

Controllability, Coping, Efficacy, and Distress

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Abstract

The present study had two central aims: to test the 'goodness of fit' hypothesis and to predict coping strategies (problem versus emotion focused) based on two types of situational control (objective and perceived). An experimental design assessed the relationship between control over a stressful situation (an anagram task), and the subsequent coping strategies used to confront that situation (situational coping) as well as psychological distress (state anxiety) and coping efficacy (operationalized as the number of anagrams solved). High control participants solved more anagrams and reported less anxiety than low control participants; they also were higher on task-oriented coping and lower on emotion-oriented coping. Copyright © 2000 John Wiley & Sons, Ltd.

INTRODUCTION

A time-honored principle of effective coping is to know when to appraise a situation as uncontrollable and hence abandon efforts directed at altering that situation and turn to emotion-focused processes in order to tolerate or accept the situation (Folkman, 1984, p. 849).

It has been widely recognized within the stress and coping literature that the construct of personal control over a source of stress can have powerful effects on the way in which an individual copes with the stress. The present study investigates the ways in which an individual copes with a specific situation that is either primarily controllable or not primarily controllable. Specifically, this investigation will assess the relationship between perceived control over a stressful situation (an impromptu anagram task), and the subsequent coping strategies used to deal with that situation (situational coping) as well as psychological distress (state anxiety) and coping efficacy, defined in terms of performance on a cognitive task (solving anagrams). Of particular interest is whether or not two *types* of situational control (perceived and objective)

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will differentially affect the three outcome measures (anxiety, coping, and coping efficacy).

The concept of control

Studies have found that individuals generally overestimate the amount of control they can exert over events that are objectively random (e.g., poker/gambling). This suggests that people are strongly motivated to believe that they can control their environment (Rodin, 1990). Part of this motivation may stem from the findings that individuals with a sense of control are better able to cope with stress; therefore having a sense of control is, in this sense, more adaptive than not having a sense of control (Kobasa, 1979; Taylor, 1983). Control over a specific situation (situational control) is often investigated by making available or eliciting a response that a person can use to affect the event (for example by self-administering a stressor, making a decision, or obtaining more detailed instructions). As stated by Thompson (1981), 'It is assumed that availability of such options increases perceptions of control, although that is usually not measured as part of the research'. This is a good definition of what we have chosen to refer to in the present study as *objective control* which refers to the actual (i.e., objective) amount of control that is present in the environment. However, this does not seem to present the entire picture. Mineka and Henderson (1985) found that the effects of potential or *perceived control* are similar to the effects that occur when respondents actually have control. In other words, perceptions of control alone are sufficient to reduce stress (the control does not actually have to be present or realized but merely perceived to be present). Furthermore, physiological evidence suggests that it is the *perception* of control rather than actual behavioural control that may be more important in reducing physical indicators of distress (Blankstein, 1984). Perceived control has been defined by Thompson (1981) as 'The belief that one has at one's disposal a response that can influence the aversiveness of an event'. Thus it is possible to identify two different kinds of control: perceived (subjective) and actual (objective) control. A central aim of the present study is to investigate how perceived versus actual (experimentally induced) control differentially affect situational coping, distress (anxiety), and coping efficacy (performance on a cognitive task). However, because none of the studies we came across have explicitly made a distinction between perceived and objective control, for the remainder of this introduction, control will be defined in a general sense as any response (perceived or actual) that reduces the stressfulness of an aversive situation. Following our review of the existing literature, we will return to the perceived/objective control dichotomy in the context of the present study.

Situational control and coping with stress

Predicting coping based on situational control

In an experimental study, Endler, Summerfeldt and Kantor (1993) attempted to predict situation-specific coping (task and emotion) based on coping disposition and perceived situational control. They found that situational task-oriented coping (measured by the *Coping Inventory for Stressful Situations*, Endler and Parker, 1999) depended to a greater extent on situational controllability than did situational

emotion-oriented coping. However, the results were mixed according to gender and high versus low control. Subjects who were dispositional emotion-oriented copers demonstrated more state emotion-oriented coping and experienced greater anxiety regardless of potential for situational control. Task-oriented coping effects were influenced by control over the situation but only for dispositional task-oriented copers. In this study, perceived control was only minimally predictive of coping strategies and distress, while one's coping style or disposition (the way one generally copes with a variety of stressful situations) was seen to be a much stronger determinant.

Forsythe and Compas (1987) found that, in predicting coping from control, problem-focused coping increased when dealing with controllable events but emotion-focused coping did not differ according to perceived situational control versus no control. This is consistent with the notion that problem-focused coping varies as a function of situational control, whereas emotion-focused coping does not (cf., Compas, Banez, Malcarne and Worsham, 1991; Endler *et al.*, 1993).

A contradictory finding was reported by Terry (1991) who found no association between perceptions of control over an academic examination and subsequent coping styles; situational control (or lack thereof) had no effect in predicting the use of a particular coping strategy. In a similar but more extensive (longitudinal) study however, Terry (1994) found that the problem-focused facet of *instrumental action* tended to be more widely used when the stressful situation was appraised as controllable. There were also weak effects for the influence of situational control on the use of *minimization*, *self-blame* and *cautiousness*. Overall, it appears that situational control does have some influence on a person's subsequent coping strategies, and that perceiving oneself as having control is generally associated with problem-focused coping and less distress. Higher distress seems to warrant the use of emotion-focused coping regardless of the level of perceived control. The present study will investigate whether having control (perceived or actual) over an anagram task (a stressful situation) predicts coping (task or emotion).

Goodness of fit

Studies on coping and perceived control over a stressful situation have often produced mixed results, particularly in testing the *goodness of fit* hypothesis (Conway and Terry, 1992). This hypothesis states that problem-focused coping will be more adaptive in situations appraised as controllable, and maladaptive in uncontrollable situations. Emotion-focused coping will be more adaptive in situations appraised as uncontrollable and maladaptive in controllable situations. Felton and Revenson (1984) failed to find support for the goodness of fit hypothesis, while Forsythe and Compas (1987) found considerable support. Specifically, Felton and Revenson (1984) found that the effectiveness of problem versus emotion-focused coping strategies did not differ as a function of self-reported control over a chronic illness. However, a chronic illness seems to have an inherent component of uncontrollability that could obscure smaller variations in individual reports of control. This is a serious limitation of the study of Felton and Revenson (1984).

Forsythe and Compas (1987) also tested the goodness of fit hypothesis, and found that problem-focused coping was associated with lower symptoms (including depression) in controllable situations, and with higher symptoms (including

depression) when the situation was uncontrollable. Emotion-focused coping on the other hand, was associated with lower symptoms when the situation was uncontrollable and with higher symptoms when the situation was controllable. These findings support the goodness of fit hypothesis. Overall then, the results of these two studies (Felton and Revenson, 1984; Forsythe and Compas, 1987) contradict each other. Fortunately, a more recent study by Vitaliano, DeWolfe, Maiuro, Russo and Katon (1990) has shed some light on this inconsistency.

Vitaliano *et al.* (1990) found that across three different samples, the positive relationship between emotion-focused coping and depression (a measure of psychological distress) was higher in a situation appraised as controllable. On the other hand, low symptoms were observed when problem-focused coping was used in controllable situations. However, the use of problem-focused strategies was *not* maladaptive in situations appraised as uncontrollable and there was *no* evidence that the use of emotion-focused coping was adaptive in situations appraised as being uncontrollable. Consistent with this result, Conway and Terry (1992) found that high levels of problem-focused coping were adaptive in controllable situations, while the negative effects of emotion-focused coping (e.g., self-denigration) were stronger in controllable situations. There was no evidence that high problem-focused coping was maladaptive in uncontrollable situations, or that emotion-focused coping was adaptive in uncontrollable situations. These results are consistent with those of Vitaliano *et al.* (1990). Overall then, problem-focused coping seems to be more adaptive when the situation is controllable, while emotion-focused coping in controllable situations is maladaptive. Terry and Hynes (1998) studied coping in response to a real life uncontrollable situation (women's failure at *in vitro* fertilization) and found that attempts to manage one's appraisal of the stressfulness of the situation (e.g., focus on the positive) was related to better adjustment, whereas attempts to actively manage or solve the problem were related to worse adjustment. In light of the preceding conclusions, it seems as though we know more about adaptive coping in controllable situations than in uncontrollable situations.

Continuing with this general research paradigm, Compas *et al.* (1991) reported that perceptions of having control were negatively related to psychological maladjustment (e.g., depressive symptoms) in 8–17 year olds. Compas *et al.* (1991) also reported that emotional distress is lower when problem-focused coping is used in controllable situations. Conversely, elevated emotional distress occurs when problem-focused coping is used in uncontrollable situations. This result seems to provide further evidence that emotional distress depends in part upon the 'goodness of fit' between coping strategy employed (problem versus emotion) and situational control. The present study will attempt to determine how the outcomes of distress (state anxiety) and coping efficacy (number of anagrams solved) depend on the degree of fit between situational control and a situational coping strategy. The question of interest is which type of coping strategy is most effective under conditions of *both* objective and perceived control.

Control and anxiety

Lobel, Gilat and Endler (1993) investigated distressful reactions (anxiety) to Gulf War Scud missile attacks—a situation that is inherently uncontrollable. They found that the use of emotion-oriented coping was related to higher levels of anxiety, and that

those who use emotion-oriented coping are typically most affected by the stressful situation (in terms of levels of distress). Task-oriented and avoidance-oriented coping were not related to distress. The conclusion drawn was that because the situation was not one that could be controlled, task-oriented coping was not very useful in reducing levels of anxiety.

Craske, Bunt, Rapee and Barlow (1991) attempted to provide further evidence that the concept of uncontrollability can be linked to anxiety, and that the provision of control lessens the negative impact (i.e., anxiety levels) of aversive stimuli. However, their study found that provision of control over exposure to a tarantula did not affect levels of fear (a construct that is objectively similar to anxiety). Fear was found to decrease only with repeated exposure to the stimulus (tarantula). One explanation for this finding is that perhaps the tarantula induced such high levels of fear (anxiety) that the level of control did not matter. In other words the relationship between perceptions of control and anxiety may not hold at high levels of anxiety.

Sanderson, Rapee and Barlow (1989) found that respondents with panic (anxiety) disorder who believed that they could not control the inhalation of carbon dioxide gas reported a greater number of DSM-III (revised) panic attack symptoms, rated these symptoms as more intense, and reported greater subjective anxiety and more catastrophic cognitions. They were also significantly more likely to report panic attacks. Thus in this situation, lower perceived control resulted in greater symptoms of anxiety. The present investigation will further investigate how perceptions of control (perceived and objective) differentially affect levels of state anxiety.

Efficacy and coping

The construct of efficacy has been repeatedly linked to the way in which one copes with stressful situations. Perhaps the most salient construct to emerge from this research is that of *self-efficacy*, defined as the belief that one has the ability to produce a desirable outcome (Bandura, 1977). In an investigation of self-efficacy and coping in a sample of teachers experiencing job-related burnout, Chwalisz, Altmaier and Russell (1992) found higher self-efficacy to be associated with greater problem-focused coping. Furthermore, emotion-focused coping was strongly associated with negative outcome (in this case, job burnout). Similarly, Haney and Long (1995) found that female athletes with higher levels of self-efficacy used more problem-focused coping than athletes with lower self-efficacy. The present study will attempt to broaden and extend these findings not in terms of *self-efficacy* (as defined by Bandura) but rather by employing a measure of *coping efficacy*—how successful was the type of coping strategy (task oriented versus emotion oriented) in confronting the stressful situation? We have defined coping efficacy in terms of performance on a cognitive task (solving anagrams). This follows the rationale provided by Zeidner and Saklofske (1996) stating that ‘... successful coping depends on the successful resolution of coping tasks’ (p. 509). Furthermore, if a coping strategy is indeed effective at reducing the stress-inducing properties of a situation, this should be able to be shown empirically (Zeidner and Saklofske, 1996). In the present study then, it is assumed that better coping strategies should be associated with better performance on the anagram task (the stressful situation). Thus, we are dealing not with *self-efficacy*, but rather with the efficaciousness of the particular type of coping strategy (task or emotion) that one chooses. In the present study, it is of interest to determine how the

efficacy of a particular coping strategy changes according to perceived and objective control.

The present study

A central aim of the present investigation is to disentangle the complex effects of control on subsequent styles of coping with an aversive (stressful) situation. While the literature on control and coping has produced some inconsistencies (e.g., Felton and Revenson, 1984, versus Forsythe and Compas, 1987) overall having control of the situation seems to be adaptive in terms of increasing levels of problem-focused coping. Furthermore, the reduction in levels of negative affect seems to depend in part on the degree of fit between situational control and type of coping employed (the goodness of fit hypothesis). The present study will further investigate this notion, using two different types of control (perceived and actual/objective) and an experimentally induced stressful situation involving a cognitive task. This investigation will determine whether or not the two types of control, in combination with situational coping strategy, affect state anxiety levels. Furthermore, the present study will determine whether certain types of coping strategy are more or less efficacious (in terms of the number of anagrams solved), depending on one's level of control (perceived or objective) over a stressful situation. Based on existing research and theory, we have made the following predictions:

- (1) Higher levels of control (perceived and objective) will be associated with less situation-specific emotion coping, more situation-specific task coping, lower levels of state anxiety (or A-state), and better performance on the anagram task than lower levels of control. In other words, the having control will be adaptive or beneficial.
- (2) Performance on the anagram task (coping efficacy) and level of state anxiety will depend on the degree of 'fit' between coping strategy employed and the controllability (perceived or objective) of the situation. Specifically, when control (perceived or objective) is high, task coping will be associated with lower state anxiety and better performance on the anagram task than emotion coping (i.e., task coping will be a more efficacious strategy). Emotion coping will be unrelated to anagram performance, as it is posited to be primarily a function of emotional distress (in this case, anxiety) than of situational characteristics (Folkman, 1984; Masel, Terry and Gribble, 1996). Emotion coping will therefore be strongly and positively related to state anxiety (A-state).

METHOD

Research participants

Participants were 80 undergraduate students (40 men, 40 women) recruited from classes at York University, most of whom were in their first year of study.

Measures

Coping Inventory for Stressful Situations—Situation Specific Coping

(CISS-SSC; Endler and Parker, 1994; Endler, Kantor and Parker, 1994). The CISS-SSC is a 21-item modified version of the CISS that assesses situation-specific coping responses. The instructions to this scale were modified from the original *Coping Inventory for Stressful Situations* (Endler and Parker, 1999). Participants were asked to report on the coping activities they had used *as they worked on the anagrams* (the stressful situation). The CISS-SSC assesses Task, Emotion, and Avoidance oriented coping responses and contains seven items per scale. However, the avoidance-oriented coping subscale was not used in the present study, as it was deemed impossible to *avoid* the particular stressful situation that we created in the laboratory.

Anagrams

(Tresselt and Mayzner, 1966). Ten anagrams were presented as the criterion measure of coping efficacy. The anagrams chosen had median solution times ranging between 57 and 240 seconds, with seven of the ten having a median solution time of less than 100 seconds (Tresselt and Mayzner, 1966). Examples of anagrams presented are A T R Y P (party) with a median solution time of 65 seconds, and T B O A N (baton) with a median solution time of 194 seconds (Tresselt and Mayzner, 1966). Anagrams were chosen because they minimize differences in experience or knowledge with no gender difference in performance (Bourne, Ekstrand and Dominowski, 1971; Mendelsohn, Griswold and Anderson, 1966).

Endler Multidimensional Anxiety Scales—State Component and Perception Component

The definition of psychological *distress* employed in the present study was state anxiety, measured by the EMAS-State (S) scale (Endler, Edwards and Vitelli, 1991). This scale was based on an interactional model of anxiety (Endler, 1997; Endler and Magnusson, 1976). The EMAS-State (S) scale, is a self-report measure of one's *present* anxiety. This 20-item measure assesses two components of anxiety: a cognitive-worry, and an autonomic-emotional component (ten items each), using a five-point Likert scale ranging from (1) 'Not at all' to (5) 'Very much'. The EMAS-S has 20 items. Sample items include 'Distrust myself' (cognitive worry) and 'Feel tense' (autonomic-emotional). Cronbach's alpha for the EMAS-S in the present study was 0.93.

The participant's perception of the situation was measured using the EMAS-Perception (P) scale. This scale asks the degree to which the person believes they are in a situation reflective of social evaluation, physical danger, ambiguous and daily routines. Each item on the EMAS-P scale has been found to be a reliable and valid measure of anxiety (Endler, Edwards, Vitelli and Parker, 1989).

Perceived control

Perceived control was measured using a questionnaire which we disguised as the 'Event Perception Measure', which was designed by Jimmieson and Terry (1997). This scale consists of six questions that assess a participant's appraisal of the

controllability of the outcome of the situation (Jimmieson and Terry, 1997). Sample items included 'How much choice were you given when performing this activity?' and 'How much influence did you have over the way you completed this activity?'. This scale was developed by Jimmieson and Terry (1997) to measure perceptions of control with respect to a specific task, as opposed to more general perceptions of control. Responses were given on a five-point Likert scale ranging from (1) 'Not at all' to (5) 'Very much'. Cronbach's alpha for this scale in the present study was 0.79.

Objective control

Objective control was *manipulated* via the random assignment of participants to two conditions (high control, low control). We chose to manipulate objective control through the provision of choices or options. This follows that rationale provided by Thompson (1981) which states that availability of options increases perceived control. Furthermore, Paterson and Neufeld (1995) found that anticipating a choice between several options increased perceptions of control over a stressful situation. A more complete description of the circumstances of each condition is provided in the following procedure section.

Procedure

Participants came to the laboratory and on arrival were asked either to seat themselves wherever they liked (high control condition), or in a specified chair facing one-way glass (low control condition). They were then presented with the anagram task. In order to make this situation seem more stressful, participants in both conditions were told that their performance would be compared with the performance norms of others.

Participants in the high control condition were instructed: 'Your job is to complete as many anagrams as you can in 10 minutes. You can do them in any order you want and you can skip ones and go back to them later if you have time. Please write down anything you want to on the paper—you can use the back of the sheet if you need more writing space. I will stop you when the 10 minutes is up . . . '.

Participants in the low control condition were instructed: 'There are 10 anagrams to be solved in 5 minutes. Please do not write anything on the paper except your final answer. In other words, solve them in your head. You must solve them in the order in which they appear and to prevent you from looking ahead, you must use the black paper we have provided you with to cover up the remainder of the test. Under no circumstances are you to go back to solve an anagram that has passed. What will happen is I will say "start anagram 1". You will move the black paper so that only anagram 1 is visible. Write your solution in the blank space under the anagram. After 30 seconds, I will say "start anagram 2" '.

After completing the anagram task, participants completed the Coping Inventory for Stressful Situations—Situation Specific Coping, the Endler Multidimensional Anxiety Scales—State measure, the EMAS-P (perception measure), and the measure of perceived control.

Table 1. Means, standard deviations, and coefficient alpha reliability estimates for measures employed in the present study

Measure	Mean	SD	Alpha
1. CISS-SSC Task-oriented	24.74	4.74	0.79
2. CISS-SSC Emotion-oriented	13.76	5.38	0.86
3. EMAS-S (State subscale)	38.40	13.91	0.93
4. Event perception (perceived control)	19.11	5.71	0.79

Note: $N = 80$.

RESULTS

Means, standard deviations, and co-efficient alpha reliability estimates

Means, standard deviations, and co-efficient alpha reliability estimates for the *Coping Inventory for Stressful Situations—Situation Specific Coping* (task and emotion-oriented subscales), the *Endler Multidimensional Anxiety Scale—State* and the *Event Perception Measure* (perceived control) are shown in Table 1. All alpha co-efficients are sufficiently acceptable (> 0.79).

Manipulation checks

Two manipulation checks were carried out prior to the main analyses. First of all, we checked to make sure that our manipulation of objective control was successful, and second, we made sure that the participants actually found the anagram task stressful.

In order to ascertain whether or not the manipulation of objective control was successful, following the anagram task, participants' completed the following item: 'Rate the degree to which you perceive this situation as one in which you can express some control. That is, the extent to which you feel you "have a say" in the procedures'. A t-test revealed that participants in the 'high objective control' condition scored significantly higher on this question than participants in the 'low objective control' condition ($t(39) = 1.64$, $p < 0.001$). Thus, the manipulation of objective control was deemed sufficiently stressful.

A perhaps larger concern was whether or not the participants actually found the anagram task stressful. This was ascertained by comparing scores on the state anxiety measure for participants in the present study, against normative data collected by Endler *et al.* (1991). For Canadian undergraduates, the normative means score for the EMAS-S (state anxiety) scale is 31.5 (Endler *et al.*, 1991). In the present study, the mean score was 38.2 (35.7 for the high control condition; 40.87 for the low control condition). Thus, state anxiety levels were substantially higher than the norm during our experimentally induced stressful situation—even in the high objective control condition. It seems that our participants did in fact experience heightened anxiety in response to the stressful situation that we created. Furthermore, we used the EMAS-P to assess the degree to which participants saw the anagram test as a *social evaluation* situation. The average score for participants in our study was 3.36 on a scale of 1 (not at all) to 5 (very much). The normative mean for this single item is 2.5 (Endler *et al.*, 1991). Again, our participants scored higher than the norm for this item, indicating that the anagram task resulted in an elevated degree of social anxiety.

Table 2. Correlations for participants in two experimental conditions: high objective control (above diagonal) and low objective control (below diagonal)

Variable	1	2	3	4
1. State anxiety	–	–0.23	0.29*	–0.08
2. Task coping	–0.07	–	–0.37**	0.23
3. Emotion coping	0.66**	0.00	–	–0.41**
4. Anagram task performance	–0.02	0.40*	–0.21	–

Note: Above diagonal is *high* objective control; below diagonal is *low* objective control. $n = 40$ for each condition. * $p < 0.05$; ** $p < 0.01$.

Differences in anxiety and coping

Objective control

Analyses of variance revealed that there were no differences between the experimental conditions (*objective high and low control*) with respect to state anxiety (A-state), situation-specific task coping, or situation-specific emotion coping. There were also no gender differences.

Correlation analyses were then conducted for each of the two experimental conditions and are shown in Table 2. For the *experimental* condition of *high control* ($n = 40$), emotion coping was positively correlated with A-state ($r = 0.29$, $p < 0.05$) and negatively correlated with task coping ($r = -0.37$, $p < 0.01$). Correlations for the experimental condition of *low control* ($n = 40$) are also shown in Table 2. Emotion coping was positively related to A-state only ($r = 0.66$, $p < 0.001$). Thus, regardless of experimental condition (high or low control), increased anxiety is associated with increased emotion coping.

Perceived control

Participants' subjective perceptions of control (*perceived control*) seemed to have a much stronger impact on the outcome measures. Correlational analyses for the total sample ($N = 80$) are shown in Table 3. *Perceived control* is negatively related to anxiety ($r = -0.32$, $p < 0.003$) and situation-specific emotion coping ($r = -0.29$, $p < 0.007$) and positively related to state task coping ($r = 0.38$, $p < 0.0001$).

In conducting subsequent analyses, participants who scored in the top third on the perception of control scale ($n = 27$; 15 men, 12 women) were compared with participants who scored in the bottom third ($n = 26$; 12 men, 14 women). Correlations were then computed within the two groups: high perceived control ($n = 27$)

Table 3. Correlations between perceived control, anxiety and coping

Variable	1	2	3	4
1. Perceived control		–0.32*	–0.29*	0.38**
2. State anxiety			0.52**	–0.17
3. Emotion coping				–0.19
4. Task coping				

Note: $N = 80$.

* $p < 0.01$; ** $p < 0.001$.

Table 4. Correlations among variables for participants with high perceived control (above diagonal) and low perceived control (below diagonal)

Variable		1	2	3	4
1. State anxiety	—	−0.07	0.12	−0.17	
2. Task coping	0.04	—	−0.20	0.16	
3. Emotion coping	0.80**	0.00	—	−0.35	
4. Anagram task performance	−0.10	0.45*	−0.30	—	

Note: Above diagonal is *high* perceived control; below diagonal is *low* perceived control.

$n = 27$ for high perceived control.

$n = 26$ for low perceived control.

* $p < 0.05$; ** $p < 0.001$.

and low perceived control ($n = 26$), and are shown in Table 4. The results here demonstrate that when perceived control is *high*, neither type of coping (task or emotion) is significantly associated with state anxiety levels. When perceived control is *low* however, the use of emotion coping is associated with significantly higher state anxiety ($r = 0.80$, $p < 0.001$) while task coping is unrelated to anxiety.

Analyses of variance employing perceived control as a predictor in each case revealed that *high* perceived control is related to lower A-state ($F(1) = 7.97$; $p < 0.01$) (means = 33.60; $sd = 11.78$ versus 44.19; $sd = 14.78$), less reliance on situation-specific emotion coping ($F(1) = 9.34$; $p < 0.01$) (means = 11.39; $sd = 4.13$ versus 15.42; $sd = 5.32$) and greater reliance on situation-specific task coping ($F(1) = 10.99$; $p < 0.001$) (26.92; $sd = 3.99$ versus 22.88; $sd = 5.15$). There were no significant main effects for gender. There was however, a significant gender \times perceived control interaction effect for situation-specific task coping ($F(1) = 4.37$; $p < 0.01$). When perceived control was *low*, women relied more on situation-specific task coping than men (means = 24.50; $sd = 4.66$ versus 21.00; $sd = 5.32$). When perceived control was *high*, men relied on situation-specific task coping more than women (means = 27.62; $sd = 3.44$ versus 26.00; $sd = 4.63$).

Summary

To sum up, perceived control is more strongly associated than objective control, with both state anxiety (distress) and situation-specific coping.

Coping efficacy—performance on the anagram task

Objective control

With respect to experimentally manipulated control (*objective control*), analysis of variance revealed that participants in the *high control* condition solved more anagrams than participants in the *low control* condition ($F(1) = 9.38$; $p < 0.01$) (means = 6.37; $sd = 2.26$ versus 4.47; $sd = 2.59$). This result is not surprising given that participants in the *high control* condition had twice as much time to solve the anagrams as participants in the low control condition (this was necessary as part of our operational definition of objective control).

Analyses were then conducted according to experimental condition in order to determine the relationship between coping and coping efficacy (with length of time

controlled for). For the *experimental* condition of *high control* ($n = 40$), emotion coping was negatively correlated with anagram task performance ($r = -0.41$, $p < 0.01$). This correlation is shown in Table 2. For the experimental condition of *low control* ($n = 40$) task coping was positively related to anagram task performance ($r = 0.40$, $p < 0.01$). This is also shown in Table 2. These results demonstrate that if one *has* objective control, then emotion coping is negatively associated with performance on the anagram task (i.e., fewer anagrams are solved). Under the same condition (high objective control) task coping and anagram performance are not significantly associated. If one does *not* have objective control, task coping seems to be more effective, as task-oriented coping is associated with a better performance on the anagram task (i.e., more anagrams are solved). Under the same condition (low objective control) emotion coping and anagram performance are not significantly associated. Thus, the use of task coping is always associated with better anagram performance than the use of emotion coping, but is especially effective when one does not have (objective) control over the situation. Emotion coping on the other hand is not particularly effective (in terms of solving anagrams) in either condition (high or low control) but is especially deleterious in the low control condition. Here, emotion-oriented coping strategies are significantly associated with solving fewer anagrams (for the high control condition there is no relationship between emotion coping and number of anagrams solved). It is not readily apparent whether emotion-oriented coping strategies lead to poor anagram performance, or whether individuals who do poorly at anagrams become distressed and anxious, leading them to rely on emotion-oriented strategies. This is simply a by-product to the design of our study (participants reported on their coping and emotional outcomes at the conclusion of the experiment). Nevertheless, our results do show that the negative association between emotion coping and anagram performance is stronger when one does not have control.

Perceived control

Analyses of variance revealed that higher perceived control is related to solving more anagrams ($F(1) = 13.99$; $p < 0.0001$) (means = 6.42; $sd = 2.25$ versus 4.03; $sd = 2.34$). There were no gender differences. Again this result is not surprising, as a greater number of participants with high perceived control belonged to the experimental *high control* group (the group that had more time to complete the anagram task).

Correlations were then computed within the groups of high perceived control (top third, $n = 27$) and low perceived control (bottom third, $n = 26$). The results here demonstrate that when perceived control is high, neither type of coping (task or emotion) is associated with a better performance on the cognitive task (anagrams). This is shown in Table 4. When perceived control is low however, task coping is positively related to anagram task performance ($r = 0.45$, $p < 0.05$) while emotion coping is not significantly related to anagram task performance (see Table 4).

Summary

In terms of coping efficacy (anagram task performance) when objective control is low, emotion-oriented coping seems inefficacious (i.e., is associated with solving fewer

anagrams); when either objective or perceived control is low however, task-oriented coping seems most efficacious (i.e., is associated with solving more anagrams). No other results for coping strategy and coping efficacy under differential conditions were significant.

DISCUSSION

The present study had two central aims, each of which has been reflected by a specific set of hypotheses. The first aim was to determine whether task and emotion coping strategies (in response to the specific stressful situation) would be associated with the presence (or absence) of two types of situational control (objective and perceived). The second aim was to re-evaluate the 'goodness of fit' hypothesis, taking both perceived and objective situational control into consideration and examining two different outcome measures—state anxiety and coping efficacy.

How is control associated with coping strategies and anxiety?

The present study sought to determine whether situational coping (i.e., coping with the stressful anagram task), state anxiety, and coping efficacy (number of anagrams solved) would be associated with two types of control (perceived and objective). We hypothesized that under higher levels of both types of control, a greater employment of task-oriented coping, and a lesser employment of emotion-oriented coping would predominate, along with less state anxiety. We found that the results differed according to whether control was objective or perceived and that, in general, perceived control (participants' subjective perceptions of the controllability of the situation) was more strongly associated with situational coping and anxiety than objective control (the amount of control actually present in the situation). More specifically, higher *perceptions* of control, as predicted, were related to lower state anxiety, lesser reliance on situational emotion coping, and greater reliance on situational task coping than lower perceptions of control.

The present results demonstrate that objective control is considerably less important than perceived control. Random assignment of participants to the two experimental conditions of high and low control had no effect on levels of state anxiety or on the employment of situational task or situational emotion coping strategies.

These results lend support to previous research and theorizing stating that subjective perceptions of control are more important than the amount of control that is actually present in the environment (e.g., Mineka and Henderson, 1985) and with research stating that generally speaking, having a sense of control is more adaptive than not having a sense of control (Kobasa, 1979; Taylor, 1983). However, the present results for emotion-oriented coping are somewhat contradictory to results obtained by Endler *et al.* (1993), and by Forsythe and Compas (1987). Endler *et al.* (1993) found that higher control facilitated the employment of task-oriented coping but emotion-oriented coping was contingent to a lesser extent on the situational characteristic of control. Forsythe and Compas (1987) also reported that emotion-oriented coping was unaffected by perceptions of situational control. However, the present study found that emotion-oriented coping was employed significantly more often when *perceptions*

of control were low, but was unrelated to how much control was actually present in the environment (objective control).

The reasons why, in our study, emotion-oriented coping could be predicted from (low) perceptions of control, while other studies have failed to predict emotion-oriented coping from control are not readily apparent. This points to a need for further investigation into the relationship between control and emotion-oriented coping. Our results for task-oriented coping however, are consistent with previous studies (Forsythe and Compas, 1987; Endler *et al.*, 1993), adding to the robustness of the previously identified relationship between high perceptions of control and task-oriented coping.

One overall conclusion to be drawn from the present results, is that having *perceptions* of control is adaptive—more so than when the control is actually present in the environment. Higher perceived control is associated with lower state anxiety. Furthermore, the employment of both types of coping strategy (task and emotion) is associated with perceptions of control over a stressful situation. Overall then, our results for coping strategies validate the statement of Folkman and Lazarus (1980) that the manner in which a stressful situation is appraised is related to the kind of coping strategy that an individual will employ to cope with the situation.

Testing the goodness of fit hypothesis: state anxiety and anagram performance (coping efficacy)

Once a particular coping strategy has been identified as occurring in response to a controllable or a non-controllable situation, it is of interest to know whether or not the type of coping employed is adaptive in that particular situation. As previously stated, adaptive coping can be defined in part as the ability to match one's coping strategy to the characteristics of the situation, in this case, controllability. Therefore, a second aim of the present study was to re-evaluate the goodness of fit hypothesis (which, in the past has produced some mixed results) using two types of control (perceived and objective) and two different outcome measures (anxiety and coping efficacy). In this sense, coping was conceptualized as associated (in combination with control) with a particular outcome (high or low coping efficacy; high or low anxiety).

We hypothesized, based on previous research and theory, that anxiety levels and the degree to which coping was efficacious would depend on the degree of 'fit' between coping and controllability (both types of control). The present results generally failed to support the goodness of fit hypothesis. The results that emerged from the tests of these hypotheses will be discussed first in terms of the adaptiveness of task-oriented coping, followed by a discussion of the adaptiveness of emotion-oriented coping, for both objective and perceived control.

Task-oriented coping and goodness of fit

When objective control is high, the employment of task-oriented coping is unrelated to state anxiety or coping efficacy (number of anagrams solved). Similarly, when perceived control is high, task coping is unrelated to state anxiety or coping efficacy. Thus, when control is high, anxiety and coping efficacy seem to occur independently of whether or not one employs task-oriented coping strategies. When objective

control is low, task coping is also unrelated to state anxiety. Similarly, when perceived control is low, task coping is unrelated to anxiety.

The results are different however, under both conditions of low control (perceived and objective). Specifically, task-oriented coping is significantly and positively associated with coping efficacy (number of anagrams solved). In other words, when control (perceived or objective) is low, the employment of task-oriented coping, is associated with solving more anagrams. While the previous (null) results simply fail to find support for the goodness of fit hypothesis, this latter result *contradicts* it, as the hypothesis predicts that when control is low, task-oriented coping will be maladaptive. Two previous studies have found support for this hypothesis (Forsythe and Compas, 1987; Compas *et al.*, 1991) while two have not (Vitaliano *et al.*, 1990; Conway and Terry, 1992). It is noteworthy however, that the latter two studies found that task coping, in conditions where control is low, was unrelated to state anxiety—our measure of distress (as opposed to being positively related as the hypothesis would predict), while the present study finds that the employment of task-oriented strategies under conditions of low control is significantly and positively related to coping efficacy. This finding is also noteworthy because previous studies have shown that coping strategies do *not* predict examination performance (Bolger, 1990; Krantz, 1983). Therefore, regardless of the directionality of task coping and anagram performance, the significant association between these two constructs was not an obvious one, based on past studies of coping and performance. Therefore, in the present study, it can be argued that task coping when control is low is adaptive or efficacious (i.e., is associated with solving more anagrams).

Emotion-oriented coping and goodness of fit

When objective control is high, emotion-oriented coping strategies are positively associated with state anxiety levels. For high perceived control however, emotion-oriented strategies are unrelated to state anxiety. Therefore, the *actual* amount of control that is present seems to have more of an impact on the relationship between emotion coping and anxiety than does the amount of control that one *perceives* to be present. For coping efficacy, under conditions of high objective control, again emotion-oriented strategies are associated with lower efficacy (solving fewer anagrams) but for perceived control, emotion coping is unrelated to efficacy. Once again the amount of control that is actually present seems to have a greater impact on this particular outcome. Furthermore, it is worth re-stating that the negative relationship between emotion-oriented coping and anagram performance contradicts the results of both Bolger (1990) and Krantz (1983), both of whom found that coping strategies had no effect on the results of an academic examination—a task where, like the anagrams, performance is heavily skewed towards those with intellectual ability.

Turning now to situations of low control, emotion-oriented coping is strongly associated with increased anxiety for both perceived and objective low control. However, when control is low, emotion coping is unrelated to efficacy. In other words, regardless of the type of control present (perceived or objective) the employment of emotion-oriented strategies is related to higher anxiety but is unrelated to the number of anagrams solved. Our results for emotion-oriented coping strategies generally do not support the goodness of fit hypothesis, the exception being our finding that when objective (but not perceived) control is high, emotion coping seems maladaptive (i.e.,

is associated with higher anxiety and lower efficacy). This is consistent with what the original theory would predict under these circumstances (emotion coping when control is low is maladaptive). No other results for emotion-oriented coping support the goodness of fit hypothesis. Rather than being an adaptive way to cope under conditions of low control (as the hypothesis would predict), the present study finds that when control (perceived or objective) is low, the employment of emotion coping is maladaptive in terms of its strong association with increased anxiety, and is unrelated to coping efficacy (number of anagrams solved).

The present results in testing the goodness of fit hypothesis, seem to depend largely on which type of control is under consideration as well as which particular outcome is being considered. The results for coping efficacy (number of anagrams solved) are, under certain conditions (high versus low control), different from the results for anxiety. Nevertheless, when taken together the results of the present study do not provide strong support for the goodness of fit hypothesis. This overall pattern is consistent with a similar conclusion made by Masel *et al.* (1996) which these authors have stated as follows: "the goodness of fit model does not provide an adequate explanation of the relationships among coping, control, and adjustment" (p. 298). Masel *et al.* (1996) go on to suggest that perhaps the relationship between coping and control is simpler than that which is predicted by the goodness of fit hypothesis. Consistent with this conclusion, our results for goodness of fit are largely non-significant. The strongest findings were for the positive association between task-oriented coping and coping efficacy when control is low (i.e., task coping is related to solving more anagrams), and for the positive relationship between emotion-oriented coping and anxiety, also when control is low. When control (perceived or objective) is high, neither task nor emotion-oriented coping strategies are strongly related to either outcome (anxiety or efficacy).

One exception to the previous set of findings is that, for reasons that are not readily apparent, emotion-oriented coping is associated with higher anxiety when objective (but not perceived) control is high. This is what the original goodness of fit hypothesis would predict. However, the present study finds no other support for the conclusions made by other researchers working within the goodness of fit paradigm (e.g., Forsythe and Compas, 1987; Vitaliano *et al.*, 1990; Conway and Terry, 1992). Perhaps the best conclusion to draw here, is in agreement with Masel *et al.* (1996) that coping researchers now need to look beyond the goodness of fit hypothesis in order to gain a better understanding of how coping and controllability are related to psychological adjustment versus distress.

Control, anxiety, and coping

Several important findings emerged regarding the relationships between control, anxiety, and coping. The present study found a strong relationship between anxiety and emotion-oriented coping strategies (regardless of the potential for control). This supports the findings of Lobel *et al.* (1993) who also found a strong relationship between state anxiety levels and the use of emotion-oriented strategies in coping with Scud missile attacks. In the present study, both situational coping and state anxiety were measured *after* the anagram task had been completed and therefore it is unknown whether state anxiety warrants a reliance on emotion-oriented coping or whether individuals who employ this type of coping strategy are more prone to

appraise a situation as anxiety arousing. It is also possible that even the participants' perceptions of control could have been biased by their own ability to do well on an anagram task, which makes the interpretation of the perceived control conditions somewhat difficult. Further investigations are needed to provide insight into the strong associations between these constructs. Supporting the findings of previous research on the relationship between control and anxiety (e.g., Craske *et al.*, 1991; Sanderson *et al.*, 1989), the present study also found that higher perceptions of control were associated with lower state anxiety levels. Once again, perceiving oneself as being in control seems to be adaptive.

Limitations of the present study

Several limitations of the present study can be identified. We chose an experimental design in order to manipulate the degree of control over the environment, as well as to provide a greater degree of homogeneity with regards to the stressful situation. However, there are two inherent limitations to this approach. The first is in the way we actually manipulated objective control. In the low control condition, ten anagrams had to be solved in one's head, in half as much time as in the high control condition, where an unspecified number of anagrams were to be solved with the aid of pen and paper. It is clear then, that more than just control was manipulated. The low control condition is also a more difficult condition and due to the introduction of time pressure, more stressful. However, it is worth restating here, that while participants in the high control condition did solve more anagrams, the ANOVAs showed *no* overall differences between the two groups on state anxiety. It was only when the results *within* the experimental groups were assessed in terms of coping, that anxiety differences emerged (emotion coping was associated with higher anxiety in both groups—task coping was not). Furthermore, we believe that many of the factors (other than control) that may also have been manipulated, such as difficulty level, amount of challenge, and the amount of time pressure, are those that tend to co-vary naturally with high versus low control situations in the real world.

Another limitation of the present study is that it may have been the case that our definition of coping efficacy was somewhat limited. More specifically, it is possible that individual differences in the ability to solve anagrams may have played a greater role than we had anticipated. In other words, regardless of the type of coping strategy employed or the amount of control that was either present or perceived, some participants may simply have been better than others at solving anagrams. However, preliminary data screening indicated that, for the entire sample ($N = 80$), performance on the anagram task was normally distributed. Future research should therefore attempt to replicate the present study by employing different kinds of stressful situation, including real life stressors.

We must also acknowledge the fact that the design of our study does not permit any assumptions of causality. Although the associations are strong and clear, we cannot conclude, for example that emotion-oriented coping *causes* one to perform poorly on the anagram task. Rather, it is just as likely that participants who are inept at solving anagrams become distressed, warranting a reliance on emotion-oriented coping. In this study, we chose to rate participants' coping and state anxiety by asking them how they felt *as they worked on the anagrams*. It is also likely, that anxiety and coping occurred before, during, and after the anagram task. This view of coping as a process

makes the inference of causality a complicated issue. We have left it up to other researchers to further investigate factors such as anticipatory anxiety and anticipatory coping in the face of a stressful situation. Further research in our own stress and coping laboratory has been aimed at broadening the present findings beyond a cognitive task (anagrams) to an interpersonal task (storytelling based on a picture of a dyadic interaction with characters clearly in charge versus in a subservient role) (Endler, Macrodimitris and Kocovski, 1999).

A final possible limitation to the present study is that no baseline measures were taken for state anxiety. Instead, we chose to rely on normative data previously gathered for the EMAS-S by Endler *et al.* (1991). However, our results may have been more meaningful had we assessed state anxiety levels both before and after the anagram task.

Summary and conclusions

The present study finds further support for the widely held contention that having control over a stressor is beneficial. However, the present results also demonstrate that there are some limitations to this conclusion. The factors we found to be associated with having control—be they beneficial (coping efficacy) or deleterious (anxiety)—seem to depend upon the type of control under consideration (it is generally better to *perceive* oneself as being in control than to have *objective* control). While the results also fluctuate depending on the degree of fit between situational coping strategy and control, overall the ‘goodness of fit’ hypothesis does not have a considerable degree of explanatory power. It is therefore suggested that in the future, coping researchers turn their attention away from this hypothesis and focus on other factors that could contribute to the observed pattern of relationships between control, coping, and adjustment. Possible factors include a greater specification of the nature of the situation and a greater examination of the role played by avoidance coping. It seems prudent to conclude this discussion with an insightful statement made by an individual who is *not* a psychologist; Canadian and international recording artist Celine Dion (1997) has been quoted as saying ‘When you are in control you always feel strong, and I have never felt this much in power’.

ACKNOWLEDGEMENTS

Preparation of this article was supported, in part, by Social Sciences and Humanities Research Council Grant No. 410-94-1473 to Norman S. Endler. We would like to thank several anonymous reviewers for their helpful comments.

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