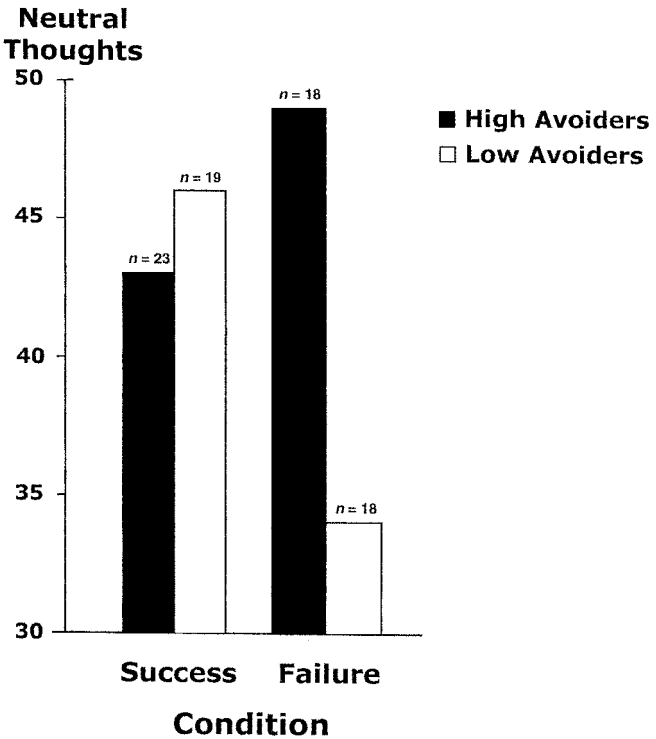

Figure 1. Number of neutral thoughts of high and low avoiders as a function of the experience of success or failure.

TABLE 3
Self-focus as a function of vigilance, success or failure experience, and thought order (first two vs. last two thoughts)

	First thoughts		*Last thoughts*	
Vigilance	*Success*	*Failure*	*Success*	*Failure*
Low				
N	20	16	20	16
M	1.73_a	2.25_a	2.18_a	2.00_a
(SD)	(1.33)	(0.97)	(1.04)	(1.17)
High				
N	22	20	22	20
M	2.32_a	2.85_b	1.61_c	2.33_a
(SD)	(1.35)	(0.69)	(0.92)	(1.05)

Note: Means (within rows and columns) with different subscripts are significantly different at $p < .10$.

conditions and low vigilants after failure exhibited an attenuation of self-focus from the first to the last thoughts that was significant for high vigilants. In contrast, low vigilants after success became more self-focused as the thought listing progressed. This difference, however, failed to reach the standard level of significance.

High avoiders (M = 2.32) were more self-focused than low avoiders (M = 1.97), $F(1, 70) = 4.47$, $p < .04$. This main effect, however, was qualified by two interaction effects. The Tukey HSD test for a significant CAV × Condition interaction, $F(1, 70) = 4.42$, $p < .04$, revealed that low avoiders experiencing success were significantly less self-focused (M = 1.54) than any other group (means varying from 2.30 to 2.42, ps < .05). Avoidance also interacted with thought order, $F(1, 70) = 10.87$, $p < .01$. Tests for simple effects showed that high avoiders' first thoughts (M = 2.62) were more self-focused than their last thoughts (M = 2.02) and the thoughts of low avoiders (M = 1.92 and 2.01, respectively, ps < .05).

The prediction that thought negativity in avoiders attenuates as the thought listing progresses could not be supported by our data. For self-focus, however, our hypothesis that high vigilants experiencing failure are more self-focused than low vigilants was clearly confirmed for the initial thoughts. Similarly, high avoiders' strong self-focus after success is in accordance with expectations. The finding, however, that high avoiders are equally self-focused after failure is at variance with hypotheses derived from the model of coping modes.

DISCUSSION

The manipulation check, based on established and psychometrically elaborated instruments, demonstrated that we succeeded in inducing success and failure experiences together with the corresponding emotions. Joviality increased after success and decreased after failure, whereas shame, anxiety, and hostility exhibited the opposite relationship.

Although Schwartz and Garamoni (1986) reported that, typically, the majority of all valenced thoughts is positive (see also Amsel & Fichten, 1998), we observed that negative thoughts clearly outnumbered positive ones by a ratio of almost 2 : 1 (cf. Table 2). Furthermore, inspection of the correlations of the different thought categories could only partly reaffirm results reported by Amsel and Fichten (1990). Although positive and negative thoughts unrelated to the experiment were indeed independent of each other, as observed by Amsel and Fichten, the total number of positive and negative thoughts as well as positive and negative thoughts related to the experiment showed negative correlations. Negative associations of similar magnitude were found by Fichten (1986), who assessed cognitions in a role-taking task where participants had to respond to an imaginary social situation.

Mood-congruency vs. mood-repair hypothesis

With respect to the different *valence* scores, the study provided evidence in support of three general conclusions: *First*, the number of negative thoughts, especially those related to the experiment, was significantly higher after failure than after success. The number of unrelated cognitions was not different between conditions. *Second*, the number of positive thoughts, especially those related to the experiment, was significantly higher after success than after failure. Again, the number of positive thoughts unrelated to the experiment did not differ between conditions. *Third*, valence did not differ between the first and the last thoughts listed by our participants.

As far as thought valence is concerned, these conclusions clearly contradict the mood-repair hypothesis. If this hypothesis were valid, we would, at least, expect an attenuation of thought negativity as the thought listing progressed. In fact, results convincingly speak for a mood-congruency effect for positive *and* negative emotional states, in accordance with predictions derived from the network theory of affect (Bower, 1981): Positive mood states tend to produce positive cognitions, whereas negative mood states generate negative thoughts. Our results even specify this relationship. Positive and negative emotional states do not produce positive and negative cognitions in general, but cognitions *related* to the cause of this state (success or failure).

The prevalence of negative cognitions throughout the entire time period points to the operation of a stabilisation (maintenance) process. In the introductory section we defined emotion regulation as the control of an *unadaptive* emotional state by generating certain neurophysiological, cognitive, or behavioural responses (cf. Gross, 1998). In view of this definition we may ask what the generation of negative cognitions has to do with emotion regulation. In a theoretical article addressing this topic, Parrott (1993) listed a number of motives for inhibiting good moods and for maintaining bad moods. Some of these motives such as avoiding distraction, improving concentration, or protecting oneself against future disappointment are of immediate relevance for achievement situations that may lead to positive or negative feedback. This reasoning may also explain our finding that the predominance of negative cognitions after failure ($M = 46.43$) was not compensated by an equally strong dominance of positive thoughts after success ($M = 26.90$).

Although findings for thought valence speak in favour of a mood-congruency effect, we do not exclude the possibility that mood-repair may occur. In our study, thoughts were collected for a period of three minutes starting shortly after the emotion-induction situation had terminated. (Similar temporal relationships are reported in the studies of Boden & Baumeister, 1997, and McFarland & Buehler, 1997.) If we had extended the collection of thoughts or had started this procedure at a later time, we might have observed that the mood-congruency effect had vanished and mood-repair processes prevailed. At the moment, this is

merely a speculation. Further research is needed to clarify the situational circumstances under which mood-congruency or mood-repair effects are elicited.

Self-focused attention was higher after failure and the subsequent experience of negative emotions than after success and the positive emotion of joviality. This finding is in accordance with predictions made by Tomkins (1962, 1963) and empirical results reported, among others, by Cunningham (1988) or Sedikides (1992). Results do not support the hypothesis of Wood and colleagues that elevated positive and negative emotional states equally contribute to a self-focused attention (cf. Wood et al., 1990a). At least as far as self-involving situations are concerned, an elevated self-focus seems to be restricted to the experience of a negative emotional state.

Coping variables, thought valence, and self-focus

Effects of success versus failure feedback on cognitions and self-focus were qualified by influences from the coping variables of *vigilance* and *cognitive avoidance*. A closer inspection of these effects revealed that both dimensions contributed unequally to the explained variances in the valence and self-focus scores, respectively. Whereas avoidance dominated the field of positive and negative thoughts, vigilance was somewhat more influential with respect to attention deployment. This unevenness might explain the lack of theoretically relevant vigilance by cognitive avoidance interactions.

However, significant effects observed for the dimensions of vigilance and cognitive avoidance were mostly in accordance with basic assumptions of the MCM. We will first discuss results for the *valence* scores. Regardless of success or failure feedback, high avoiders generated fewer negative thoughts, especially those related to the experiment, than low avoiders. This finding supports predictions derived from the MCM. In this model, cognitive avoidance is defined as the tendency to turn attention *away* from threat-related cues. The prime aim of this strategy is to shield the person from an increase in emotional arousal that may be stimulated by those cues, for example, by negative thoughts.

Whereas the differences registered for *failure* feedback are in accordance with the theory of avoidant coping, the MCM does not explicitly address avoidance-related differences in the generation of cognitions after *success*. However, in line with predictions derived from the mood-congruency hypothesis that were supported by the data presented above, we would expect that both high and low avoiders are about equally high in positive and equally low in negative cognitions after induction of positive mood. Our findings, however, demonstrate that low avoiders produced fewer positive and more negative thoughts than high avoiders. The specific regulatory processes observed for low avoiders seem to be in accordance with motives some individuals activate in achievement situations. As Parrott (1993) convincingly argued, motives, such as avoiding distraction, improving concentration, or protecting oneself against future disappointment,

may inhibit the generation of too many positive cognitions after success. We assume that these motives are especially salient in nonavoidant individuals. This assumption needs to be corroborated, of course, in future research.

The fact that high avoiders generate comparatively few negative thoughts after failure does not imply that these individuals invariably turn their attention toward pleasant thoughts (e.g., happy memories). In fact, a more efficient strategy may be to *turn away from emotionally valenced material at all* and, instead, to entertain emotionally neutral cognitions.

Support for this idea comes from the interactive effect of condition and cognitive avoidance on the generation of neutral thoughts (cf. Figure 1). Whereas high and low avoiders did not differ after success, high avoiders produced more neutral thoughts than low avoiders after having experienced failure. Although the MCM does not necessarily imply that avoiders' emotion regulation relies on the generation of positive cognitions, most approaches on mood-repair assume that repressers cope with exposure to negative experiences by accessing pleasant thoughts (cf. Boden & Baumeister, 1997). Our finding does not support this assumption. Why should avoiders renounce positive cognitions when coping with negative experiences? Although the strategy to replace negative cognitions when feeling bad by positive ones seems efficient at first glance, its effectiveness can be deceitful. The problem is that it still allows affective material to enter consciousness. For example, retrieving happy memories when feeling sad could, in fact, make one feel even worse. A strategy for circumventing this hazard is to (temporarily) exclude emotional valence (hot cognitions) entirely and to only register neutral (cold) facts.

The hypothesis that vigilance is associated with an increase in negative cognitions after the experience of failure was disconfirmed. Instead, we registered an interactive effect of vigilance and avoidance on the number of positive thoughts, especially those unrelated to the experimental situation. Regardless of the feedback condition, individuals scoring high in vigilance and avoidance (i.e., the coping mode of high anxiety) produced more positive (unrelated) thoughts than any other group. This result was not predicted and we hesitate to draw far-reaching conclusions about its implications. A tentative interpretation could be that this outcome is based on a process, similar to the two-stage model of emotion regulation proposed by McFarland and Buehler (1997). These authors hypothesise that sensitisers (who, in their measurement approach, also included the high-anxious coping mode) are more likely than repressers to acknowledge negative feelings and to adopt strategies that alleviate their distress. We assume that anxious individuals, compared to repressers, sensitisers, and nondefensives (as defined by the MCM), feel generally more tense when facing a demanding task. This state, in turn, should lead to the recruitment of positive cognitions, in particular those not related to the stressful event, to alleviate distress.

Unlike the percentage scores, the dimensional valence score only yielded few significant results. We assume that this lack of significant findings is caused by

the fact that this score combines both cognitions related and unrelated to the feedback condition. The majority of significant findings, however, was observed for related cognitions. Theoretically, we could, of course, calculate a valence score that only relies on this type of cognitions. This would imply, however, that this score could not be applied to those participants who did not exhibit these cognitions in their two initial or final thoughts. Again, this observation suggests to extend the collection of thoughts in future research and, thus, to obtain more (and possibly more heterogeneous) thoughts.

In contrast to valence, the analysis of *self-focus* revealed significant thought-order effects that might indicate the operation of a *person-specific* ''repair'' mechanism. As expected, high vigilants who had experienced failure exhibited stronger initial self-focus than any other group (cf. Table 3). In addition, high vigilants in both conditions showed a significant attenuation of self-focus over time. This attentional shift was predicted for individuals high in cognitive avoidance who had experienced failure. In fact, high avoiders displayed the expected shift from self to external focus. However, compared to low avoiders, high avoiders' initial self-focus was markedly elevated, and this shift was observed in both the success and failure conditions.

We tentatively propose that different dynamics are responsible for attentional shifts in vigilants and avoiders. For vigilants, the attenuation seems to be in accordance with the two-stage model of emotion regulation proposed by McFarland and Buehler (1997). Compared to other coping modes, vigilants first achieve an undistorted acknowledgement of their emotional state. This process is accompanied by self-focused attention. They then adopt strategies, for example shifting attention to an external source, that alleviate distress.

Although avoiders' strong self-focus after success is in accordance with the MCM, their equally strong self-focus after failure needs further reasoning. Previous conceptions of attentional reactions in repressers and sensitisers have concentrated on a simplistic dichotomy in directing attention: Sensitisers are supposed to direct their attention towards threat whereas repressers are considered to invariably avoid threatening information (for a review of this research see Krohne, 1996). As described, however, in the introduction, the idea that cognitive avoidance is characterised by an increased susceptibility to emotional arousal and a subsequent inhibition of the processing of aversive information requires the assumption of an early-stage orientation towards arousal-inducing information in avoiders (Krohne, 1978). In our experiment, this orientation might have caused avoiders to direct their attention toward the self and to clarify the meaning of failing in a test ostensibly predicting academic success.

This two-stage conception of cognitive avoidance is supported by a number of empirical findings. Hock et al. (1996), for example, presented their participants with a series of ambiguous sentences that could be interpreted in a threatening or nonthreatening fashion. Evidence based on the unpleasantness ratings of the events described in these sentences and on the reaction times of

these ratings showed an overrepresentation of repressers' interpretations in a response pattern that was characterised by intermediate (neither positive nor negative) ratings and markedly delayed reaction times. The authors called this state ''unresolved ambiguity'' and concluded that first both meanings (threat and nonthreat) are activated in repressers and that these persons then have great difficulties to impose either the unambiguous threatening or nonthreatening interpretation on this event. (See Hock & Krohne, 2001, for a replication of these findings.) Further results that indicate an early-stage processing of aversive information in repressers are reported by Dawkins and Furnham (1989) or Hock and Egloff (1998).

To summarise, the purpose of the present investigation was twofold. First, we contrasted two hypotheses (mood-congruency vs. mood-repair hypothesis) about the general effects of negative and positive mood states on thought valence and attentional focus. We found little evidence for a *general* mood-repair effect. On the contrary, results obtained for both thought valence and attention deployment spoke in favour of a congruency effect.

Second, we investigated the moderating effects of the coping dimensions vigilance and cognitive avoidance on the mood-cognition relationship. By introducing a time sequence analysis, we were able to look at variations over time in valence and self-focus related to these coping dimensions. We observed that thought valence and attentional focus were substantially influenced by these dimensions, with most effects being in accordance with expectations derived from the model of coping modes: Compared to low avoiders, high avoiders generated more non-negative (positive and neutral) and fewer negative thoughts. High vigilants were significantly more self-focused than low vigilants. However, this self-focus, triggered by an emotionally evocative task, attenuated over time. This finding indicated that vigilants' initial heightened awareness was followed by a relaxation of tension. For avoiders, the idea of an early-stage (short-time) orientation towards threat cues followed by avoidant coping, as proposed in a processing model of avoidant coping (Krohne, 1978, 1993), was substantiated.

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