Pain promotion: Negative effects of exposure to health charity appeals

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Abstract

Health charity appeals are typically evaluated solely in terms of the amount of money raised relative to the administrative costs of the campaign. The effect of information communicated in these appeals on receivers' health related attitudes and behaviour has not been investigated. What is the effect of portrayals of suffering and helplessness on receivers who have the portrayed health problem? Social modelling research has shown that the experience of pain can be altered by exposure to models coping with pain. It is plausible, therefore, that campaign material depicting suffering and helplessness may adversely influence receivers with pain.

To test this notion, four versions of a fund-raising brochure for a fictitious chronic back pain charity were constructed according to the principles of Protection Motivation Theory. Pain was described as either mildly or severely intense and debilitating (high vs. low Threat) and pain treatment as either effective or ineffective (high vs low Response Efficacy).

In Study 1, 92 service club members read one randomly selected version of the brochure and completed a questionnaire about their willingness to help the charity and a pledge form. Results of two 2(high vs. low Threat) x 2(high vs. low Response Efficacy) ANOVAs indicated that amount pledged was equivalent across the four brochures but that subjects' willingness to help was greater for the high Threat/low Response Efficacy brochure.

Moreover, willingness to help accounted for a significant proportion of variance in amount pledged.

In Study 2, 57 chronic pain patients completed the Coping Strategies Questionnaire before and after reading one randomly selected version of the brochure. Results of a 2(high vs. low Threat) X 2(high vs. low Response Efficacy) X 2(Time 1 vs. Time 2) between subjects, repeated measures MANOVA revealed that subjects' ability to ignore pain appeared to be lessened if subjects read the low Response Efficacy appeal compared to the high Response Efficacy appeal. Results from these studies offer preliminary evidence that health charity appeals that effectively stimulate a desire to help in receivers by portraying helplessness may adversely affect patients who have the portrayed health problem.

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1. Introduction

1.1. The Problem

Graphic depictions of misery are used at times in health charity fund-raising appeals. Persons in these appeals are portrayed as helpless victims of disease or pain and viewers are encouraged to feel sorrow or guilt and donate money. An unstated implication of this type of appeal appears to be that there is little the suffering person can do to help himself or herself cope with his or her health-problem. Relief is possible only in the future and as a result of costly medical research. What is the effect of this type of appeal on viewers who have the portrayed health problem? Does exposure to images of individuals unsuccessfully coping with a health-problem that is similar to one's own detract from one's coping efforts?

Individuals with chronic pain appear to be an appropriate group for studying the effects of media portrayals of pain on coping. Both the expression and experience of pain have been shown to be influenced by social modelling influences. Craig and colleagues (e.g., Craig & Weiss, 1971) have demonstrated repeatedly that subjects tend to respond to pain in a manner similar to models that they had observed previously. That is, individuals who view a model coping successfully with pain tend to cope more successfully with pain than

individuals who view a model not coping successfully with pain. Thus, chronic pain will be the health problem used in the present study because (a) social and psychological factors play a substantial role in the subjective experience of pain (Melzack & Wall, 1982; Turk, Meichenbaum, & Genest, 1983), (b) there is a considerable amount of research demonstrating how the experience of pain is altered by exposure to modeled behaviour and information (see review by Craig, 1986 and below), and (c) the image of a person in pain is commonly used in fund-raising appeals and in advertisements for pain relieving medications and products.

1.2. Outline of Introduction

The literature most relevant to the present investigation is the persuasive-appeal literature. Within this literature, fear-appeals have received the most attention from health researchers.
This introduction, then, will begin with a review of the fear-appeal literature. Three major fear appeal theories will be reviewed. It will be shown that our understanding of health-threat communications has changed substantially since the 1950's. Each new theory has been an elaboration and refinement of the one preceding it. It will be argued that protection motivation theory (Rogers, 1975; 1983), the most recently developed theory of fear appeals, provides a model for understanding and

testing the proposition that fund-raising appeals may have a negative effect on some viewers.

1.3. Fear Appeals and Health-Related Attitude and Behaviour Change

1.3.1. Fear-Drive Models

Historically, most of the research on fear-arousing communications has been guided by variations of the fear-drive model. Hovland, Janis, and Kelley (1953) provided one of the earliest formulations of the fear-drive model as applied to health communications. Within this model, people are thought to become emotionally aroused when exposed to health-threatening information (e.g., smokers are shown pictures of diseased lungs). The emotional arousal is typically considered to be a negative affective state such as fear, anxiety, or tension (Beck & Frankel, 1981). If the emotional tension aroused during the communication is sufficiently intense to become a drive state, it is believed that the individual will be motivated to try out various responses to reduce the unpleasant state.

Health-threat communications usually present a particular response that recipients are encouraged to perform (e.g., smokers are encouraged to contact their family physician to obtain a prescription for nicotine gum). It is assumed that people will be motivated to

perform the recommended behaviour to the extent that the recommended behaviour alleviates the negative affective state. The greater the reduction in the negative affective state, the more strongly the recommended behaviour is reinforced and the more likely it is to be performed again when similar health-threat cues are present. However, if the level of fear experienced is exceedingly intense, or if the recommended coping response is ineffective, the person will probably engage in some form of defensive behaviour, such as denying the threat, not attending to the message, or impugning the credibility of the communicator.

In the fear-drive model, fear arousal can facilitate as well as inhibit persuasion. As the level of fear arousal increases from low to moderate levels a corresponding increase in persuasion is thought to occur. Increases in fear arousal beyond the moderate level, however, are thought to produce defensive avoidance and thus inhibit persuasion (Janis, 1967). Thus, the relationship between fear and persuasion is thought to be curvilinear with moderate levels of fear producing the greatest amount of compliance. In the health area, Beck and Frankel (1981) pointed out that people are motivated to reduce the fear produced by exposure to health-threatening communications, and that the strategy they

choose (acceptance or defensive avoidance) depends on the level of fear aroused by the communication.

McGuire (1969) also proposed a nonmonotonic model of fear and persuasion. McGuire (1969) contended that fear has both drive and cue functions. As a drive, fear increases the likelihood of message acceptance. As a cue, fear arouses avoidance tendencies that interfere with the acceptance of the message, therefore reducing the probability of message acceptance. The model predicts an inverted U relationship (similar to Janis, 1967) between persuasion and fear because the avoidant tendencies are thought to increase at a faster rate (as the level of fear increases) than the message acceptance tendencies. The optimal level of fear arousal for attitude change, therefore, is an intermediate level.

Several major critical reviews (Beck & Frankel, 1981; Higbee, 1969; Leventhal, 1970; Rogers, 1983; Sternthal & Craig, 1974; Sutton, 1982) of the fear-drive models have concluded that they are not well supported by empirical evidence. For example, Sutton (1982) conducted a meta-analysis of 35 published studies investigating fear-arousal and persuasion. Only studies that satisfied strict selection criteria (i.e., methodological soundness, assessment of relevant variables, manipulation checks) were included in the analysis. Results showed that (a) increases in fear are consistently associated

with increases in persuasion, (b) there is no evidence that fear and persuasion are related in a non-monotonic fashion, and (c) there is little or no support for the interactions predicted by the fear-drive model.

Interactions predicted from the model generally concerned the effect of fear level on certain message variables (e.g., the specificity of the recommended coping response, the positioning of the recommended coping response in the communication). The data fail to support most of these detailed predictions about interaction effects (see reviews by Beck & Frankel, 1982, Leventhal, 1970; Rogers, 1983; Sutton, 1982; but see Janis & Feshbach, 1953, Rogers & Mewborn, 1976, and Kleinot & Rogers, 1982 for an exception).

In sum, fear-drive models guided most of the early research on fear-appeals. The major predictions of the model, however, are not empirically supported. First, the data suggest that high as opposed to moderate levels of threat are optimal for persuasion. Second, many of the interactions between level of fear and message variables predicted by the model were not found. Third, there is not strong support for the notion that people yield to health-threat communications mainly to reduce feelings of fear (Beck & Frankel, 1981; Leventhal, 1970; see section 1.3.4. below for elaboration of this point).

1.3.2. The Parallel Response Model

Leventhal (1970) developed the parallel response model as an alternative to the fear-drive model. One important contribution of this model is that it distinguishes between emotional reactions to a health threat and attempts to cope with the threat. Leventhal (1970) labelled these processes fear control and danger control, respectively. This is in contrast to the fear-drive model which views coping as an emotional process motivated by a desire to reduce fear-arousal. In the fear-drive model, fear arousal reduction is the central explanatory construct in accounting for individuals' compliance with recommendations presented in threatening communications. In contrast, in Leventhal's (1970) model, emotional reactions to a health threat and coping responses are considered to be independent processes. These separate processes are considered to occur simultaneously rather than sequentially: neither causes the other (Leventhal, 1970; 1971). Thus, health threatening communications may arouse fear, but protective actions are motivated by a desire to control the danger, not to reduce fear.

Danger control is a cognitive process (Rogers, 1983) aimed at selecting and carrying out responses in order to avert the threat. Fear control is primarily an emotional process aimed at reducing an unpleasant internal state.

Behaviours to control fear could be sleeping, eating, intense laughter, and other responses that distract or otherwise help to avoid the threat. Many of the behaviours that are useful for controlling fear may have little or no effect on the actual danger (Leventhal, 1970). On the other hand, behaviours that are associated with danger control are directed at changing the external environment, by changing the health threat and its ability to strike us (e.g., quitting smoking to reduce the risk of contracting lung cancer).

The parallel response model is not a well articulated theory of the process of persuasion. Leventhal (1970) characterized the model as a first step toward theory building. Reviewers (Beck & Frankel, 1981; Sutton, 1982) agree that the model is best considered a general paradigm that helps to integrate empirical data. The model's main shortcoming is its lack of specificity about the stimulus variables associated with fear and danger control processes. Beck and Frankel (1981) pointed out that it is difficult to generate testable hypotheses based on the model because the important variables are not specified. The value of the model, however, is that it has contributed to a change of focus for fear appeal researchers. That is, research subsequent to the publication of the parallel response model has focused much less on the role of fear and fear-arousal in

persuasion. Instead, there has been an increasing emphasis on cognitive variables, (e.g., appraisal; Rogers, 1975) and information-processing models of persuasion (e.g., Flay, DiTecco, & Schlegel, 1980).

1.3.3. Protection Motivation Theory

Rogers' (1975) protection motivation theory (PMT) is an elaboration and refinement of Leventhal's parallel response model. In protection motivation theory the cognitive variables that are involved in the appraisal of health threats are made explicit. According to protection motivation theory the three most important variables in a fear appeal are 1) the noxiousness of a depicted event, 2) the probability that the event will occur provided that no adaptive activity is performed, and 3) the effectiveness of a coping response that might avert the noxious event.

It is assumed that each of the three components of fear appeals initiates a corresponding cognitive mediating process or appraisal. Noxiousness is appraised in terms of severity of the depicted health threat; probability is appraised in terms of expectancy of personal exposure to the health threat; and efficacy is appraised in terms of belief in the efficacy of the coping response. A schema of protection motivation theory is shown in Figure 1.3.3.1.

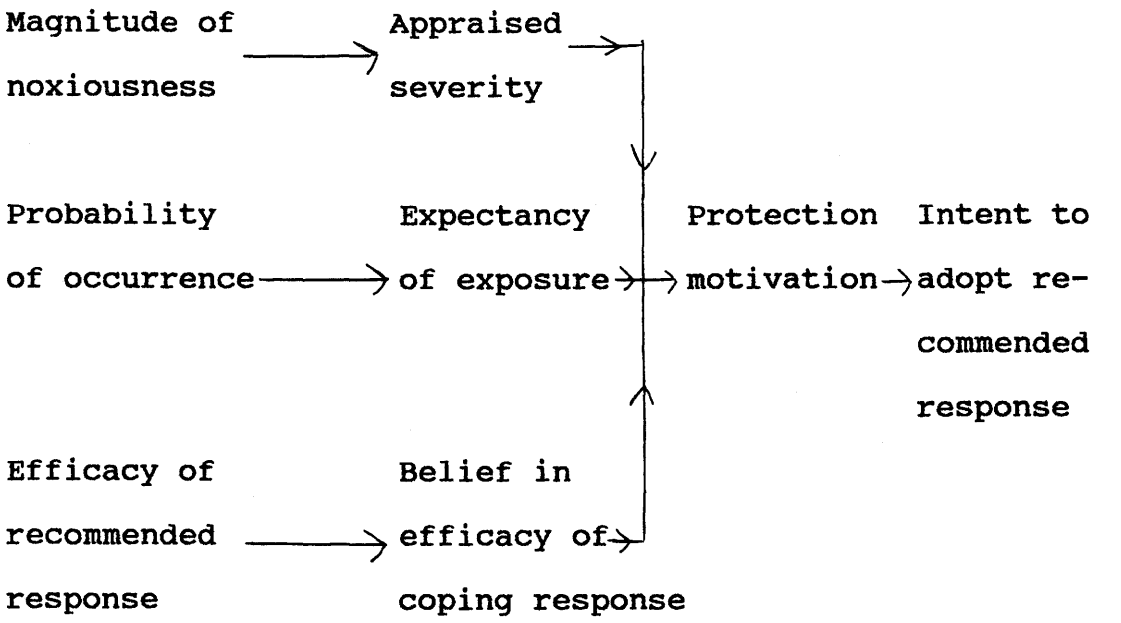

Figure 1.3.3.1. Components of protection motivation theory. Adapted from Rogers (1975).

Predictions derived from protection motivation theory are that people will tend to follow a recommendation on how to avoid a health threat if they are convinced (a) that the threat is severe, (b) that they are susceptible to it, and (c) that the coping response recommended is an effective way to avoid or control the threat. It is

assumed that these communication variables are appraised independently of one another and subsequent research has confirmed this assumption (e.g., Rogers and Mewborn, 1976).

As seen in Figure 1, the three cognitive mediating processes combine and give rise to an intervening variable that Rogers has termed 'protection motivation'. The probability that the recommended coping response will be adopted is a function of the amount of protection motivation aroused. Rogers (1975) describes protection motivation as a motive that "arouses, sustains, and directs activity" (p. 98). In this model, attitude change is thought to occur as a result of the amount of protection motivation aroused by the cognitive mediational processes and not as a result of the emotional experience of fear.

In reviewing studies assessing components of protection motivation theory it appears that there is substantial empirical support for most of the major postulates of the theory. In general, the greater the level of noxiousness portrayed the greater the acceptance of the recommended coping response (e.g., Rogers & Deckner, 1975; Rogers & Thistlethwaite, 1970; Shelton & Rogers, 1981). The level of noxiousness has been manipulated, for example, by essays arguing that alcohol

use causes either extensive liver damage or minor irritation to internal organs.

Similarly, a coping response described as effective is more likely to be accepted than a coping response described as ineffective (e.g., Rogers & Mewborn, 1976; Rogers & Thistlethwaite, 1970; Shelton & Rogers, 1981). Response efficacy has been manipulated, for example, in essays arguing that venereal disease is either untreatable or easily treatable by medical intervention. Results concerning the probability of occurrence variable are less consistent, although there is some evidence that probability of occurrence has a main effect on intentions to adopt the recommended coping response (Stainback & Rogers, 1983). Probability of occurrence has been manipulated by essays arguing either that a smoker has a very good chance of contracting lung cancer or that, although smoking leads to lung cancer, the chance of any individual smoker contracting lung cancer is quite small.

A number of studies (Rogers & Mewborn, 1976; Kleinot & Rogers, 1982) have found an interaction between probability of occurrence and response efficacy. Compliance with the recommended coping response is most likely if subjects perceive the response to be effective and if they perceive themselves to be susceptible to the health threat. If, however, the response is perceived to be ineffective then increases in perceived susceptibility

to the threat decreases compliance and may lead to a boomerang effect (i.e., subjects behaving in a manner opposite to the recommended coping response). This pattern, high perceived susceptibility and low response efficacy, has led smokers to indicate that they intend to smoke more cigarettes after exposure to a message encouraging people to quit smoking (Rogers & Mewborn, 1976) and social drinkers to indicate that they intend to drink more alcohol after exposure to a message encouraging them to stop drinking (Kleinot & Rogers, 1982). A more detailed discussion of these interactions, their meaning, and their relevance for the present study will be presented below in section 1.4.

The primary dependent variable assessed in most protection motivation studies is intention to adopt the recommended coping response advocated in the appeal. This focus on behavioural intentions is consistent with Ajzen and Fishbein's (1980) findings that intentions are good predictors of behaviour (a) when intentions and behaviours are measured at the same level of specificity and (b) when the measure of intention reflects the individual's intention at the time the behaviour is measured. Some studies using the protection motivation theory paradigm measured intentions and behaviour and reported a significant association between the two variables. For example, Rogers, Deckner, and Mewborn

(1978) found that smokers' intentions to stop smoking predicted smoking cessation one year later and Wurtele and Maddux (1987) reported a significant correlation between intentions to exercise and self-reported exercise behaviour measured two weeks later.

1.3.4. A Revised Theory of Protection Motivation

Rogers (1983) and Maddux and Rogers (1983) extended protection motivation theory by including (a) a broader statement about the sources of information that initiate a coping response, (b) additional cognitive mediating processes, and (c) more attention to the different ways that individuals cope with a health threat. The original components of protection motivation theory are incorporated into the revised version unchanged. A schema of the revised version of protection motivation theory is shown in Figure 1.3.4.1.

Of primary concern to the present study are the inclusion of additional cognitive mediating processes and the increased attention to the different ways that individuals cope with a health threat. Sources of information simply refer to environmental or interpersonal events that initiate the cognitive mediational processes. It is assumed that the same cognitive mediational processes occur regardless of the source of information. Stated differently, all sources

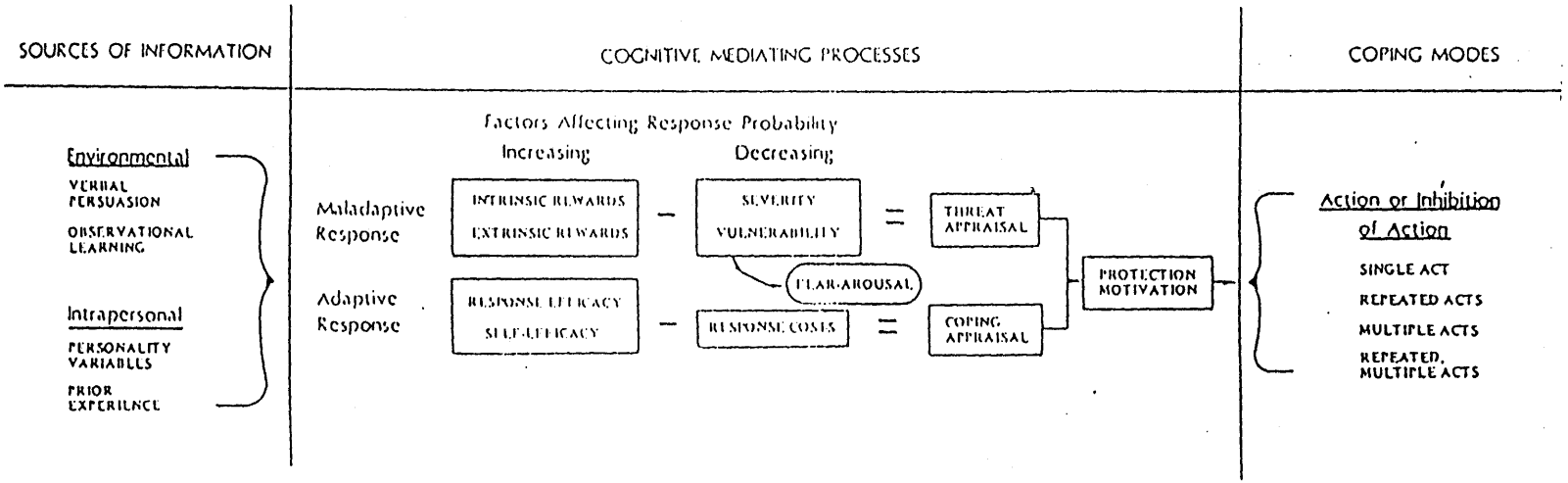

FIGURE 1.3A.1 Schema of protection motivation theory.
From Rogers (1983) p. 168

of information, environmental or interpersonal, initiate the same appraisal processes. The health-threat communications used by Rogers and colleagues in this research paradigm are considered to be a form of verbal persuasion (see Sources of Information in Figure 1.3.4.1.).

The belief in the efficacy of the coping response is the third major component of the original formulation of the theory and is retained in the revised version. One new key component of protection motivation theory is the belief that one can perform the recommended response, which is an operational definition of self-efficacy. Self-efficacy is an expectancy that one is or is not capable of performing a given behaviour (Bandura, 1977). Self-efficacy is distinct from response efficacy, both conceptually and operationally. Response efficacy refers to the belief that a behaviour either is or is not effective in producing a given outcome, regardless of whether or not an individual perceives himself or herself to be capable of performing that behaviour.

In the revised version of protection motivation theory the cognitive appraisal processes are divided into two categories, threat appraisal and coping appraisal (See Figure 1.3.4.1.). Considering threat appraisal first (See the top line in Figure 1.3.4.1 in the section entitled Cognitive Mediating Processes), the maladaptive

response could be a behaviour that is either currently engaged in (smoking cigarettes) or could be adopted (starting to smoke cigarettes). Factors that increase the probability of the maladaptive response, according to protection motivation theory, are intrinsic rewards (e.g., bodily pleasure, satisfaction) and extrinsic rewards (e.g., peer approval). Factors that decrease the probability of occurrence of the maladaptive response are the severity of the threat (e.g., minor irritation vs. lung cancer) and the expectancy of being exposed to the threat (one's vulnerability: e.g., smoking causes lung cancer vs. only a small percentage of smokers contract lung cancer). Note that both these variables, severity and vulnerability, were key components in the original formulation of the theory. It is assumed that the appraisal of these factors will summate algebraically to produce the final threat appraisal.

Coping appraisal proceeds in a manner similar to threat appraisal (See the bottom line in Figure 1.3.4.1 in the section entitled Cognitive Mediating Processes). Coping appraisal refers to one's ability to cope with and avert the health-threat. Factors that increase the probability that the adaptive response will be adopted are (a) a belief that the recommended behaviour is effective (e.g., quitting smoking will significantly lessen the risks of contacting lung cancer) and (b) a

belief that one can perform the recommended behaviour (I can quit smoking). Coping appraisal is the sum of these two appraisals and any costs associated with quitting smoking (e.g., expense, inconvenience, difficulty, and side effects).

To illustrate the principles of protection motivation theory, consider the topic of smoking and lung cancer. The habit of smoking cigarettes is the maladaptive response. Factors that increase the likelihood that a person will continue to smoke are intrinsic rewards such as bodily satisfaction and extrinsic rewards such as peer approval. Factors that decrease the likelihood that a person will continue to smoke are the beliefs that one is vulnerable to lung cancer and that lung cancer is severe. The adaptive response in this case is to stop smoking. Factors that increase the likelihood that one will stop smoking are the beliefs that smoking cessation is an effective way to avoid lung cancer and that one is capable of stopping to smoke. Factors that decrease the probability of smoking cessation are response costs, such as overcoming withdrawal symptoms or the financial expense of a treatment program.

Before evaluating the empirical support for the revised version of protection motivation theory a note about the role of fear in this paradigm should be made. As can be seen in Figure 2, fear-arousal does not have a

direct relationship to protection motivation or to any outcome measure of attitude or behaviour change. The relationship is indirect, as fear-arousal affects the appraisal of severity of the health-threat, which in turn affects protection motivation and the intention to adopt the recommended coping response (See Rogers & Mewborn, 1976).

Further evidence that fear may not directly affect ones' intentions or behaviour in response to health-threatening information can be found in studies that have examined subjects' physiological reactions to persuasive appeals. Both Rogers (1983) and Beck and Frankel (1981) have reviewed persuasive appeal studies employing measures of physiological arousal and conclude that there is no evidence that physiological arousal directly mediates acceptance of the recommended coping response advocated in persuasive appeals.

1.3.5. Empirical Support for the Revised Theory of Protection Motivation

In general, the major propositions of the revised version of protection motivation theory have been empirically supported. Studies have found that the probability of occurrence variable, and the response efficacy variable, usually produce a main effect on intentions to adopt the recommended behaviour. Examples of the recommended behaviour include quitting smoking

(Maddux & Rogers, 1983), increasing interpersonal assertiveness (Maddux, Sherer, & Rogers, 1982), performing breast self-examinations (Rippetoe & Rogers, 1987), and beginning an exercise program (Stanley & Maddux, 1986; Wurtele & Maddux, 1987). The self efficacy variable has been found to produce a main effect on intentions in four studies (Maddux & Rogers, 1983; Rippetoe & Rogers, 1987; Stanley & Maddux, 1986; Wurtele & Maddux, 1987) but has failed to influence intentions in two studies (Maddux et al., 1982; Maddux, Norton, & Stoltenberg, 1986).

The effect of the severity variable has been less consistent, as recent studies (Maddux and Rogers, 1983; Wurtele & Maddux, 1987) have failed to find a relationship between the portrayed severity of the health-threat and intentions to adopt the recommended coping behaviour. In some studies (e.g., Rippetoe & Rogers, 1987) the severity and vulnerability variables have been combined to produce essays that vary in the amount of health threatening information.

In sum, higher levels of response efficacy, vulnerability, and self-efficacy are usually associated with greater intentions to perform the recommended coping response. The independent effect of the severity variable is less clear. When severity is combined with

vulnerability, however, intentions to perform the recommended response are increased.

The pattern of interactions between the four key components of protection motivation theory varies somewhat across studies. One pattern, however, emerges consistently: a three-way interaction between vulnerability, self-efficacy, and response efficacy (Campis, Prentice-Dunn, & Lyman, 1989; Maddux & Rogers, 1983; Wurtele & Maddux, 1987). This interaction has been interpreted as a precautionary strategy (Maddux & Rogers, 1983). That is, even though individuals had low expectations of being exposed to the health-threat (low vulnerability) they intended to adopt the coping response if they thought the coping response to be effective and if they believed they could easily perform the response. It is as if subjects thought, "Why take a chance? I know that I am not at much risk but I can easily perform this behaviour which I know will effectively protect me from the health-threat".

1.4. Empirical Basis for the Present Investigation

Shelton and Rogers (1981) applied the principles of protection motivation theory to the problem of soliciting help for a pro-environmental group (Greenpeace) devoted to protecting whales from slaughter. These authors experimentally manipulated three variables: (a) noxiousness (e.g., scenes of whales being hunted, killed,

and processed vs. scenes of a whaling expedition preparing to set sail), (b) response efficacy (in the high efficacy condition Greenpeace members were shown successfully saving whales from whalers, whereas, in the low efficacy condition, neutral scenes of Greenpeace vessels at sea were shown), and (c) empathy (prior to viewing the film subjects were either given no empathy instructions or were given detailed instructions about how to empathize with the whales). Results showed that all three variables had a main effect on intentions to help, such that higher levels of the variable produced a stronger desire to help.

This study differs from other protection motivation studies in three important ways. First, the threat depicted in the communication did not personally threaten the subjects who participated in the study. It is possible, therefore, that a different pattern of results would have been obtained had there been more similarity between the audience and the depicted individuals. The results obtained by Shelton and Rogers (1981) contrast with those obtained by Rogers and Mewborn (1976).

In the latter study college students were exposed to a communication about venereal disease. It was found that increments in the noxiousness of the communication produced greater intentions to obtain penicillin only if subjects believed penicillin to be a highly effective

treatment; increments in noxiousness did not affect intentions if the response was considered to be ineffective. Shelton and Rogers (1981) speculated that response efficacy and noxiousness did not interact in their study as they did in Rogers and Mewborn (1976) because the subjects in their study were not personally threatened. Shelton and Rogers (1981) interpret this pattern of results in terms of Janis and Feshbach's (1953) defensive avoidance hypothesis, namely, "that when fear is strongly aroused but is not fully relieved by the reassurances contained in a mass communication, the audience will become motivated to ignore or minimize the importance of the threat" (p. 90). Shelton and Rogers (1981) concluded that defensive reactions are aroused only if the threat is to oneself; if the threat is to another (e.g., whales), defensive reactions do not occur.

A second important difference between Shelton and Rogers (1981) and other protection motivation studies is the manner in which noxiousness was manipulated. In the high-noxiousness condition subjects were shown gory scenes of whales being slaughtered and processed as well as segments of a whaling expedition and a coastal whaling operation. In the low noxiousness condition, the gory scenes were omitted. It is probable that these two experimental conditions differed on more than just the dimension of severity. The vulnerability (a major

component of protection motivation theory) of the whales was also probably manipulated. That is, in the high noxiousness condition the whales were shown being slaughtered, thus they were definitely exposed to the threat. In the low noxiousness condition the whales were not shown being killed, thus the threat was less immediate and the whales were less at risk. If asked, subjects viewing the film may have rated the whales in the high noxiousness condition to be at greater risk than whales in the low noxiousness condition.

The third important difference between Shelton and Rogers (1981) and other protection motivation studies is the way in which response efficacy was conceptualized. Shelton and Rogers'(1981) conceptualization of response efficacy referred to the efficacy of Greenpeace in protecting whales. In other studies, response efficacy refers to a response, described as either effective or ineffective, the individual can perform to avert the health threat. No equivalent measure was used in Shelton and Rogers (1981). There was no response that whales could perform to avert the threat. This difference must be considered when comparing Shelton and Rogers (1981) to other studies.

1.4.1. Expanding the Criteria for Evaluating a Health-Charity Appeal's Effectiveness

Recently, concern has been expressed about the potential negative effects of information presented in some health communications. Health-charity officials must weigh the monetary benefits of certain types of fund-raising appeals against the potential negative psychosocial effects of the appeal. Evans (1988) suggested that some health promotion campaigns may inadvertently communicate misleading or inaccurate information because of (a) inadequate utilization or awareness of the existing biomedical research evidence, or (b) inadequate empirical validation of the health practices advocated in certain campaigns. Health-charity appeals may similarly have unintended negative effects on message recipients' health-related attitudes and behaviour.

Fund raising campaigns, including health charity appeals, are typically evaluated in terms of the amount of money raised relative to the cost of staging and administering the campaign. The effect of the information communicated in these appeals on viewers' health-related attitudes and behaviour has not been investigated. Many appeals appear to be designed under the assumption that donations are best stimulated by arousing sympathy or guilt in viewers. Phillips (1969),

in his book on fund-raising strategies, has a chapter entitled "Activating the guilt complex". Health-charity appeals frequently feature individuals afflicted with a particular disease and portray them as needy and helpless victims.

This portrayal of suffering and helplessness raises important questions to both the health-researcher and to the professional fund-raiser. The fund-raiser's main concern is the net amount of money raised. There is little empirical evidence that portrayals of suffering and helplessness lead to increased donations when compared to other types of appeals. In addition, the relative effects of helplessness and suffering on donations has not been clarified. Shelton and Rogers (1981) provided initial evidence that greater amounts of noxiousness lead to greater contributions to a pro environmental group.

Pancer et al. (1979a; 1979b), however, have shown that portrayals of suffering are less efficacious in enlisting donations than are neutral or positive portrayals. The findings from these and other studies are difficult to compare directly because the stimuli used in each study varied along several dimension, some of which were not quantified. As an initial step in determining the effective elements of a fund-raising appeal, the present study is an attempt to clarify whether or not portrayals

of great suffering and helplessness are more effective in enlisting donations than are portrayals of lesser amounts of suffering and helplessness.

Health researchers, on the other hand, are concerned more with the psychosocial effects of media appeals. A plausible effect of extreme portrayals of suffering and helplessness is that individuals' perception of their ability to cope with their own pain will be adversely affected. Social modelling research has shown repeatedly that pain tolerance, nonverbal pain expression, pain sensation, and pain report are influenced by exposure to modelled behaviour and information (Craig, 1986). Health-charity appeals may have a similar effect on receivers' pain coping efforts. That is, receivers may modify their pain coping efforts to match the model's coping efforts. After attending to a fund-raising appeal, sponsored by a credible organization, that describes a pain problem as devastating and uncontrollable, receivers may come to believe that their own pain problem is devastating and uncontrollable.

Health charities endeavour to raise funds in order to support projects and activities believed to be of immediate or future benefit to the individuals they represent. Most major health charities use sophisticated strategies and professional fund-raisers to assist in raising money. The primary goal of most health

charities, however, is to promote the welfare of individuals who have a particular health problem. Fund-raising is an important activity only in that the monies raised are used to sponsor programs and projects that are believed to promote the welfare of those individuals with the given health problem. Potentially, there is a conflict if an effective fund-raising strategy is shown to detract from the welfare of those with the targeted health problem.

Health charities should, perhaps, weigh the potential benefit of their campaign appeals (e.g., net amount of money raised) against the potential harmfulness of these same appeals. Two studies, therefore, will be conducted simultaneously: one to assess the relative fund-raising efficacy of different appeals and one to assess the effects of these same appeals on the coping abilities of people afflicted with chronic pain.

Two distinct sets of evaluation information can then be used to decide which appeal to utilize. Previous evaluations have focused almost exclusively on the effects of the campaign on contributions and have not considered psychosocial aspects. This study is an attempt to show how the fund-raising evaluation can be combined with the psychosocial evaluation in order to select a campaign that is consistent with the mandate of

most health charities, which is to promote the welfare of its target population.

Following completion of the studies, several different patterns of results are possible. Fishman (1975) has provided a useful grid that may be used to assist in interpreting the results from the investigation. Intended as a means of comparing the cost-effectiveness of two programs, the grid can be adopted to assist in conducting a cost-benefit analysis of the appeals used in the present study. The grid is shown in Table 1.4.1.1.

Table 1.4.1.1.

Cost-benefit decision matrix

		Harmfulness of appeal A (Study 2) relative to appeal B		
		appeal A is less harmful	appeal A is as harmful	appeal A is more harmful
Effectiveness of appeal A relative to B Study #1)	appeal A is less effective	?	**Choose B**	**Choose B**
	appeal A is as effective	**Choose A**	**No Difference**	**Choose B**
	appeal A is more effective	**Choose A**	**Choose A**	?

A decision about which campaign to use could be informed by both fund-raising efficacy and information about the appeal's effect on the target population's ability to cope. Results from these studies will show the relative fund-raising effectiveness and the relative effects on coping of four different appeals. The decision as to which appeal to implement in a campaign will be informed by both sources of information. The decision makers, however, will consider a host of additional information and may conclude that an appeal that is extremely effective and causes only minimal harm is worth implementing. They may decide that the harm is easily corrected or that it is only a temporary response to the appeal. Hopefully, future empirical investigation will clarify some of these concerns.

Decision makers must weigh the monetary benefits of a certain type of appeal against the potential detrimental psychosocial effects. Additional factors, not assessed in these studies, will help to determine the final decision. The results of these studies, however, will help decision makers to select appeals that are effective fund-raisers and that do not detract from the welfare of people the charity serves.

1.4.2. Study 1

The image of whales being slaughtered and processed is a powerful and complex image. The complexity of the

image can be reduced somewhat if some of the components of the image are specified and examined individually. Protection motivation theory has identified relevant dimensions that can be used to analyze the complex images used in media communications. Results from the Shelton and Rogers (1981) study tell us only that the high noxiousness condition was appraised as more severe than the low noxiousness condition. Although not assessed in the study, it is possible that the high noxiousness condition led subjects to perceive the whales to be more vulnerable to whalers and more helpless (nothing the whales could do could avert the danger) than did the low noxiousness condition. This portrayal, then, of high severity, high vulnerability, and low response efficacy could be especially powerful in eliciting help from others. To date, we have evidence only that high severity leads to increases in intentions to help others (Shelton & Rogers, 1981). Thus, it is hypothesized that high threat/low response efficacy will elicit the most help.

The present study will be, in part, a replication of Shelton and Rogers (1981). One purpose of this study is to identify the particular characteristics of a fund-raising appeal that elicit the most help from an audience. The studies will be similar in that a request for help will be made and that the stimulus materials

will vary along key dimensions of protection motivation theory. The variables that made up the noxiousness manipulation in Shelton and Rogers (1981), however, will be specified more precisely. Vulnerability and severity will be manipulated together (i.e., threat) to produce a potentially stronger effect. Response efficacy will refer to the effectiveness of available treatments for chronic pain. Shelton and Rogers (1981) operationalized response-efficacy to refer to the effectiveness of Greenpeace in interrupting a whaling expedition, whereas in the present study response efficacy will refer to effectiveness of interventions for chronic pain. Response efficacy will be used in the present study, then, as it has been used in the majority of protection motivation studies. Subjects will be presented with an essay describing a particular health problem and its effects on individuals who have the health problem. Subjects will be asked to respond to a request for assistance. Similar to Shelton and Rogers (1981) the threat presented in the communication will not personally threaten the subjects.

1.4.3. Study 2

A second study will be conducted to assess the effect of the threat on persons who have the portrayed health problem. The main dependent variable will not be subjects' willingness to contribute to the charity, but

rather, how they appraise the threat and cope with it. It is expected that the pattern(s) that elicits the most help from a general population of subjects will lead to the most maladaptive coping in the population of subjects who have the portrayed health problem.

Rogers (1983), referring to his schema of the revised version of protection motivation theory (see Figure 1.3.4.1.), stated that when either threat appraisal or coping appraisal is considered individually, an additive model takes effect. That is, coping appraisal would be the sum of response efficacy and self-efficacy minus any response costs. No interactions between these three variables are predicted. When threat appraisal and coping appraisal processes are combined, second-order interaction effects are expected. Rogers (1983) stated that:

> It is assumed that if response efficacy (or self-efficacy) is high, severity and/or vulnerability will have a simple main effect on intentions; if response efficacy (or self-efficacy) is low, increments in severity and/or vulnerability will either have no effect or a boomerang effect, actually reducing intentions to comply with the recommendations (p. 170).

This is the pattern of results predicted for the second study. It is expected that response efficacy will interact with severity and vulnerability (threat). The most maladaptive coping will result from the combination of low response efficacy and high severity and high vulnerability. Previous studies (Rogers and Mewborn, 1976; Kleinot and Rogers, 1982) have found this pattern: High perceived vulnerability and low response efficacy has led smokers to indicate that they intend to smoke more cigarettes after exposure to a message encouraging people to quit smoking (Rogers & Mewborn, 1976) and social drinkers to indicate that they intend to drink more alcohol after exposure to a message encouraging them to stop drinking (Kleinot & Rogers, 1982). Rogers (1983) interpreted these results to mean that the inability to protect oneself induces feelings of helplessness and loss of control. These feelings, he speculated, may motivate people to attempt to restore perceived control by engaging in the behaviour that will lead to the inescapable danger. Although the explanation is plausible, it is impossible to assess whether or not subjects felt helpless as no specific measures of helplessness or general measures of coping were included in these studies.

A later study by Rippetoe and Rogers (1987) sought to assess the effects of the key components of protection

motivation theory on subjects' adaptive and maladaptive coping abilities. Prior to this study, all protection motivation studies used intentions to comply with the recommended coping behaviour as the primary dependent variable. This study used selected scales from McCrae's (1984) Coping Questionnaire. Subjects were female undergraduates who did not regularly perform breast self-examinations. Subjects were exposed to information about breast cancer and encouraged to perform breast self-examinations. The information varied along the dimensions of (high vs. low) threat (severity plus vulnerability), response efficacy, and self-efficacy. The dependent measures were two adaptive strategies (intention to perform breast self-examinations and rational problem solving, such as planning to seek out additional information) and five maladaptive strategies (religious faith, avoidance, wishful thinking, fatalism, and hopelessness).

The two main predictions made by the authors were (a) that higher levels of each variable, compared to lower levels, should increase intentions to perform breast self-examinations and (b) that high-threat/high-response-efficacy/high-self-efficacy should produce higher scores on the two adaptive coping measures and lower scores on the five maladaptive coping measures than high-threat/low-response-efficacy/low-self-efficacy. Both

predictions were confirmed, although the latter prediction applied only to the adaptive coping modes and three of the five maladaptive coping modes.

Study 2 will be a partial replication of Rogers and Rippetoe (1987). One difference will be that the independent variables will be threat (severity and vulnerability) and response efficacy, instead of threat, response efficacy and self-efficacy. Self-efficacy will not be included in Study 2 because it was not used in Study 1. Response-efficacy, instead of self-efficacy, was used in Study 1 because the majority of studies that formed the empirical basis of Study 1 examined response-efficacy and not self-efficacy. In the present study, response efficacy will refer to the effectiveness of available treatments for chronic pain. A second important difference will be that the subjects used in Study 2 will actually have the health problem described and not simply be at risk.

It is expected that high-threat/low-response-efficacy will produce more maladaptive coping and less adaptive coping than will high threat/high response-efficacy, low threat/high response-efficacy and low threat/low response-efficacy. That is, subjects who view the high threat/low response-efficacy appeal will show signs of coping more poorly with their own pain in comparison to subjects viewing any of the other three appeals.

1.5. Coping with Pain

Coping, in the present study, refers to the thoughts and behaviours people use to manage their pain or their emotional reactions to the pain, so as to reduce emotional distress (Turner & Clancy, 1986). The cognitive events accompanying painful or stressful stimulation have been studied intensively during recent years (Chaves & Brown, 1987). One reason for this interest is the assumption that the magnitude of pain and stress experienced may be modified as a result of the cognitive events which accompany them (Chaves & Brown, 1987; Tan, 1982, Turner & Chapman, 1982). Turk et al. (1983) argued also that cognitive events play a substantial role in the development, experience, maintenance, and expression of pain and pain related problems. They added that behaviours and affect interact in a complex manner with cognitions to shape people's experience with pain.

For the purpose of the present investigation it is assumed (similar to Turk et al., 1983) that positive change in one system may promote positive change in the related systems. For example: A person with recurrent attacks of pain acquires the ability to reduce the intensity of previously uncontrollable pain by performing brief relaxation exercises. This reduction in pain intensity allows the person to carry on with his or her

job without substantial disruption. It is almost certain that the person will come to think of himself or herself as a more competent and capable worker and perhaps as a more competent and capable person. This self-perception of increased resourcefulness heightens a sense of control (Frank, 1974; Seligman, 1975) and self-competence (Bandura, 1977, 1980). These cognitive and affective changes, coupled with the patient's newly established behavioural skills, increase the probability he or she will respond with greater self-efficacy to problem situations in the future (adapted from Turk et al., 1983).

A similar assumption is made in terms of negative events. For example, if a person fails at a task it is likely that he or she would begin to feel discouraged and to view himself or herself as less capable. Similarly, the belief that one is ineffective and incompetent will likely negatively influence how one feels about oneself and how one responds to the environment (Beck, 1972; Beck, Rush, Shaw & Emory, 1979).

The use of the word coping is at times confusing. Coping implies a successful outcome (Rosenstiel & Keefe, 1983). Numerous investigations, however, have identified thoughts and behaviours people typically use when in pain that actually exacerbate pain or emotional distress. Rosenstiel and Keefe (1983) have suggested using terms,

such as self-control strategies, that can be defined independent of outcome.

For the purpose of the present investigation the term coping will be retained and used to characterize the thoughts and behaviours people use in response to pain or to circumstances related to living with pain (e.g., frustration caused by being unable to prepare a meal because of arthritis pain), whether or not these thoughts and behaviours effectively reduce pain or emotional distress. The thoughts and behaviours themselves may be either habitual and automatic responses to pain (e.g., rubbing a throbbing joint) or to the circumstances surrounding living with a painful condition or they may be purposeful attempts (e.g., performing a relaxation exercise) to reduce pain or emotional distress.

The selection of which coping strategies to assess and how to measure them is a difficult one. There are numerous labels applied to a wide range of coping strategies and numerous scales to measure these dimensions. For the purpose of the present investigation, scales are needed (a) that have been shown to be internally consistent, and reliable in previous studies, (b) that have been shown to validly assess which responses to pain are adaptive and which are maladaptive, and (c) that have been validated on a sample of chronic low back pain patients.

Rosenstiel and Keefe (1983) developed the Coping Strategies Questionnaire (CSQ) to measure the frequency that patients report using cognitive and behavioural coping strategies and the degree to which these strategies are perceived as effective. In their initial study, seven scales reflecting pain coping activity and two pain control effectiveness ratings were assessed. The seven scales, each comprised of six items, were: (a) Diverting attention (thinking of things that serve to distract one's attention from the pain); (b) Reinterpreting pain sensations (imagining something that, if real, would be inconsistent with the experience of pain); (c) Coping self-statements (telling oneself that one can cope with the pain no matter how bad it gets); (d) Ignoring pain sensations (denying that the pain hurts or affects one in any way); (e) Praying or hoping (telling oneself to hope and pray that the pain will get better one day); (f) Catastrophizing (negative self-statements and an expectation that the worst possible outcome will occur); (g) Increasing activity level (engaging in behaviours which divert one's attention away from the pain). The pain control ratings assessed individuals' perception of (a) their ability to decrease their pain, and (b) their belief in how much control they had over their pain.

In the original validation study, chronic low back pain patients who were referred for treatment completed the CSQ and a number of other measures assessing adjustment to chronic pain (depression, functional disability, time spent lying down, state anxiety, and pain level). Responses to the CSQ were factor analyzed and three factors were interpreted. The first factor was labelled Cognitive coping and suppression and was comprised of the scales B, C, and D, described above. The second factor was labelled Helplessness and was comprised of scale F and the inverse of scale G and the two effectiveness ratings (described above. The third factor was labelled Diverting attention and praying and was comprised of scales A and E (described above).

The relationship between the three factors and the adjustment variables were assessed by means of regression analyses. The factor scores were entered after demographic variables and patient history variables (number of prior surgeries, disability status, and the like) in order to assess their relationship with adjustment after partialling out the influence of potentially confounding variables. Results indicated that patients scoring high on Factor I (Cognitive coping and suppression) were much more likely to report having functional impairment than patients scoring low on this factor. Patients high on Factor II (Helplessness) were

significantly more depressed and anxious than patients scoring low on this factor. Patients who scored high on Factor III (Diverting attention and praying) had higher levels of pain and were more impaired functionally than subjects low on this factor.

Results from this study indicate (a) that the CSQ was internally reliable (co-efficient alpha values ranged from .70 to .85 for the multi-item scales), and (b) that the three CSQ factors were predictive of behavioural and emotional adjustment to chronic low back pain above and beyond what may be predicted from knowledge of patient history variables and patients' tendency to somaticize.

Turner and Clancy (1986) sought to replicate Rosenstiel and Keefe's (1983) findings and to extend them. Turner and Clancy (1986) attempted (a) to replicate the factor structure of the CSQ in a sample of chronic low back pain patients, (b) to replicate the relationship between CSQ factors and measures of physical and psychological functioning, (c) to assess whether treatment programs, in comparison to waiting list controls, could modify utilization of coping strategies as assessed by the CSQ, and (d) to examine whether CSQ changes were associated with changes in pain and disability.

Results indicated that the factor structure of the CSQ was generally replicated, with some subscales loading on

different factors. The interpretation of the 3 factors was similar across studies. The relationship of the three factors to measures of psychological and physical functioning were also generally replicated, supporting Rosenstiel and Keefe's findings. For example, higher scores on the helplessness factor were positively and significantly related to greater depression, and physical and psychological impairment.

It was shown also that, in general, patients' use of different strategies is modifiable. The patients in the treatment programs, compared to the waiting list controls, altered the frequency with which they engaged in different strategies. These changes were then shown to be related to measures of pain and disability. For example, decreases in catastrophizing, as a result of treatment, were associated with decreases in pain intensity ratings, as well as decreased overall impairment, and psychological impairment.

Spinhoven, Kuile, Linsenn, & Gazendam (1989) conducted a similar replication in a sample of Dutch chronic low back pain patients and reported similar results: A three factor structure resembling previously reported solutions and significant relationships between the CSQ factors and measures of psychological and physical functioning. In general, high scores on the helplessness factor were

related to greater depression, anxiety, and functional impairment.

Numerous other studies (e.g., Keefe et al., 1987a; 1987b; Keefe, Brown, Wallston, & Caldwell, 1987; Keefe, Crisson, Urban, & Williams, 1990; Keefe and Dolan, 1986; Reesor & Craig, 1988) have found that the three CSQ factors are significantly associated with measures of psychological and physical impairment, even after partialling out patient history and demographic variables.

In addition to Turner and Clancy (1986), other studies have provided some evidence that coping strategies, such as those assessed by the CSQ, are modifiable as a result of intervention. For example, Vallis (1984) found that the effectiveness of a stress inoculation training program for coping with cold-pressor pain was probably mediated by a decrease in subjects' tendency to catastrophize and an increase in their ability to relax.

The majority of studies examining the relationship between CSQ factors and adjustment employed correlational designs. These designs, while providing valuable and important information, limit the conclusions that can be drawn about the effect that changes in coping strategies can have on adjustment. Some studies (e.g., Turner and Clancy, 1986; Vallis, 1984) that used an experimental design lend support to the notion that the selection and

frequent use of different coping strategies can differentially affect coping. Longitudinal designs assessing coping strategies and adjustment to pain are needed to validate the results from correlational studies, namely, that changes in the use of coping strategies will affect psychological and physical adjustment. To that end, some longitudinal studies have been designed. For example, Gross (1986) found that CSQ scores assessed prior to surgery in a group of back pain patients significantly predicted post surgical adjustment.

In conclusion, coping strategies as assessed by the CSQ appear to be related to measures of depression, anxiety, and physical impairment, and psychological adjustment. Changes in some of the coping strategies, as assessed by the CSQ, appear to be possible as a result of intervention. Moreover, these changes appear to be related to changes in physical and psychological adjustment in relation to pain.

It is assumed that the experimental manipulation will alter subjects' responses to the CSQ. This change in the reporting of coping strategies and in perceived control over pain is expected to be significantly correlated with cognitive, behavioural, and affective changes in how subjects respond to their chronic back pain. Substantial evidence (reviewed above) has established a link between

responses to the CSQ and measures of psychological and physical adjustment to chronic low back pain.

The classification of coping strategies as either adaptive or maladaptive is difficult. For purposes of the present study, operational definitions of the adaptiveness or maladaptiveness of coping strategies as assessed by the CSQ are necessary. The CSQ strategies were selected on the basis of previous research, largely laboratory produced acute pain (see review by Turk et al., 1983) with student volunteers, and it was concluded on the basis of these experimental studies that greater use of any of the strategies, except catastrophizing, would lead to improved coping. It was found that greater catastrophizing would lead to poorer coping. Some subsequent studies with the CSQ, however, have unexpectedly shown an association between greater use of most of the coping strategies and increased reports of pain or disability (e.g., Spinhoven et al., 1989). These studies, while using patient samples, are correlational and do not illuminate whether or not greater reliance on particular coping strategies leads to increased pain or disability or whether persons with greater pain and disability come to rely on specific coping strategies.

Studies with experimental designs and that have employed patients as participants are needed to determine whether or not specific strategies are effective for

coping with pain. These studies are fewer in number but their results generally support the laboratory studies. That is, increased use of the coping strategies that comprise the CSQ, except catastrophizing, lead to improved ability to cope with pain. For example, Turner and Clancy (1986) found that pain patients following psychological treatment programs for pain increased their use of ignoring pain, reinterpreting painful sensations, attention diversion, praying and hoping, and decreased their use of catastrophizing. Parker, Frank, Beck, Smarr, Buescher, Phillips, Smith, Andersen, and Walker (1988) have demonstrated that patients' scores on the CSQ scales of perceived control over pain and perceived ability to decrease pain have increased following Cognitive-Behaviour Therapy for pain. In a longitudinal study, Keefe, Brown, Wallston, and Caldwell (1989) have shown that pain patients' who had high scores on the catastrophizing scale had poorer outcomes, in terms of pain intensity, disability, and depression, six months later. Thus, for purposes of the present study, adaptive coping will be operationalized as higher scores on all of the CSQ scales, except catastrophizing, whereas maladaptive coping will be indicated by lower scores on all the CSQ scales, except catastrophizing where higher scores will indicate maladaptive coping.

Chronic low back pain (CLBP) will be used as the health condition for the present investigation. The choice of CLBP was made for the following reasons. First, as shown immediately above, there exist well validated measures of coping for use with CLBP patients. Second, appeals describing CLBP will probably not generate as much fear or anxiety as other more life threatening conditions. The choice of CLBP will temper the potential negative effects of exposure to the appeals (see Section 1.6 below). Third, the experience and expression of pain is influenced by exposure to modelled behaviour and information (e.g., Craig, 1986). The presentation of information about the experience of back pain and about the effectiveness of coping techniques should, therefore, modify the CLBP patient's experience of their own pain and their perception of its controllability. Fourth, CLBP is a highly prevalent and disabling condition. Recent estimates suggest that as many as 600,000 Canadians are bed ridden as a result of low back pain on any single day (Fine, 1985). The results from this investigation, therefore, are potentially relevant to a large section of the population. Fifth, back pain problems are responsive to self-control strategies (e.g, Phillips, 1988; Turk et al., 1983) and it is therefore important to investigate sources of information that may

either enhance or inhibit the use of effective coping strategies.

1.6. Precautions to Minimize Harm

If the hypotheses for Study 2 are correct, then participants in the high threat/low response efficacy condition would have been negatively affected as a result of their participation in this study. To minimize the effect of this potential harm several measures will be employed. First, a health problem will be selected that is not a life threatening condition and that is not likely to induce a great amount of fear in subjects. Chronic low back pain, while having enormous psychosocial and economic effects, is probably not as fear-arousing as conditions such as cancer, heart disease or stroke and is therefore better suited to the present investigation. Second, prior to participating in this study, participants will be informed that certain versions of the brochure may make them upset and cause them to feel less capable of managing their pain (the consent form appears in Appendix A). Participants will be informed that they can withdraw from the study at any time and for any reason. Third, following completion of the study, the debriefing of participants will include exposure to the high reassurance essay which describes many effective techniques for dealing with back pain (see Appendix B for an outline of the debriefing procedure). Fourth,

participants will be offered referral information about back pain associations and books about coping with pain. Fifth, only participants who are awaiting an educational program on back care will be recruited for this study. Shortly after completing this study participants will begin the educational program which will offer instruction in posture, exercise, ergonomics, and other aspects of back care and anatomy.

1.7. Summary

Two studies will be conducted. The first will attempt to identify which combination of protection motivation theory components elicits the most help in response to a request to donate to a health-charity. It is predicted that a portrayal of someone who is in distress and who cannot remedy his or her own situation will elicit the most help. In the second study, the effect of the appeals used in the first on subjects' coping ability will be assessed. Subjects in the second study will have the health-problem that is described in the appeal. It is expected that the combination that is most useful in eliciting help in the first study will have the most deleterious effect on subjects in the second study. Chronic low back pain will be the health condition utilized in the present investigation.

1.8. Summary of Major Hypotheses

1.8.1. Study 1

1) Threat and response efficacy will each have a main effect on intentions to help. High threat will elicit more help than will low threat. Low response-efficacy will elicit more help than high response-efficacy.

2) An interaction between threat and response-efficacy is predicted. High threat/low response-efficacy will elicit more help than the other three conditions.

1.8.2. Study 2

1) An interaction between threat and response efficacy is predicted. Exposure to the high threat/low response efficacy appeal will lead to more maladaptive coping than will exposure to any of the other three appeals.

2. Study 1

2.1. Method

2.1.1. Subjects

Ninety-two members of seven service clubs from Nova Scotia voluntarily participated in this study. Participants were adults and 87 (94.6%) were male. A total of 143 service club members were invited to participate, thus the participation rate was 64.3%. Participating clubs were Halifax Rotary, Truro Rotary, Dartmouth East Rotary, Truro Kiwanis, Truro Kinsmen, Armdale Lions, and Dartmouth Lions. Of the five women who participated, two were from the same club and the other three were from three different clubs. An attempt was made to recruit more women. The majority of service clubs members are male, but two female only clubs were identified and their presidents were asked for permission to present to their members. Both presidents denied access to their clubs.

2.1.2. Procedure

Presidents of service clubs were contacted and asked for permission to present at a regular club meeting in order to conduct an evaluation study of fund-raising materials for a health charity. The main hypotheses of the study were explained to club Presidents and they were informed that the study was part of a Ph. D. dissertation

and that the charity described in the materials was fictitious.

Presidents were informed that the study was supported by the International Pain Foundation. To increase the likelihood that club presidents would grant permission to address their clubs, it was proposed that pledges made by individual club members would not be collected and that a presentation about fund-raising research could be made to club members following the study. Fifteen club Presidents were contacted, and seven agreed to host the presentation. Presidents were asked not to disclose that the pledges would not be collected and that the health charity described in the materials was fictitious.

During a regular club meeting, members were invited to participate in an initial evaluation of fund-raising materials for a health-charity, the Chronic Low Back Pain Foundation of Canada (CLBPFC). Members were typically seated in groups of six to eight, around luncheon tables. Presentations to the club were made by the author, who was described as a researcher and a psychologist who was working in conjunction with the CLBPFC to assist in evaluating their promotional materials.

Participants were informed that they would be required to read a brochure about back pain, decide whether or not to pledge a donation to the charity, and

fill out questionnaires pertaining to the brochures. To decrease the possibility that participants would be influenced by their neighbours' responses, it was explained to participants that different versions of the brochures were being compared and participants were requested not to discuss the brochures with their neighbours, who may or may not have received an identical brochure. To increase participants' attention to the brochures, they were asked to underline what they thought was the key sentence on each page of the brochure.

It was emphasized to participants that participation was voluntary. All club members first received an instruction sheet (see Appendix A) outlining the steps of the study and a consent form (see Appendix B). Club members who choose not to participate either stayed seated at their table and read other material, talked quietly, or else removed themselves from the room for the duration of the study. Club members who signed the consent form next received the experimental materials which consisted of a brochure, the Evaluation Questionnaire (see Section 2.1.4.2. below), a pledge form (see Appendix C), and the Information Questionnaire (see Appendix D). Brochures were randomly distributed to participants. Participants took between 10 and 20 minutes to complete the study. Completed materials were placed in sealed envelopes and collected.

Participants were debriefed after the materials were collected. Participants were informed that the charity described in the brochures was fictitious and that the pledges would not be collected. Five participants who had placed cash donations in the envelope were given the option of having their money returned to them, having it donated to their club's general fund, or having it forwarded to a charity devoted to pain; all participants choose the latter. The main hypotheses were described and a description of the purpose of the study was given and participants were given the opportunity to ask questions. Details about how the versions of the brochures differed and examples about how pain was described in each was provided. In five of the seven clubs, a presentation and discussion about fund-raising research and strategies followed.

2.1.3. Stimulus materials

2.1.3.1. Persuasive appeals.

Four persuasive appeals (see Appendix E) were written and designed to be similar to each other with the exception of the manipulations of the independent variables. The appeals differed along two dimensions central to protection motivation theory, threat and response efficacy. Each appeal consisted of either a high or low presentation of the threat variable and a

high or low presentation of the response efficacy variable. Thus, the four appeals were:

1. High threat/High response efficacy (Back pain is very painful and debilitating but can be easily treated)
2. High threat/low response efficacy (Back pain is very painful and debilitating and is difficult to treat)
3. Low threat/High response efficacy (Back pain is an annoying type of pain and not debilitating that can be easily treated)
4. Low threat/low response efficacy (Back pain is an annoying type of pain and not debilitating but is difficult to treat)

The threat variable was formed by combining pain severity and vulnerability to disability. Thus, high pain severity and high vulnerability to disability formed the high threat appeal and the low pain severity and low vulnerability to disability formed the low threat variable.

The appeals were presented to participants as a six panelled brochure that was formed by double folding an 8.5 X 14 in. green sheet of paper that contained text only on both sides. The structure of the brochures, text length, and number of arguments were similar across

versions of the brochure. Extraneous differences between versions of the brochure were minimized by attempting to keep the phrasing and form of the brochures similar. For example, the high threat brochures contained the sentence, "back pain is often described as an excruciating type of pain", whereas the low threat brochures contained the sentence, "back pain is often described as a dull type of pain". Moreover, an attempt was made to place related information on the same page and in the same position across the brochures.

The four appeals were pre-tested to ascertain whether or not they differed along the expected dimensions. Twelve adult raters who did not have chronic pain and who were not involved in other aspects of these studies voluntarily read the four appeals and completed rating scales. Each subject read all four appeals. The appeals were presented to participants in counterbalanced order, such that they were counterbalanced for the position (e.g., first, second, third) and for the context (e.g., third followed first, second, and fourth an equal number of times) in which they appeared to participants.

Participants read one appeal, then completed a rating scale containing the following three questions: (a) According to the description provided in the material you just read, how painful is back pain? (responses were recorded on 11-point Likert scales ranging from 0, not at

all painful to 10, extremely painful); (b) according to the description provided in the material you just read, how likely is it that back pain will lead to permanent disability? (responses were recorded on 11-point Likert scales ranging from 0, not at all likely to 10, extremely likely); (c) according to the description in the material you just read, how effective are current treatments for back pain? (responses were recorded on 11-point Likert scales ranging from 0, not at all effective to 10, extremely effective). Participants then read the next appeal and completed the rating scale again; this procedure was repeated until all four appeals were read and rated.

Results indicated that the variables differed as expected. Ratings for each level (high vs. low) of each variable (pain severity, vulnerability, and response efficacy) were combined and compared to the other level of the same variable, thus 24 observations per level were obtained. The high pain severity appeals (Mean = 9.4, SD = 0.7) were rated as presenting back pain as significantly more painful (t(df = 23) = 11.9, p < .0001, two-tailed) than were the low pain severity appeals (Mean = 4.2, SD = 1.6). The high vulnerability to disability appeals (Mean = 7.3, SD = 2.3) were rated as presenting the risk of vulnerability to disability as significantly more likely (t(df = 23) = 9.2, p < .0001, two-tailed)

than were the low vulnerability to disability appeals (Mean = 2.3, SD = 1.3). The high response efficacy appeals (Mean = 8.3, SD = 0.9) were rated as describing treatment for back pain as significantly more effective (t(df = 23) = 14.0, p < .0001, two-tailed) than were the low response efficacy appeals (Mean = 2.4, SD = 1.5).

2.1.4. Dependent Variables

2.1.4.1. Manipulation checks.

To ensure that the manipulation of the independent variables had the intended effect, participants' perception of severity, vulnerability, and response efficacy were measured. This procedure is typical in PMT studies, and others, when it is necessary to assess whether or not the independent variables were successfully manipulated. For example, it is expected that participants who read the high Response Efficacy brochures will rate treatment for back pain as more efficacious than participants who read the low Response Efficacy brochures.

Three items were used to assess each variable and responses were made on 7-point Likert scales, ranging from 0 (Strongly Disagree) to 6 (Strongly Agree). Perceptions of pain severity were assessed by the following: 1. The pain caused by back pain is often unbearable. 2. Back pain is often a dull, mild type of pain (responses to this item were reversed when scored).

3. Back pain is a severe, excruciating pain. Perceptions of vulnerability to disability were assessed by the following: 1. Many people become disabled because of their back pain. 2. Back pain can interfere with people's lives to the point where they have to give up their jobs. 3. It is rare for someone with back pain to become disabled because of the pain (responses to this item were reversed when scored). Responses to the six items of the threat scale were summed to produce a scale score with a range of 0 to 36. Perceptions of Response Efficacy were assessed by the following: 1. Back pain is an easy condition to treat. 2. There are many treatments that have been proven to be successful in the treatment of back pain. 3. Back pain remains a very difficult condition to treat effectively (responses to this item were reversed when scored). Responses to the three response-efficacy items were summed to produce a scale score with a range of 0 to 18.

As an estimate of internal consistency, co-efficient alpha was calculated for the Response Efficacy variable. A co-efficient of .74 was obtained. Responses to the Severity and Vulnerability variables were combined to form the Threat variable. A co-efficient alpha of .69 was obtained for the six-item Threat scale. The nine items comprising the manipulation checks were presented to participants as questions 1-9 of the Information

Questionnaire (see Appendix D) and the results of the manipulation checks are shown in section 2.2.1. below.

2.1.4.2. Intentions to help.

Participants' willingness to help the CLBPFC was assessed by asking participants to respond to the following items: 1. I would be willing to donate at least $10.00 to support the work of the Chronic Low Back Pain Foundation of Canada. 2. In the future, I do not intend to respond to appeals soliciting funds for back pain research. 3. I would not be willing to offer my time to help the Chronic Low Back Pain Foundation of Canada with a mailing campaign. 4. If asked for assistance, I would do what I could to help out this organization. 5. I think that the Chronic Low Back Pain Foundation is an organization worthy of support from the community. These five items were labelled "Evaluation Questionnaire" when presented to participants. The items are similar to the items used by Shelton and Rogers (1981) to form the main dependent variable in their study of the effects of persuasive appeals on intentions to help a charity.

Participants' responses were recorded on 7-point Likert scales ranging from 0 (Strongly Disagree) to 6 (Strongly Agree). First, responses to items #2 and #3 were reversed when scored, then the responses to the five item scale were summed to produce a scale score with a range of 0 to 30. Co-efficient alpha was calculated as

an estimate of internal consistency for this five item scale and a co-efficient of .70 was obtained.

2.1.4.3. Pledge form.

The pledge form (see Appendix C) was a solicitation for participants to pledge a monetary donation to the CLBPFC. Participants were asked to indicate whether or not they wished to pledge a cash donation to the CLBPFC, to specify an amount, and to include their name and address so that the charity could contact them to collect the pledge at a later date.

2.1.4.4. Information questionnaire.

Participants were asked to rate (7-point Likert scales, ranging from 0, strongly disagree to 6, strongly agree) their impressions of the brochure on a number of dimensions (e.g., interesting-uninteresting, informative-uninformative). These questions were included to be congruent with participants' beliefs that they were evaluating the content of the brochures. Participants' responses to these questions (questions 10-14 in Appendix D) were not analyzed. Questions 1-9 were used for the manipulation checks, and are described above in Section 2.1.4.1.

2.2. Results

2.2.1. Manipulation Checks

2.2.1.1. Response Efficacy manipulation check.

The Response Efficacy manipulation was tested with a 2 (high vs. low Response Efficacy) by 2 (high vs. low Threat) between subjects factorial ANOVA. The Response Efficacy manipulation was successful. Participants who read versions of the brochure that described treatment as effective rated treatment as being significantly more effective (Mean = 9.2, SD = 3.8) than did participants who read versions of the brochure that described treatment as ineffective (Mean = 5.2, SD = 3.5; $F(1, 80) = 24.9$, $p < .001$). The main effect for Threat ($F(1, 80) = 0.5$, $p > .05$) and the Interaction ($F(1,80) = 0.4$, $p > .05$) were not significant, indicating that the Response Efficacy manipulation did not influence ratings of the Threat variable. Marginal means, cell means and standard deviations are shown in Appendix F. The ANOVA source table is shown in Appendix G.

2.2.1.2. Threat manipulation check.

The Threat manipulation check was tested with a 2 (high vs. low Response Efficacy) by 2 (high vs. low Threat) between subjects factorial ANOVA. The Threat manipulation was successful. Participants who read the High Threat versions of the brochure rated back pain as being more severe and debilitating (Mean = 26.3, SD =

4.8) than did participants who read the Low Threat versions of the brochure (Mean = 18.4, SD = 6.4; $F(1, 78) = 40.3$, $p < .001$). The main effect for Response Efficacy ($F(1, 78) = 0.8$, $p > .05$) and the Interaction ($F(1, 78) = 0.6$, $p > .05$) were not significant, indicating that the Threat manipulation did not influence ratings of the Response Efficacy variable. Marginal means, cell means and standard deviations are shown in Appendix F. The ANOVA source table is shown in Appendix G.

2.2.2. Intentions to Help

A 2(high vs. low threat) X 2(high vs. low response-efficacy) between subjects factorial ANOVA was conducted with the measure of intention to help as the dependent variable. A significant interaction was obtained ($F(1, 88) = 5.57$, $p < .05$). The main effects for Response Efficacy ($F(1, 88) = 0.14$, $p > .05$) and Threat ($F(1, 88) = 2.64$, $p > .05$) were not significant. The cell means and standard deviations for the intention to help index are shown in Table 2.2.2.1. Newman-Keuls post-hoc analysis shows that for participants exposed to the low Response Efficacy appeal, greater Threat resulted in greater intentions to help. Participants exposed to the High Response Efficacy appeal were not differentially influenced by the degree of Threat communicated in the appeal. Marginal means, cell means and standard

deviations are shown in Appendix F. The ANOVA source table is shown in Appendix G.

Table 2.2.2.1

Mean scores on the measure of intention to help the CLBPFC as a function of experimental condition

Threat	Response Efficacy	
	Low	High
Low	12.6[a]	15.1
	(6.7)	(6.1)
High	17.6[a]	14.2
	(4.4)	(6.7)

Note: 1) Standard Deviations are shown in parentheses.

2) Means with the same superscript differ at $p < .01$ according to the Newman-Keuls test.

2.2.3. Amount of Money Pledged

A 2(high vs. low Response Efficacy) X 2(high vs. low Threat) between subjects factorial ANOVA was conducted with the amount of money pledged as the dependent variable. Main effects for Response Efficacy ($F(1, 85) = 0.05$, $p > .05$) and for Threat ($F(1, 85) = 0.92$, $p > .05$)

were not significant, nor was the Interaction ($F(1, 85) = 0.13$, $p > .05$). Cell means and standard deviations are shown in Table 2.2.3.1. Marginal means, cell means and standard deviations are shown in Appendix F. The ANOVA source table is shown in Appendix G.

Table 2.2.3.1.

Mean amount of dollars pledged to the CLBPFC as a function of experimental condition

Threat	Response Efficacy	
	Low	High
Low	$2.73	$2.59
	($4.29)	($4.26)
High	$3.35	$3.96
	($4.63)	($6.11)

Note: Standard Deviations are shown in parentheses.

The range of pledges was $0.00 to $20.00. The modal and the median pledge was $0.00, thus the distribution was severely positively skewed. The skewed distribution contributed to the high standard deviations, relative to the means, within cells. Following Tabachnik and Fidell's (1983) suggestions for dealing with skewed

distributions, the amount of money pledged variable was subjected to a logarithmic transformation. The transformed variable was then entered into a similar ANOVA as that used for the amount of money pledged variable. The results of the ANOVA with the log of amount pledged as the dependent variable yielded results similar to that of the ANOVA with amount pledged as the dependent variable, that is no significant effects were obtained. The ANOVA source table is shown in Appendix G.

2.2.4. Relationship between amount pledged and willingness to help

In order to determine the degree of association between the amount of money pledged and the questionnaire items assessing willingness to help, a post hoc multiple regression analysis was conducted. The five help index items were entered into a standard multiple regression analysis to predict amount of money pledged. Results of the multiple regression showed that a Multiple R of .53 was obtained ($F(5, 78) = 6.08$, $p < .001$), indicating a significant association between the amount of money pledged and the predictor variables. Squared Multiple R was .28, indicating that the predictor variables accounted for 28% of the variance in the amount of money pledged. Results for the predictor variables are presented in Table 2.2.4.1.

Table 2.2.4.1.

Results of multiple regression of Amount Pledged predicted by Willingness to Help Questionnaire Items

Predictor variable	Beta	T	Simple r	Probability (two-tail)
Q. 1	0.45	3.58	0.52**	0.001
Q. 2	-0.09	-0.77	-0.22*	0.441
Q. 3	0.03	0.26	-0.09	0.793
Q. 4	0.02	0.18	0.30**	0.860
Q. 5	0.07	0.57	0.34**	0.572

Note: 1) Q # refers to question numbers in the order specified in Section 2.1.4.2. above.

2) ** denotes $p < .01$, * denotes $p < .05$.

These results indicate that of the five questions, asking participants if they would be willing to donate at least $10.00 is the best predictor of amount pledged. The other 4 questions do not account for a significant proportion of the variance beyond that accounted for by question #1.

2.3. Discussion of Study 1

2.3.1. Effect of the appeal.

As expected, the high threat/low response efficacy appeal elicited stronger intentions to help than did the other appeals. The amount of money pledged, however, did not differ across conditions. Do the results show that a depiction of unrelenting pain and suffering is an effective fund-raising strategy compared to the other types of appeals used in this study? Perhaps. The appeal affected participants' willingness to help, that is, participants' behavioural intentions. Participants' pledging behaviour was not significantly affected, but the results also show that behavioural intentions significantly predicted pledging. Thus, a plausible interpretation of the data is that the high Threat/low Response Efficacy appeal predisposes participants to pledge but that additional factors influence whether or not participants will make a pledge and the amount pledged.

2.3.2. Behavioural intentions and behaviour

Support for the notion that additional factors come into play when attempting to account for behaviour instead of behavioural intentions can be found in Fishbein's model (Fishbein & Ajzen, 1975) of the process of attitude and behaviour change. It is not assumed in this model that behaviour change will simply result from

attitude change, or that attitude change occurs simply as a result of changes in beliefs or knowledge. Rather, change is thought to be moderated by the value one places on the expected outcome. For example, a driver may believe that driving without seatbelts is dangerous but the expected attitude change (I should use seatbelts) may not occur if the individual's expectation of a negative outcome (e.g., an accident) is low or if there are numerous positive outcomes (e.g., more comfort without seatbelts).

Similar constructs are used by Rogers (1983) in his revised version of PMT (e.g., response costs: see Section 1.3.4. above) to show that responses to threatening information are not exclusively the result of factors contained in the message. That is, one's compliance with a message is affected by the information in the message as well as one's appraisal of the benefits of compliance. Thus, if the response costs are high (e.g., parting with money) participants may be less willing to comply, whereas if the response costs are lower (e.g., offering support via questionnaire responses) participants are more willing to comply.

Methodologically, measures of behaviour generally improve the external validity of a study and are a more stringent test of hypotheses than are measures of behavioural intentions. Behavioural measures, however,

are often more time-consuming and costly to assess. Additional research appears needed to better address the effect of persuasive appeals on behaviour change, and the association between behavioural intention change and behaviour change. As theories of persuasion mature, it may be possible to extend these theories to incorporate behaviour change as a more central component. An initial step in this direction was taken by Rogers and colleagues (Rogers, Deckner, & Mewborn, 1978; Wurtele and Maddux, 1987) who assessed behaviour change as a function of exposure to persuasive communications. Behavioural intentions were found to predict behaviour, generally. A useful next step would be to investigate factors that attenuate or accentuate the degree of association between behavioural intentions (measured after exposure to a persuasive appeal) and behaviour (measured some time later).

2.3.3. Comparison to Shelton and Rogers (1981)

The results of this study are similar to Shelton and Rogers (1981) and replicate their main finding that threat and response efficacy interact, and help is elicited most by portrayals of high threat and low response efficacy. Intention to help was measured in a similar manner in both studies (i.e., via questionnaire, with similar helping behaviours tapped) and may explain, in part, the consistency of results in the two studies.

An important difference between the two studies is that pledging behaviour was included in this study and the expected result was not obtained on this variable.

Unlike Shelton and Rogers' results, main effects for the independent variables were not found in this study. One reason for the lack of significant main effects may have been due to the different manner in which the stimuli were constructed. In their study, severity, for example, was manipulated by showing scenes of whales being slaughtered (high noxiousness) vs. scenes of whaling vessels preparing to sail (low noxiousness). Their manipulation of low noxiousness could better be described as no noxiousness, or as a control condition. In the present study, severity was manipulated by using different adjectives to describe pain. The descriptors varied along a continuum of intensity. The low severity condition still contained descriptors of pain. Thus, it appears that their manipulation of noxiousness as well as response efficacy (effectively interrupting a whale kill vs. vessels sailing at sea) was a comparison between high levels of the variable compared to an absence of the respective variable. In the present study, the difference between high and low conditions of the variables was probably less than the differences in Shelton and Rogers'. Thus, in the present study, main effects were attenuated but the interaction effect

emerged because of the combination of high threat and low response efficacy.

Significant results for the amount of money pledged may also have not been attained because the distribution of the pledges variable was severely skewed. The skewness led to high within cell variability and made it more difficult to obtain significant effects between cells. Obtaining skewed distributions when assessing the amount of money pledged or donated to charities may be unavoidable as most individuals do not contribute in response to charity appeals. Thus, the skewed distribution obtained in the present study probably resembles the distributions obtained when individuals are asked to pledge money to a charity in that the modal response is zero.

The sample size used in the present study was adequate to detect a moderate effect size (.55) with beta = .80 and alpha = .05. Increasing the power of the test to detect a smaller effect size would have been desirable but not practical. The addition of a small number of participants would probably not have altered the outcome of the ANOVA as the probability values for the obtained F ratios were well above .05 (refer to the ANOVA source table in Appendix G). Thus, an extremely large number of additional participants (several hundred per cell) would

have been necessary to detect a small effect if one were present.

2.3.4. Pledges vs. donations

Pledges, generally, are considered behavioural intentions. Donations were not used as a dependent variable in this study because access to participants was facilitated by club presidents' knowledge that money would not be diverted from the other concerns of the service clubs. Although not empirically tested, it appeared that participants believed that they would be required to follow-through on their pledges. Participants making a pledge provided their address on the pledge form, five participants placed cash in the envelopes, and during debriefing and the discussions that followed a number of participants commented that they believed they would have been required to honour their pledge. Using donations would have been preferable, but it does not appear that using pledges as a dependent variable unduly compromised the results of this study. There was no indication that participants treated the pledges light-heartedly (e.g., by pledging extremely large or small donations or by making humorous remarks on the pledge form).

3. Study 2

3.1. Method

3.1.1. Subjects

Fifty-seven adults (40 women, 70.2% and 17 men, 29.8%) completed study #2. Participants were referred by their family physicians to the Physiotherapy Department, Camp Hill Medical Centre, Halifax, NS, for treatment for chronic back pain. The Physiotherapy Department screened each referral and categorized them according to type of pain problem, urgency, and type of treatment that would be provided. Participants for this study were drawn from the group considered to have chronic back pain who were not in urgent need of service, such that they were placed on a waiting list of approximately five to eight weeks by the Physiotherapy Department. Treatment consisted of a back education class followed by physiotherapeutic techniques tailored to the individual patients' needs.

For purposes of this study, participants were selected who reported that they had experienced low back pain at least three days per month for at least six consecutive months. Participants also were able to read English well, according to their self-report.

3.1.2. Procedure

The receptionist of the Physiotherapy Department, when calling patients to give them their initial physiotherapy appointment, asked permission to release

their names and phone numbers to a researcher who was conducting a research study about pain. A total of 149 participants were contacted by the researcher by telephone. Two participants (one male and one female) stated that they did not wish to participate, and four participants (1 male and 3 females) were not asked to participate because of difficulty reading English (two participants), or difficulty understanding the explanation of the study (two participants).

The remaining participants were invited to evaluate a fund-raising appeal for a back pain research foundation and to provide information about how they cope with their own pain. Participants agreed to receive the consent form (see Appendix H) and CSQ and to decide if they wished to participate. A stamped return envelope addressed to the researcher was included in each mail-out. Participants were provided with the telephone number of the researcher and encouraged to contact the researcher about any procedural questions or about any other matters arising from their participation in the study. The researcher assumed the postage costs. One hundred and forty-three participants were sent the first packet and 82 (57.3%) were returned. Thus, sixty-one participants (17 (27.9%) males and 44 (72.1%) females did not return the first packet).

Second, within one week of receipt by the researcher of the signed consent form and completed CSQ, participants were mailed one of the four appeals, selected randomly, an information questionnaire, a CSQ, and a stamped return envelope addressed to the principal investigator. Participants were provided with an information sheet instructing them (a) to read the appeal and underline the most important sentence in each paragraph (to insure attention to the appeal), (b) to complete the information questionnaire, (c) to complete the CSQ, and (d) to place the appeal, the information questionnaire, and the CSQ in the return envelope and mail it to the researcher. Eighty-two participants received the second packet and 66 (80.5%) were returned. Of the sixteen individuals who did not return the second packet, four (25%) were males and 12 (75%) were females. A Chi Square analysis was conducted to determine if the drop-out rate differed depending on which version of the brochure participants received. Results revealed that there was no significant differences in drop-out rate between the versions of the brochure ($\chi^2 = 2.05(1)$, $p > .05$).

Third, within one week of receipt of the return envelope from step 2, participants were mailed a CSQ and a return envelope. Sixty-six participants received the third packet, and 57 (86.4%) were returned. Of the 9

individuals who did not return the third packet, two (22.2%) were male and seven (77.8%) were female. A Chi Square analysis was conducted to determine if the drop-out rate differed depending on which version of the brochure participants received. Results revealed that there was no significant differences in drop-out rate between the versions of the brochure ($\chi^2 = 0.90(1)$, $p > .05$). This third administration of the CSQ was to assess any longer term effects on coping as a result of reading the appeal.

Following receipt of the completed third CSQ, participants were mailed the debriefing information, including a second consent form (See Section 3.1.7. below). Following the mailing of the debriefing materials, the researcher telephoned participants to help insure that participants were debriefed and to answer any questions. No participants reported any negative experiences as a result of participation. A reminder note was mailed to participants who do not return materials within two to three weeks of the materials being mailed. Participants who did not respond to the reminder note were dropped from the study. Participants who did not respond to the reminder note, and who had received the appeal from Step 2 were mailed the debriefing information also.

Of the 82 participants who agreed to participate by returning a signed consent form, 57 (69.5%) completed the study. Chi square analysis of all participants who dropped out (dropouts from step #2 and #3 combined) showed that the dropout rate was not significantly different across conditions ($\chi^2 = .34(1)$, $p > .05$). Table 3.1.2.1 is a diagram of the process of subject recruitment and retention for Study #2 and includes the materials mailed to participants at each stage of the study.

Table 3.1.2.1.

Diagram of subject recruitment and retention for Study #2

Description of procedure	Number of participants withdrawn	Number of participants remaining
1. Referrals received from physiotherapy department	0	149
2. Participants screened by researcher and mailed consent form and first CSQ	6	143
3. Participants who returned first packet	61	82
4. Participants who returned brochure and second CSQ	16	66
5. Participants who returned third CSQ	9	57
6. Participants who returned final consent form	0	57

Participants, on average, took longer to return the materials at each stage than anticipated and consequently many participants probably commenced physiotherapy prior to completion of the study. The date that each subject began treatment was not recorded, but the waiting period varied from a minimum of five weeks to a maximum of eight weeks. The date that each packet was mailed and received was recorded, and time needed to complete the study frequently exceeded five weeks and often exceeded eight weeks. Participants who were on a waiting-list for treatment were selected so that the effects of receiving treatment would not confound the results of the study. If these responses were included it would not be possible to tease out study effects from treatment effects and their potential interactions. Therefore, responses to the third mail-out were excluded from the analysis, and the responses to steps 1 and 2 were used in the analysis. Sixty-six participants completed step 2 but not step 3. Including these participants' responses would increase the sample size but a decision was made not to include these participants. Participants who dropped out prior to the third step of the study did not receive the second consent form and therefore were not able to provide their fully informed consent. Their responses, therefore, were not used.

3.1.3. Stimulus Materials

3.1.3.1. Persuasive Appeals. The same four appeals used in Study #1 and described in Section 2.1.3.1. above were used in this study.

3.1.4. Dependent Variables

3.1.4.1 Manipulation checks. The same items used in Study #1 and described in Section 2.1.4.1 above were used in this study. As an estimate of internal consistency, co-efficient alpha was calculated for the Response Efficacy variable. A co-efficient of .53 was obtained for the three item scale, which suggests that the scale was less internally consistent than desirable. In an attempt to improve the internal consistency of the Response Efficacy scale, the item (item #8 on the evaluation questionnaire in Appendix D) that appeared to contribute least to the internal consistency of the scale was deleted and co-efficient alpha was recalculated. A co-efficient of .60 was obtained, which indicates that the revised Response Efficacy scale is more internally consistent, and therefore a better index of perceived response-efficacy, than the original Response Efficacy scale. A co-efficient alpha of .75 was obtained for the six-item Threat scale.

3.1.4.2. Coping Strategies Questionnaire. The Coping Strategies Questionnaire (Rosenstiel and Keefe, 1983: See Appendix I) is the most widely used measure of

coping with pain. The CSQ is comprised of 42 strategies for coping with pain that make up seven pain coping scales. The seven scales, each comprised of six items, are: (a) Diverting attention (thinking of things that serve to distract one's attention from the pain); (b) Reinterpreting pain sensations (imagining something, that if real, would be inconsistent with the experience of pain); (c) Coping self-statements (telling oneself that one can cope with the pain no matter how bad it gets); (d) Ignoring pain sensations (denying that the pain hurts or affects one in any way); (e) Praying or hoping (telling oneself to hope and pray that the pain will get better one day); (f) Catastrophizing (negative self-statements and an expectation that the worst possible outcome will occur); (g) Increasing activity level (engaging in behaviours which divert one's attention away from the pain). Two additional items assess belief in ones' ability to control and decrease pain.

The CSQ was originally validated with back pain patients (Rosenstiel & Keefe, 1983) and subsequent studies have found the CSQ useful for assessing the coping abilities of back pain patients (e.g., Turner & Clancy, 1986; Spinhoven et al, 1989).

Participants completed the CSQ three times. Typically, participants are instructed to indicate how frequently they employ different strategies for coping

with pain. For the second administration of the CSQ in the present study, the instructions were changed slightly to read "Please indicate how often you think you will use the following strategies during the next seven days". This manipulation was necessary to assess changes in participants' perceptions of their ability to manage pain after exposure to the appeal.

3.1.4.3. Information questionnaire. The same Information questionnaire used in Study #1 and described in Section 2.1.4.4. above was used in this study. As in Study #1, questions #1 through #9 comprised the items for the manipulation checks.

3.1.5. Instructions for dealing with untoward effects.

Participants were provided with an instruction sheet that informed them to contact the researcher if they experienced any discomfort as a result of their participation in the study. The researcher's phone number was included on the sheet. No participants telephoned the researcher because of feeling distressed as a result of participation in this study. Telephone calls from participants regarded procedural matters only.

3.1.6. Debriefing information.

Participants were informed that the health charity presented in the appeal they had read was a fictitious charity, but they were informed that the information they provided would contribute to the knowledge base regarding

health charity appeals. Participants were informed of the experimental condition they were in and given the opportunity to request the results of the study. The nature of the study and the hypotheses under investigation were disclosed to participants.

Participants were provided with the titles of books about coping with pain (e.g., R. Sternbach's Mastering pain, J. Fine's Your guide to coping with back pain) and the address of the Back Association of Canada, a legitimate self-help organization. Participants in the high threat/low response efficacy and the low threat/low response efficacy condition received the appeal from the low threat/high response efficacy condition (the high reassurance appeal that describes back pain as mild and responsive to many treatments). This latter step is commonly used in protection motivation studies (e.g., Maddux & Rogers, 1983) as a means of counteracting any negative effects induced as a result of a particular appeal. Participants were again encouraged to contact the researcher regarding any questions or concerns they had. The debriefing information is shown in Appendix J.

3.1.7. Final Informed Consent

Participants were requested to sign a second consent form (See Appendix H) after receiving the debriefing information. The second consent form was considered necessary because deception was used in the study. Thus,

after completion of the study, the use of deception was explained fully to participants and they were given the opportunity to request that the data they provided not be used. No participants requested that their data not be used.

3.2. Results of Study 2

3.2.1. Manipulation Checks

3.2.1.1. Response Efficacy manipulation check.

The Response Efficacy manipulation was tested with a 2 (high vs. low Response Efficacy) by 2 (high vs. low Threat) between subjects factorial ANOVA, using the two-item Response Efficacy scale with a range of 0 to 12. The Response Efficacy manipulation was successful. Participants who read versions of the brochure that described treatment as effective rated treatment as being significantly more effective (Mean = 5.6, SD = 2.5) than did participants who read versions of the brochure that described treatment as ineffective (Mean = 4.3, SD = 2.1; $F(1, 52) = 4.2$, $p < .05$). The main effect for Threat ($F(1, 52) = 0.4$, $p > .05$) and the Interaction ($F(1,52) = 0.04$, $p > .05$) were not significant, indicating that the Response Efficacy manipulation did not influence ratings of the Threat variable. Marginal means, cell means and standard deviations are shown in Appendix K. The ANOVA source table is shown in Appendix L.

3.2.1.2. Threat manipulation check.

The Threat manipulation check was tested with a 2 (high vs. low Response Efficacy) by 2 (high vs. low Threat) between subjects factorial ANOVA, using the six-item threat scale with a range of 0 to 36. The Threat manipulation was successful in influencing participants'

perception of perceived threat. Participants who read the High Threat versions of the brochure rated back pain as being more severe and debilitating (Mean = 26.4, SD = 5.5) than did participants who read the Low Threat versions of the brochure (Mean = 21.0, SD = 7.4; $F(1, 50) = 10.6$, $p < .01$). The main effect for Response Efficacy ($F(1, 50) = 5.9$, $p < .05$), was significant. Participants who read the High Response Efficacy versions of the brochure rated back pain as being more severe and debilitating (Mean = 25.7, SD = 6.3) than did participants who read the Low Response Efficacy versions of the brochure (Mean = 21.6, SD = 7.2). The Interaction ($F(1, 50) = 2.4$, $p > .05$) was not significant. Marginal means, cell means and standard deviations are shown in Appendix K. The ANOVA source table is shown in Appendix L.

3.2.2. Analysis of Coping with Pain

3.2.2.1. Multivariate analysis

A 2 (high vs. low threat) X 2 (high vs. low response efficacy) X 2 (time 1 vs. time 2) between group, repeated measures MANOVA was conducted with the nine scale scores from the CSQ as dependent variables. Results of the between subjects analysis indicated that the Main Effects for Response Efficacy ($F(1,52) = 0.6$, $p > .05$) and for Threat ($F(1,52) = 0.04$, $p > .05$) and for the Response Efficacy X Threat Interaction ($F(1,52) = 0.5$, $p > .05$)

were not significant. Results of the within subjects analysis revealed that there was a main effect for Time ($F(17,36) = 32.5$, $p < .001$) and for the Time X Response Efficacy Interaction ($F(17,36) = 2.5$, $p < .01$). The Time X Threat ($F(17,36) = 0.8$, $p > .05$) and the Time X Response Efficacy X Threat ($F(17,36) = 1.2$, $p > .05$) Interactions were not significant. The MANOVA source table is shown in Appendix L.

3.2.2.2. Univariate analysis of significant multivariate effects

3.2.2.2.1. Response Efficacy by Time interaction effects

In order to determine which of the dependent variables contributed most to the multivariate effect, the univariate results were inspected, followed by inspection of the marginal and cell means for the dependent variables that showed a significant univariate effect. The univariate source tables for all dependent variables are shown in Appendix L and the marginal and cell means are shown in Appendix K. For the Time X Response Efficacy Interaction, Ignoring Pain Sensations was the only variable to show a similar univariate effect at the $p < .05$ level. Table 3.3.2.1.1. shows the means for the Ignoring Pain Sensations scale for the Time by Response Efficacy Interaction.

Table 3.3.2.1.1.

Mean Scores on the Ignoring Pain Sensations Scale as a Function of Time and Response Efficacy

Experimental condition	Experimental condition
Time	Response Efficacy
	Low	High
Time 1	17.7^{acd}	11.3^{ab}
	(9.5)	(7.4)
Time 2	14.7^{bd}	12.1^{c}
	(9.0)	(8.9)

Note: 1) Standard Deviations are shown in parentheses.

2) Means with the same superscript are significantly different according to the Newman-Keuls test. Means superscripted [a] and [c] are different at the $p < .01$ level. Means superscripted [b] and [d] are different at the $p < .05$ level.

3) The potential range of scores is 0 - 36. Higher scores indicate greater facility in ignoring pain

Of particular relevance to the present study is that for participants exposed to the low Response Efficacy brochures a decrement in their utilization of the strategy of ignoring pain was observed. Participants exposed to the high Response Efficacy brochures did not experience a significant change in their ability to ignore their pain. The pattern of results in Table 3.3.2.1.1. suggests two plausible interpretations: First, that the change in scores for participants receiving the low Response Efficacy brochures resulted because participants were less able to ignore their pain because of the information presented in the brochures; Second, the change in scores from pre-test to post-test for participants receiving the low Response Efficacy brochures reflects the phenomenon of regression to the mean.

To address the potential problem of regression to the mean with the Ignoring Pain Sensations variable, a post hoc 2(high vs low Response Efficacy) by 2(high vs. low Threat) ANCOVA was conducted with Ignoring Pain Sensations scale scores for Time 2 as the dependent variable and scale scores for the CSQ scales at Time 1 as covariates. Results of the ANCOVA procedure showed that there was a main effect for Response Efficacy ($\underline{F}(1,43) = 4.38$, $\underline{p} < .05$), such that participants who read the low Response Efficacy brochures scored lower (adjusted mean =

11.1, SD = 7.17) than did participants who read the high Response Efficacy brochures (adjusted mean = 15.6, SD = 7.16). The main effects for Threat ($F(1,43) = 1.84$, $p > .05$) and for the Interaction ($F(1,43) = 0.05$, $p > .05$) were not significant. The adjusted means for the Ignoring Pain Sensations scale scores are shown in Appendix K. Significant effects for the Ignoring Pain Sensations scale covariate ($F(1,43) = 22.8$, $p < .001$) and for the Decreasing Pain Behaviour covariate ($F(1,43) = 6.38$, $p < .05$) were found. None of the other seven covariates were significantly related to the dependent variable. The ANCOVA source table is shown in Appendix L. These results suggest that when pre-existing differences on the Ignoring Pain Sensations scale are statistically controlled for, participants' use of ignoring pain is influenced by the version of the brochure that they had read. The implication of changes in participants' scores on the Ignoring Pain Sensation scale for coping with back pain is discussed in Section 3.4.1. below.

3.2.2.2.2. Alternative analytic strategies

Data from Study #2 could have been analyzed with other statistical techniques, and two alternatives were seriously considered. The first involved attempting to reduce the number of dependent variables through factor analysis. This procedure has been used in the majority

of studies using the CSQ. The difficulty, however, is that unlike most previous studies using the CSQ, the present study employed a repeated measures design. Similarly, Turner and Clancy (1986), in assessing pre- to post-treatment changes with the CSQ used a repeated measures design and analyzed changes in individual scale scores. The use of a repeated measures in combination with a small sample size is a contraindication for a factor analytic strategy. First, it would not be possible to determine if changes from pre- to post-test were due to the effects of the independent variables or to the unreliability of the factor structure over time. Second, it would not be possible to determine if exposure to the independent variables altered the underlying factor structure, therefore causing changes in the factor structure from pre to post-test. Third, the small sample size would jeopardize the reliability of the factor structure and make judgements about changes from pre- to post-test tenuous. As Comrey (1973) suggests, a sample size of 50 for factor analysis is very poor.

The second alternative considered was to conduct a MANCOVA instead of the repeated measures MANOVA reported above. The advantage of MANCOVA is that error variance is reduced and generally a more powerful test results. The disadvantage of MANCOVA, if a large number of covariates are used, is that a degree of freedom is lost

for each covariate used (Tabachnik & Fidell, 1983). The loss of degrees of freedom can lead to a Type II error and is especially problematic if a small sample size is used and there are many covariates (Tabachnik & Fidell, 1983). The present study had a large number of covariates and a small sample size. Thus, rather than detract from the power of the test further and because there was no loss in the level of Type I error protection using MANOVA, it was decided to utilize the repeated measures MANOVA strategy. The repeated measures MANOVA analysis would have been contraindicated if the MANOVA results had shown that the groups differed markedly from each other on pre-test, but participants were randomly assigned to groups and the only observed difference was found on a univariate post hoc test of the Ignoring Pain Sensation variable. Thus, the MANOVA did not show significant group differences on pre-test.

3.2.2.2.3. Main effects for Time

Significant univariate main effects for the Time variable were obtained on the Catastrophizing, Increasing Behavioural Activities, and Reinterpreting Pain Sensations scales. The pattern of results for these three variables shows that participants' scores indicated improved ability to cope with pain for each scale. The range of scores for each scale is 0 to 36. For the catastrophizing scale: Time 1 Mean = 11.48 (SD = 8.8),

Time 2 Mean = 9.86 (SD = 8.3), $F(1, 52) = 5.9$, $p < .05$, indicating significantly less use of catastrophizing over time. For the Increasing Behavioural Activities scale: Time 1 Mean = 14.77 (SD = 7.7), Time 2 Mean = 16.52 (SD = 8.5), $F(1, 52) = 5.8$, $p < .05$, indicating a significant rise in the participants' intent to increase their behavioural activity level. For the Reinterpreting Pain Sensations scale: Time 1 Mean = 3.88 (SD = 4.7), Time 2 Mean = 5.95 (SD = 6.0), $F(1, 52) = 8.7$, $p < .01$, indicating a significantly greater tendency to positively reinterpret painful sensations. These results indicate an improvement in participants' self-perception of their ability to cope with pain, as assessed by these three variables, over time, regardless of the experimental condition they were in.

3.4. Study 2 Discussion

3.4.1. Evaluation of ignoring pain as a strategy for coping with pain

The results of this study show that participants' perception of their ability to control pain was influenced by exposure to a fund-raising brochure for a pain charity. Patients' ability to ignore pain appears to have been affected by exposure to appeals that described treatment for pain as ineffective. Exposure to appeals that described treatment for pain as effective did not significantly affect patients' perception of their ability to ignore pain. Results from this study, however, do not show how being less able to ignore pain affects patients' ability to manage pain, more generally. To understand the implications of being less able to ignore pain, it is necessary to examine the literature for possible cognitive and behavioural correlates of ignoring pain.

Turk et al. (1983) suggested that most cognitive strategies for pain control involve withdrawal of attention from painful sensations, and that withdrawal of attention from painful sensations generally increases pain tolerance. Further, most psychologically-based treatment programs for chronic pain teach, whether explicitly or not, pain control strategies that emphasize ignoring pain sensations. It is a common assumption

that, in general, focusing attention on ones' pain is likely to lower pain tolerance compared to focusing attention away from ones' pain. For the most part, the experimental literature supports the notion that the use of strategies involving withdrawal of attention from pain generally reduces pain intensity ratings, whereas encouraging participants to focus on their pain typically increases pain intensity ratings (see reviews by Arntz & Schmidt, 1989; Tan, 1982; Turk et al., 1983).

A recent study that experimentally manipulated attention to pain illustrates the effect of attention on how pain is experienced. Arntz, Dressen, and Merckelbach (1991) instructed participants to either concentrate on the pain stimulation and try to find descriptors of the sensations evoked (high attention condition) or concentrate on a video and try to ignore the pain stimulation (low attention condition). The pain stimulation was a series of electric shocks. The authors also manipulated participants' anxiety (high vs. low anxiety) but anxiety did not have an effect on the dependent measures nor did it interact with attention. Results showed that attention focused on the pain led to higher ratings of subjective pain (measured via visual analogue scales), less habituation to pain stimulation, stronger skin conductance responses, and stronger heart

rate acceleration following pain stimulation, than did attention focused away from the pain.

In contrast to the experimental literature on cognitive strategies to control pain, the value of ignoring pain sensations has been questioned in the clinical literature. Laboratory produced pain is typically acute and participants realize that the pain can be terminated at their discretion. Chronic pain sufferers, on the other hand, experience episodes of recurrent pain of varying duration and intensity. It is possible, therefore, that certain strategies for coping with pain may be more useful for some types of pain and not for others.

Studies by Rosenstiel and Keefe (1983), Spinhoven et al. (1989), and Turner and Clancy (1986), utilizing the CSQ, appear to support this view. These studies report that back pain patients who more frequently utilize cognitive strategies such as distraction, reinterpreting painful sensations, and ignoring pain, are more functionally impaired. This finding is not entirely robust, however, as Gross (1986), also using the CSQ, reported that patients utilizing these strategies were better adjusted on measures of activity level, sleep patterns, and intensity of pain. These studies, however, are correlational and for the studies that reported a positive relationship between degree of impairment and

utilization of cognitive coping strategies it is not clear whether utilization of these strategies leads to more functional impairment or whether the more functionally impaired come to utilize these strategies more frequently, perhaps because other strategies are found to be ineffective. Moreover, there is no evidence that shows that the inhibition of ignoring pain leads to improved functional status in low back pain.

There is more compelling evidence from the clinical literature that ignoring pain is associated with improvement in managing chronic pain. In Turner and Clancy's (1986) study, after correlating functional status with the frequency of use of different coping strategies, patients were randomly assigned to one of three treatment conditions: A cognitive behavioural treatment group, an operant conditioning treatment group, or a waiting-list control group. Following treatment, the operant group compared to the control group had significantly higher scores on the ignoring pain scale. Within subjects analysis revealed that for subjects in both the operant group and the cognitive-behavioural group, ignoring pain scale scores increased from pre to post-treatment. Control group scores did not change. These results, which are based on an experimental design with a clinical sample, indicate that patients' ability to ignore pain increased as a result of participation in

psychologically-based treatment programs for chronic back pain.

In sum, experimental studies of pain tolerance or pain threshold show that the large majority of studies that have investigated the utility of ignoring pain have found it to be advantageous. Results of studies with chronic back pain patients are more equivocal, but learning to ignore pain appears to be a product of participation in successful psychologically-based pain treatments and appears to be an adaptive strategy for dealing with pain.

3.4.2. External validity of Study #2

The clinical significance of the change in participants' ability to ignore pain after exposure to the low Response Efficacy appeals is not known. The magnitude of the change appears to be small and additional research is necessary to determine how small changes on the ignoring pain scale of the CSQ correlates with measures of pain and disability. The result, however, was statistically significant. Exposure to the appeal was for one occasion only. On one hand, it may be argued that participants paid a great deal more attention to the appeals in this study than they would normally in their household because they had agreed to participate in a research study and they were instructed to read the appeal carefully and to underline the most important

sentence on each page. On the other hand, repeated exposure over time and via different media may have a more profound effect on participants' ability to control pain. Use of different media allows for the introduction of colour, sound, movement, and more graphic depictions of pain and helplessness. Repeated exposure over time may strengthen the impact of the appeal as suggested by Arntz et al. (1991) who showed that instructions that led participants to focus attention on pain prevented habituation to the pain.

The persuasive appeal literature is large and complex. The results of this study do not indicate that all appeals that describe treatment as producing limited results will influence persons with the portrayed problem to cope less successfully. The process of message acceptance is complicated and only partly understood. Flay et al. (1980), for example, suggest that message acceptance is influenced by five main communication variables: source (e.g., likeability or attractiveness of source), message (e.g., structure or content of message), channel (e.g., choice of medium), receiver (e.g., characteristics of audience members), destination (e.g., whether short-term or long-term change is targeted). Further the process of message acceptance is thought to proceed through six steps: exposure, attention, comprehension, yielding, retention, action.

These 11 variables combine to produce a matrix of thirty cells, all of which determine the outcome of exposure to a persuasive appeal. Thus, the results of this study occurred in a particular context, which has to be considered if generalization is attempted. The results of this study, however, provide preliminary evidence that it is possible for participants' perception of their ability to cope with a health problem to be influenced by exposure to a charity appeal for that same health problem. Future research is needed to delineate the conditions under which negative effects are more likely and less likely to occur.

One model that appears well suited to increasing our understanding of the conditions under which negative effects are likely to occur is the Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1986). The ELM can be used in conjunction with PMT to more fully understand the conditions under which persuasion and acceptance of negative information is probable. Research utilizing the ELM has shown consistently that when participants are motivated and have the opportunity to consider the arguments contained in the message, post-message attitudes are dependent on the content and quality of the message. When participants are unable or unmotivated to systematically process the message, persuasion is dependent on peripheral cues (e.g., attractiveness of the

source, number of arguments contained in the message). Applying the ELM to understand better how individuals respond to charity appeal in conjunction with PMT (utilized to construct the message) appears a promising approach to further our understanding of how recipients may be affected by fund-raising appeals regarding their own health behaviour.

3.4.3. Threat appraisal

Threat appraisal did not affect participants' perception of their ability to manage pain despite its successful manipulation. The effect of threat appraisal may have been influenced by the failure to manipulate threat appraisal independent of response efficacy. Participants who received the high response efficacy appeals perceived back pain to be more threatening than did participants who received the low response efficacy appeals. One possibility is that describing treatment as effective led participants to believe that the pain must have been severe and debilitating for so much effort to be put into developing the variety of treatments described in the appeals. Also, threat may not be a good predictor for chronic pain patients. Appeals described pain as either severe or mild. Chronic pain, however, is variable, commonly with periods of mild, moderate, and severe pain. The appeals may not have accurately reflected patients' own experience with pain, and

patients may have been less influenced by the threat manipulation because it was perceived as a less accurate source of information about pain compared to their own experience. It would be helpful in future similar studies to interview participants about their reactions to the appeals as they read them or immediately afterward, similar to the procedure outlined in Turk et al. (1983) for recording the cognitions of participants as they undergo exposure to painful stimulation.

3.4.4. Relevance to Protection Motivation Theory

The hypothesized interaction between Response Efficacy and Threat was not obtained. Instead a main effect for Response Efficacy was obtained but not for Threat. One reason a significant interaction was not obtained may be due to the difficulty with appraised Threat as discussed above in Section 3.4.3. Relatedly, the potency of the independent variables in the present investigation may have been considerably less than in other PMT studies. First, the difference between high and low levels of the independent variables in the present investigation may not have differed to the extent that levels have differed in previous PMT studies (as discussed above in Section 1.4). That is, in many previous PMT studies low levels of the independent variables were obtained by using neutral (e.g., whaling vessels not engaged in whaling) or

positive (smoking does not lead to lung cancer) descriptions. In the present study, low levels of the independent variables were obtained by using descriptors (i.e., adjectives) that were as relevant and context-appropriate as the high level descriptors, but mainly differed only in the level of intensity communicated. Thus, the difference between high and low levels of the independent variables used in the present study may have been less than the differences in many previous PMT studies, resulting in the absence of strong effects in the present study.

Second, the high levels of the independent variables used in the present study may have had less of an effect on the dependent variables compared to previous PMT studies because of ethical concerns. That is, the descriptions of pain and pain treatments were constrained for fear of their potential negative effect on patients. The present study, unlike previous PMT studies, used actual patients who were experiencing the health problem described in the appeals whereas previous PMT studies have tended to use university students who, in some cases, were at risk for developing future health problems (e.g., presently healthy students who smoked). In addition, the consent form explicitly alerted participants that they may experience negative effects as a result of reading the appeals and this may have

influenced participants' responses. That is, participants may have employed a defensive strategy when reading the appeals, in anticipation of reading distressing information, that reduced the impact of the stronger appeals.

The obtained significant effect in this study was found only on the Ignoring Pain Sensation dimension of the CSQ. It is not clear why the Ignoring Pain Sensation dimension was affected by Response Efficacy and the other dimensions were not. In the previous PMT study (Rippetoe & Rogers, 1987) that examined the effect of the PMT variables (Threat, Response-Efficacy, and Self-Efficacy) on coping, it was found that each of the independent variables affected one unique dimension of coping (as measured by the Coping Questionnaire; McCrae, 1984) and not others. The specificity of effects appears to be a complex phenomenon that requires future study. In would first be helpful to replicate prior work to substantiate the effect before exploring possible reasons for the unique relationships between certain PMT variables and coping variables.

The sample size employed in the Study 2 was small and as such the power of the test was low. The inclusion of additional participants would have increased the sensitivity of the test and other effects may have been detected. The reasons for not recruiting additional

participants were not statistical but rather were related to the amount of time and effort needed to run each participant.

3.4.5. Ethical concerns

Researchers investigating potential negative effects as a result of exposure to experimental stimuli need to consider carefully how best to minimize potential harm, especially if it is a novel area of research without good precedent to rely on to develop appropriate safeguards. In the case of this study, several safeguards were anticipated and incorporated into the design of the study (See section 1.6 above). Some of the safeguards were selected on the basis of previous research (e.g., within the PMT paradigm participants exposed to negative appeals are debriefed and given the high reassurance appeals) and others on the basis of intuition and ethical guidelines for research.

Following completion of the study, however, a number of additional precautions that were not anticipated prior to the study appear worthwhile to incorporate in future studies. First, in this study, both groups of participants who received the low Response Efficacy brochures were less able to ignore their pain, not just participants in the high Threat/low Response Efficacy condition. It was necessary, therefore, to mail all participants who received a low Response Efficacy appeal

the high reassurance appeal. The precise debriefing procedures need to be flexible in order to appropriately handle unanticipated results.

Second, whether or not the debriefing procedures completely counteract the negative effects of participation should be considered carefully. In this study it would have been useful to assess participants' CSQ scores after debriefing to determine the effectiveness of the debriefing procedure. This is not typically done in persuasive appeal studies but appears important. The value of checking on the adequacy of debriefing gains importance in studies that specifically attempt to induce negative effects.

Third, as suggested by a member of the supervisory committee for this dissertation, it may be important to analyze data as it is collected as a means of restricting the number of participants who may be adversely affected as a result of participation. That is, running an analysis after a portion of the data is collected would provide an indication of the trend of the results, and data collection could be stopped if there were clear indications of harm or if the hypothesized effect was obtained.

4. General Discussion

4.1. Cost-benefit analysis

Results of this study offer tentative evidence indicating that a charity appeal portraying people coping unsuccessfully with pain leads chronic back pain patients to more negatively appraise their ability to cope with pain, whereas portraying people coping unsuccessfully with pain predisposes service club members to offer more assistance to the charity, if the pain is also portrayed as severe. As discussed above, these results must be qualified by acknowledging (a) that the effect in Study 1 was on the level of behavioural intentions and not behaviour, and (b) that the effect in Study #2 was small and occurred on only one of the scales measured. These results pose a dilemma for fund-raisers. Referring to Table 1.4.1.1., these results fall in the lower right-hand corner of the grid, demarcated by a question mark. These results can be interpreted as indicating that an appeal that portrays low response-efficacy is more "harmful" than one that does not but it is also more "effective" in generating donations, if threat is high. The question mark implies that it is necessary to consider additional factors when deciding whether or not to implement a campaign depicting people coping unsuccessfully (i.e., low response efficacy). These additional factors could include the extent to which

viewers may be negatively affected and how easy it is to rectify potential harm. Both these questions warrant further empirical investigation.

The results of this study underscore the necessity of caution when deciding on how to present media information about health-problems. Unintended negative influences may occur. Negative effects were obtained in this study, albeit an apparently small effect, despite using an appeal that was less dramatic and graphic than many typically utilized and despite specifically targeting an audience different from pain patients. That is, the brochures were targeted at potential donors and were not intentionally written to influence pain patients. Thus, the effect on pain patients would not normally have been considered in evaluations of the effects of charity appeals as potential donors would have been the only ones assessed.

The investigation contributes to our knowledge of fear appeals (a) by demonstrating that unintended negative effects can occur as a result of exposure to charity appeals, (b) by utilizing the same stimuli in two studies so that direct and meaningful comparisons could be made between studies, and (c) by potentially stimulating further research into the possible negative consequences of exposure to some charity appeals and health information communicated via the mass media. As

research in this area grows, it will possible to influence campaign designers and fund-raisers so that effective and potentially health-enhancing materials can be utilized. This research contributes to our knowledge of PMT (a) by replicating previous findings that threat and response efficacy can influence subjects behavioural intentions and appraisal of their coping ability, and (b) by drawing attention to potentially important methodological considerations in the differences in how the high and low dimensions of the independent variables are operationalized.

4.2. Generalizability of results

Patients' perception of their ability to manage pain increased over time, regardless of experimental condition. This improvement could be attributed (a) to the anticipation of receiving treatment, (b) to participation in the present research, and/or (c) to the natural ascending and descending cycle of intensity of chronic pain. To clarify the latter point, the intensity of chronic pain is often variable, including times of peak pain intensity. It may be that individuals with chronic pain are more likely to seek assistance for their pain when their pain is intense. Participants referred to physiotherapy and recruited for this study may have been referred following a peak pain experience. By the time the study was completed, many weeks later, subjects'

pain may have remitted considerably due to natural fluctuations in the intensity level of chronic pain.

The extent to which the results from this sample, pain patients awaiting treatment, may generalize to the population of pain patients is not known. Pain patients who are not awaiting treatment may differ from those who are. Patients who are not awaiting treatment may have become demoralized and given up on attempting physiotherapy or they may feel they no longer require treatment because they are coping satisfactorily. The reaction of pain patients to the appeals in this study may differ depending on their treatment status. Similarly, the manner that the stimuli were presented to the service club members was uncharacteristic of how brochures are normally presented (e.g., via the mail). The demand characteristics were high for service club members and similar responses may not have been attained under different circumstances.

Participants in Study #1 were mainly male whereas participants in Study #2 were mainly female. There were too few participants of both sexes in each study to allow for an appropriate statistical analysis of potential sex differences. Consequently, it is not possible to determine the influence of sex differences on the results of this study. It is probable, however, that the proportions of males to females obtained in the present

studies approximate the ratios of males to females in physiotherapy clinics and service clubs and are therefore relevant to these populations.

The instructions for the second administration of the CSQ were changed slightly so that participants responded based on how they expected they would cope with their pain during the upcoming week. This manipulation was thought necessary in order to assess the immediate impact of the brochures on participants' perception of their ability to cope with pain. The typical instructions for the CSQ asks respondents to base their answers on how they coped with their pain during the preceding week. It is not known how this change in instructions influenced participants. The original design of the study, which included a third administration of the CSQ with the typical instructions, would have provided information relevant to the effect of the change in instructions and about participants' use of coping strategies from the first to the third administration. Thus, comparisons between the first and second administrations of the CSQ need to be considered cautiously as it is not possible to assess exactly the influence of the change of instructions. Additional research is needed to clarify how orienting participants to the past or future in the instructions to the CSQ influences responses. The instructions, however, were

the same for participants in all experimental conditions and thus it is unlikely that they unduly influenced one group of participants more than another.

4.3. Future research

The effects of the appeals on subjects' ability to cope with pain was the only dimension assessed in the present research. It is possible that the appeals used in this research may have had other effects on relevant dimension. In future studies it may be useful to explore the effects of similar appeals on other intrapersonal variables, such as mood (e.g., Petty, Schumann, Richman, & Strathman, 1993). It also appears important to expand the assessment of impact of charity appeals to include the possibility that media portrayals of disadvantaged groups may reinforce negative stereotypes of the groups portrayed. Eayrs and Ellis (1990) showed that fund-raising posters depicting mentally handicapped people as having the same rights, values, and competencies as non-mentally handicapped people elicited fewer donations. Posters that aroused guilt, sympathy, and pity generated more donations. This latter group of posters may inadvertently reinforce negative stereotypes of the disadvantaged group despite ostensibly being more effective by generating greater donations. In a similar manner, depictions of people with health problems or mental health problems may create or reinforce attitudes

in the general public that are counterproductive and potentially damaging to those with the problem portrayed.

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Appendix A

Instructions to Service Club Members Prior to Beginning Study

1. Read and sign the CONSENT FORM if you are willing to participate

2. Read the BROCHURE, and underline what you believe to be the most important sentence in each paragraph

3. Complete the EVALUATION QUESTIONNAIRE and CONSENT FORM

4. Complete the INFORMATION QUESTIONNAIRE

5. Place all the materials back in the envelope

ALL RESPONSES ARE CONFIDENTIAL AND KNOWN ONLY TO THE RESEARCHERS

In this study we are evaluating the effectiveness of four different versions of a fund-raising brochure to generate donations for a health-charity. The brochure you have received was selected for you entirely by chance. The persons beside you may have the same or different versions of the brochure. It is important, therefore, that you keep your responses and your brochure secret from your neighbours so that you do not influence each others' responses.

Appendix B

Consent Form for Study 1

Thank you for taking time to consider participating in this research project. If you decide to participate you will be asked to read a brochure about back pain, to complete a questionnaire, and to consider pledging a donation. The brochure describes chronic low back pain and its effects on individuals, families and society. Detailed descriptions of about individuals with back pain are presented as well as how their lives have changed since the back pain began. Current treatments are described and their effectiveness is discussed. The brochure concludes with a request for charitable donations to the Chronic Low Back Pain Foundation of Canada. Your response will help us evaluate the effectiveness of our materials.

There are four different versions of the brochure currently being evaluated. You will be asked to read only one of the versions, which was selected for you entirely by chance. The versions differ from each other in the way that back pain and back pain treatments are described. Some versions take a more extreme approach whereas other versions are more mild. It is important for you to know, before agreeing to participate, that some may find the brochure to be somewhat upsetting to them. On the other hand, you may find that the brochure has little or no effect on how you feel or think about pain or people with back pain. In any case, you are free to stop reading the brochure at any time and to withdraw from the study. You are under no obligation whatsoever to participate or to continue your participation in this study. We are testing the different versions of the brochure to determine which one is most suitable for the Chronic Low Back Pain Foundation of Canada.

This evaluation study is being conducted by Mr. Michael Ross, M. A., Psychologist (candidate register), Colchester Regional Hospital and Ph. D. candidate, Psychology Department, University of Saskatchewan (893-5526), under the supervision of Carl von Baeyer, Ph. D., Professor of Psychology, University of Saskatchewan (306-966-6700).

If you agree to participate in this study please sign on the line below. Thank you for your consideration.

I have read this consent form and agree to participate in this evaluation study. I understand that I am free to withdraw at any time for any reason:

_____ _____

Date (sign here)

Appendix C

Pledge Form

To help us judge which of our brochures is the most effective in generating donations we need feedback from you. We need to know if you are willing to make a donation to the Chronic Low Back Pain Foundation of Canada, and if so, how much. This is a preliminary field-test, so any amount donated, no matter how small, will help us compare the various brochures.

Please complete the pledge form below which will be sent to the Chronic Low Back Pain Foundation of Canada. The Charity will contact you directly by mail to collect the pledge. Receipts for tax purposes will be available.

Please place a check mark indicating whether or not you wish to contribute.

Remember, any amount, even a single dollar, will provide us with valuable information about our appeal.

_____ I do not wish to contribute

_____ I do wish to contribute

If you chose to make a pledge, please complete this portion:

The amount of my pledge is $_____

Name: _____

Address: _____
_____
_____

No additional solicitation will take place and your name will not be released to other agencies. Thank you for your assistance.

Appendix D

Information Questionnaire

Please read the following statements about chronic low back pain and then indicate how much you agree or disagree with each statement by circling a number. Answer each question and circle only one number for each question. You may use any of the numbers from 0 to 6.

1. The pain caused by back pain is often unbearable.

0	1	2	3	4	5	6
Strongly Disagree			Neither Agree nor Disagree			Strongly Agree

2. Back pain is an easy condition to treat.

0	1	2	3	4	5	6
Strongly Disagree			Neither Agree nor Disagree			Strongly Agree

3. Many people become disabled because of their back pain.

0	1	2	3	4	5	6
Strongly Disagree			Neither Agree nor Disagree			Strongly Agree

4. There are many treatments that have been proven to be successful in the treatment of back pain.

0	1	2	3	4	5	6
Strongly Disagree			Neither Agree nor Disagree			Strongly Agree

5. Back pain is often a dull, mild type of pain.

0	1	2	3	4	5	6
Strongly Disagree			Neither Agree nor Disagree			Strongly Agree

6. Back pain can interfere with people's lives to the point where they have to give up their jobs.

0	1	2	3	4	5	6
Strongly Disagree			Neither Agree nor Disagree			Strongly Agree

7. Back pain is a severe, excruciating pain.

0	1	2	3	4	5	6
Strongly Disagree			Neither Agree nor Disagree			Strongly Agree

8. Back pain remains a very difficult condition to treat effectively.

0	1	2	3	4	5	6
Strongly Disagree			Neither Agree nor Disagree			Strongly Agree

9. It is rare for someone with back pain to become disabled because of the pain.

0	1	2	3	4	5	6
Strongly Disagree			Neither Agree nor Disagree			Strongly Agree

10. The brochure I read about back pain was interesting.

0	1	2	3	4	5	6
Strongly Disagree			Neither Agree nor Disagree			Strongly Agree

11. The brochure I read about back pain was informative.

0	1	2	3	4	5	6
Strongly Disagree			Neither Agree nor Disagree			Strongly Agree

12. A fund-raising campaign for back pain research is not needed.

0	1	2	3	4	5	6
Strongly Disagree			Neither Agree nor Disagree			Strongly Agree

13. The public does not need to learn about back pain

0	1	2	3	4	5	6
Strongly Disagree			Neither Agree nor Disagree			Strongly Agree

14. If you have any comments about your impressions of the brochure, please write them in the space below. Thank you.

Appendix E

Four different versions of the fund-raising appeal

Low threat/high response efficacy appeal

FACT #1 * Many effective treatments for back pain exist

FACT #2 * Rarely do episodes of severe back pain lead to chronic, disabling pain

FACT #3 * Back pain is often described as a dull type of pain

THE PAIN

Most people have had some experience with back pain and can understand how pesky it is. The pain is inconvenient and uncomfortable. The entire back can feel slightly stiff for weeks. People's legs can begin to tighten-up. People with back pain frequently become used to the pain and sometimes they stop noticing it as it just fades into the background. A backache can come along and hurt for awhile but the intense pain often disappears quickly. What the pain feels like can change, but usually the pain is a low-level dull feeling. One person said her pain felt like she was forced to carry a heavy purse around with her all day and another said he often has a twinge of pain after work each day.

THE RISKS

Statistics show that the majority of people with back pain cope with it on their own and never seek medical assistance. Medical experts agree that back pain, while troublesome and inconvenient, is not a disabling illness. People usually recover and can continue with their regular jobs, hobbies, and other responsibilities. Scientific evidence shows that in only 2% of cases does pain indicate a more serious problem. Virtually no one will become permanently disabled because of back pain. In fact, back pain naturally improves on its own as people grow older. People sometimes feel down because of their pain but it is usually only a temporary problem that disappears when the pain improves.

THE HOPE

Back pain can be relieved. Over 90% of severe back pain attacks recover. Millions of North Americans consult their doctors, physiotherapists, and chiropractors, and each helps to relieve the pain. Specialists successfully treat certain types of back pain with advanced surgical techniques. Specially designed exercise programs have been proven to reduce back pain. There are also hundreds of common sense treatments like heat pads, ice packs, whirlpools, and massage that all take the edge off the pain. Generally, most treatments help most people. We need to learn how to quickly decide which treatment is most effective for which person. The truth is that we have very effective treatments for back pain and research is discovering new and more effective treatments on a regular basis.

FACT #4 * Experts agree that there are numerous techniques that have been scientifically proven to reduce back pain

FACT #5 * The vast majority of people with back pain miss only a few days of work due to pain each year

FACT #6 * Back pain can be bothersome. Patients often describe their pain as dull, flickering, pinching, brief, and annoying

Letters from back pain victims who need your help

My back became painful seven years ago. The pain interfered with some of my activities and it became uncomfortable when I played tennis or cycled. I am 37 years old and very fit. Occasionally I will have a bad day and have to rest and watch television for a few hours until the pain passes. Afterward I feel better and usually go for a brisk walk. I have not missed work because of pain. When I do have pain my back feels sore, tender, and stiff. I do not take medication. I do not think that my wife and children have been affected because of my pain. My 5 year old daughter likes to play in a rough and tumble way and to give me big hugs and my back can easily stand it. I do not believe that my back is damaged, although sometimes it gets sore. I am sure it will keep getting better.

John C. Charles, Winnipeg, Manitoba

My pain began 16 years ago. It was manageable at first but it quickly got worse. It tired me. I finally sought help and after 4 months of treatment I have never had that terrible pain again. The pain sometimes returns but it is never as bad. Each time it returns I seek assistance and get relief. I do special exercises that loosen the muscles in the back as well as strengthen them. I do other exercises that relax my back muscles. Drugs helped when the pain was very bad. It has been 10 years since I had a severe episode of back pain. I am not afraid of the pain returning because I know that effective treatments, from physiotherapists, chiropractors, doctors, and others, are available.

Sarah Jennings, Moncton, New Brunswick

OUR APPEAL

The Chronic Low Back Pain Foundation of Canada is **FIGHTING BACK.** We are an association of health professionals, researchers, patients, and family members who are committed to fighting back pain. We need support to develop new techniques for pain relief, to improve our existing methods, and to educate people, especially children, about how to prevent back pain. Please give to help stop the pain.

We have a large volunteer base and our costs are low, so over 85% of contributions received goes directly to research and public education. No amount of money is too small, even pennies will help. Please give!

High threat/high response efficacy appeal

FACT #1 * Many effective treatments for back pain exist

FACT #2 * A percentage of episodes of severe back pain lead to chronic, disabling pain

FACT #3 * Back pain is often described as an excruciating type of pain

THE PAIN

It is difficult to understand the agony experienced by back pain patients if you have not had severe back pain yourself. The pain is constant, exhausting, and unbearable. The entire back can throb continually for weeks. Piercing pains can shoot down people's legs. People with back pain claim that the pain often feels like it will never stop, leaving them tired, and frustrated. What the pain feels like can change but when it is at its' worst it can be unbearable. The back can undergo intense spasms of pain that make it almost impossible to sit, eat, sleep, or do anything other than lie still. One person said the pain felt like screws were being tightened into each of her discs and another said his back felt like it had been placed in a giant vice that was slowly crushing his back.

THE RISKS

Statistics show that back pain is a major reason why people miss work and retire from their jobs early. Back pain can be a disabling crippler. People become unable to cope with their pain and they try and protect themselves by stopping all activities. They give up work and their favourite hobbies so as not to aggravate their backs. Their lives become centred on avoiding pain. They no longer enjoy life, they just try and get through the day, hoping their pain will leave them. Some patients become bedridden. The more pain they feel the more worried, depressed, and frustrated they become.

THE HOPE

Back pain can be relieved. Over 90% of severe back pain attacks recover. Millions of North Americans consult their doctors, physiotherapists, and chiropractors, and each helps to relieve the pain. Specialists successfully treat certain types of back pain with advanced surgical techniques. Specially designed exercise programs have been proven to reduce back pain. There are also hundreds of common sense treatments like heat pads, ice packs, whirlpools, and massage that all take the edge off the pain. Generally, most treatments help most people. We need to learn how to quickly decide which treatment is most effective for which person. The truth is that we have very effective treatments for back pain and research is discovering new and more effective treatments on a regular basis.

FACT #4 * Experts agree that there are numerous techniques that have been scientifically proven to reduce back pain

FACT #5 * Work-loss due to disability caused by back pain is a major concern for employers, patients, and health professionals

FACT #6 * Back pain can be very severe. Patients often describe their pain as heavy, throbbing, cramping, constant, and unbearable

Letters from back pain victims who need your help

I have been suffering from severe back pain for seven years. The pain prevents me from doing most activities. I am 37 and I used to be very fit and enjoyed tennis and cycling. Now I lie in bed for hours each day, hoping for the pain to stop. On good days I can sit in a chair and watch television for a few hours at a time. I rarely walk anymore and I can no longer work. I am in constant, excruciating pain. The drugs make me tired and I cannot concentrate or read. I have begun to shut out my wife and children because I am embarrassed that I am not a normal husband or father. My 5 year-old daughter doesn't understand why Daddy can't pick her up anymore. My back is often in agony and I am always afraid to move in case I damage it more. I am frightened I'll be like this forever.

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High threat/low response efficacy appeal

FACT #1 * Back pain is very difficult to treat effectively

FACT #2 * A percentage of episodes of severe back pain lead to chronic, disabling pain

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THE TRAGEDY

Back pain is very difficult to treat. Many treatments have only limited effectiveness and none have been proven to be effective for all people. Millions of North Americans consult with their doctors, physiotherapists, and chiropractors, get some relief, but find that the pain returns. There is no permanent cure for most types of back pain. Treatment is designed to reduce the pain and to teach people how to cope better but we are just beginning to learn which strategies are most successful for which people. It is very common to meet back pain patients who have had several different types of treatments from many different types of professionals and who remain in pain. The truth is we have a tremendous amount to learn about the treatment of back pain. Research is desperately needed to find effective treatment techniques.

FACT #4 * Experts agree that back pain remains a very difficult condition to treat successfully

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My pain began 16 years ago. It was manageable at first but it quickly got worse. It exhausted me and drained my energy away. I have been to 7 doctors and received 5 different diagnoses. I have had 6 different prescriptions and I have had surgery. I am still in pain. Treatments help temporarily, but they don't last. I have seen 3 different physiotherapists and 2 chiropractors over the years and nothing works. I am tired of struggling and the pain has worn me down. Despite being in treatment since my pain began, I have not had a day without pain for over 10 years. I do not believe that anything can help me anymore.

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Low threat/low response efficacy appeal

FACT #1 * Back pain is very difficult to treat effectively

FACT #2 * Rarely do episodes of severe back pain lead to chronic, disabling pain

FACT #3 * Back pain is often described as a dull type of pain

THE PAIN

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FACT #4 * Experts agree that back pain remains a very difficult condition to treat successfully

FACT #5 * The vast majority of people with back pain miss only a few days of work due to pain each year

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John C. Charles, Winnipeg, Manitoba

My pain began 16 years ago. It was manageable at first but it quickly got worse. It tired me. I have been to 7 doctors and received 5 different diagnoses. I have had 6 different prescriptions and I have had surgery. I still have a twinge of pain occasionally. Treatments help temporarily, but they don't last. I have seen 3 different physiotherapists and 2 chiropractors over the years and nothing works. I have a nagging type of pain that will not leave. Despite being in treatment since my pain began, I have not had a day without being mild pain for over 10 years. I do not believe that my pain will ever completely leave.

Sarah Jennings, Moncton, New Brunswick

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Appendix F

Marginal Means, Cell Means, and Standard Deviation Tables for Study #1

Dependent Variable is Help Index

Potential Range = 0 to 30

Independent Variable	Level	Mean	SD	N
Response Efficacy		14.92	6.23	92
	High	14.70	6.35	47
	Low	15.15	5.99	45
Threat		14.97	6.09	92
	High	15.92	5.85	49
	Low	13.89	6.41	43
Response Efficacy	High			
Threat	High	14.21	6.73	24
Response Efficacy	High			
Threat	Low	15.13	6.05	23
Response Efficacy	Low			
Threat	High	17.64	4.34	25
Response Efficacy	Low			
Threat	Low	12.65	6.70	20

Dependent Variable is Amount of Money Pledged

Independent Variable	Level	Mean	SD	N
Response Efficacy		$3.15	4.84	89
	High	$3.27	5.25	44
	Low	$3.04	4.43	45
Threat		$3.16	4.92	89
	High	$3.65	5.35	45
	Low	$2.66	4.23	44
Response Efficacy	High			
Threat	High	$3.96	6.11	22
Response Efficacy	High			
Threat	Low	$2.59	4.26	22
Response Efficacy	Low			
Threat	High	$3.35	4.63	23
Response Efficacy	Low			
Threat	Low	$2.73	4.23	22

Dependent Variable is Response Efficacy manipulation check

Potential Range = 0 to 18

Independent Variable	Level	Mean	SD	N
Response Efficacy		7.25	3.68	84
	High	9.21	3.75	43
	Low	5.20	3.52	41
Threat		7.17	4.12	84
	High	6.91	4.49	46
	Low	7.49	3.71	38
Response Efficacy	High			
Threat	High	9.26	4.48	23
Response Efficacy	High			
Threat	Low	9.15	2.79	20
Response Efficacy	Low			
Threat	High	4.57	3.11	23
Response Efficacy	Low			
Threat	Low	5.83	3.94	18

Dependent Variable is Threat manipulation check

Potential Range = 0 to 36

Independent Variable	Level	Mean	SD	N
Response Efficacy		22.27	6.80	82
	High	21.75	6.21	44
	Low	22.88	7.41	38
Threat		22.70	5.52	82
	High	26.27	4.78	45
	Low	18.36	6.40	37
Response Efficacy	High			
Threat	High	25.22	4.84	23
Response Efficacy	High			
Threat	Low	18.29	5.54	21
Response Efficacy	Low			
Threat	High	27.32	4.58	22
Response Efficacy	Low			
Threat	Low	18.44	7.57	16

Appendix G

Analysis of Variance Source Tables for Study #1

Dependent variable is Help Index

Source	SS	DF	Mean Square	F	P
Response Efficacy	5.17	1	5.17	0.15	0.71
Threat	94.48	1	94.48	2.64	0.11
Inter-action	199.57	1	199.57	5.57	0.02
Error	3152.88	88	35.83		

Dependent variable is Amount of Money Pledged

Source	SS	DF	Mean Square	F	P
Response Efficacy	1.23	1	1.23	0.05	0.82
Threat	21.89	1	21.89	0.92	0.34
Inter-action	3.07	1	3.07	0.13	0.72
Error	2023.85	85	23.81		

Dependent variable is Log(10) of Amount of Money Pledged

Source	SS	DF	Mean Square	F	P
Response Efficacy	0.01	1	0.01	0.02	0.88
Threat	0.15	1	0.15	0.63	0.43
Inter-action	0.00	1	0.00	0.00	0.99
Error	19.64	85	0.23		

Dependent variable is Response Efficacy manipulation check

Source	SS	DF	Mean Square	F	P
Response Efficacy	333.47	1	333.47	24.95	0.00
Threat	6.96	1	6.96	0.52	0.47
Inter-action	9.88	1	9.88	0.74	0.39
Error	1069.14	80	13.36		

Dependent variable is Threat manipulation check

Source	SS	DF	Mean Square	F	P
Response Efficacy	25.49	1	25.49	0.82	0.37
Threat	1256.11	1	1256.11	40.30	0.00
Inter-action	19.08	1	19.08	0.61	0.44
Error	2430.91	78	31.17		

Appendix H

I have read the debriefing materials and have had the study explained to me in full by the researher. I give consent that the data I provided be utilized. I understand that I can request that the data I provided be destroyed.

I consent that the data I provided be utilized.

_____
Name

_____
Date

_____
Researcher

CONSENT FORM

Response of persons with back pain to charity appeals for back pain research

We invite you to take part in a research study at the Camp Hill Medical Centre. It is important that you read and understand several general principles that apply to all who take part in our studies: (a) Taking part in this study is entirely voluntary. Whether you participate or not the quality of medical care provided to you will be the same; (b) personal benefit may not result from taking part in the study but knowledge may be gained that will benefit others; (c) you may withdraw from the study at any time without loss of any benefits to which you are otherwise entitled. This study is described below. The description includes information about risks to you, as well as any inconveniences or discomfort which you may experience. You are urged to discuss any questions you have about this study with the researcher, Michael Ross, M. A., 420-2509.

We are looking for people who have back pain at least three days each month for at least six months in a row and who are presently waiting to receive treatment for their pain problem. If you decide to participate you will be asked to read a brochure about back pain and to complete a questionnaire. The purpose of this research project is to learn more about the way that fund-raising appeals affect people with health problems. The fund-raising brochure describes chronic low back pain and its effects on individuals, families and society. Detailed descriptions about individuals with back pain are presented as well as how their lives have changed since the back pain began. Current treatments are described and their effectiveness is discussed. The brochure concludes with a request for charitable donations to a back pain research foundation. You, as a person with back pain, are not requested to donate any money. We are interested only in your responses to the information contained in the brochure and how you cope with pain. To obtain your responses, we have included two questionnaires for you to complete after reading the brochure.

There are four different versions of the brochure currently being evaluated. You will be asked to read only one of the versions, which was selected for you entirely by chance. The versions differ from each other in the way that back pain and back pain treatments are described. It is important to know, before agreeing to participate, that some people may find the brochure to be somewhat upsetting to them because of the way pain and pain treatment are described. Other people, however, will find that the brochure has little or no effect on

how they feel or think about their pain. In any case, you are free to stop reading the brochure at any time and to withdraw from this study. You are under no obligation whatsoever to participate or to continue your participation in this study. No additional negative effects are expected to occur as a result of your participation in this study, however, it is possible that unforseen risks may occur. If you have any negative reactions because of your participation in this study phone the researcher and inform him of your concerns. He will assist you and will <u>not pressure you into completing the study</u>.

If you agree to participate in this study you will be asked to sign this consent form, complete the enclosed questionnaire, and mail them back to the researcher. One week to ten days later you will receive the same questionnaire once again, a brochure, and another questionnaire. You will be asked to read the brochure, complete the two questionnaires, and mail them back to the researcher. One week to ten days later you will receive the questionnaire that you have already completed twice for a third time. It is necessary to complete the same questionnaire on three occasions so that we can determine whether or not the way people cope with pain changes over time. The researcher will pay for the costs of the mailings.

Your responses to the questionnaires will be kept confidential. You are not required to write your name on the questionnaires as the researcher will code the questionnaires sent to you with numbers. Only the researcher will know which names correspond to which numbers, and this information will be kept in a locked, secure place. If the results of this study are published in a scientific journal, individual participants will <u>not</u> be identified.

Your participation in this study will help us to learn how mass media appeals, such as brochures, affect people with health-problems. It is hoped that the information you provide to us will help others in the future design high quality educational and promotional materials.

If you agree to participate in this study please sign on the line below in the presence of a witness. The witness (e.g., a friend or relative) is also required to sign. We suggest that you keep a copy of the consent form for your records. Thank you for your consideration.

I have read the explanation about this study and I am aware that I can telephone the researcher to discuss this study further. I hereby consent to take part in this study.

Date	(Sign Here)
Date	Witness
Date	M. Ross, M. A. Researcher

APPENDIX I

Coping Strategy Questionnaire

COPING STRATEGY QUESTIONNAIRE

Individuals who experience pain have developed a number of ways to cope or deal with their pain. These include saying things to themselves when they experience pain, or engaging in different activities. Below are a list of things that patients have reported doing when they feel pain. For each activity, please indicate, using the scale below, how much you engage in that activity when you feel pain, where a 0 indicates you never do that when you are experiencing pain, a 3 indicates that you sometimes do that when you experience pain, and a 6 indicates you always do it when you experience pain. Remember, you can use any point along the scale.

0	1	2	3	4	5	6
Never do that			Sometimes do that			Always do that

WHEN I FEEL PAIN.....

_____ 1. I try to feel distant from the pain, almost as if the pain was in somebody else's body.

_____ 2. I leave the house and do something, such as going to the movies or shopping.

_____ 3. I try to think of something pleasant.

_____ 4. I don't think of it as pain but rather as a dull or warm feeling.

_____ 5. It is terrible and I feel it is never going to get any better.

_____ 6. I tell myself to be brave and carry on despite the pain.

_____ 7. I read.

_____ 8. I tell myself that I can overcome the pain.

_____ 9. I count numbers in my head or run a song through my mind.

_____ 10. I just think of it as some other sensation, such as numbness.

_____ 11. It is awful and I feel it overwhelms me.

_____ 12. I play mental games with myself to keep my mind off the pain.

_____ 13. I feel my life isn't worth living.

_____ 14. I know someday someone will be here to help me and it will go away for awhile.

_____ 15. I pray to God it won't last long.

_____ 16. I try not to think of it as my body, but rather as something separate from me.

_____ 17. I don't think about the pain.

_____ 18. I try to think years ahead what everything will be like after I've gotten rid of the pain.

_____ 19. I tell myself it doesn't hurt.

_____ 20. I tell myself I can't let the pain stand in the way of what I have to do.

_____ 21. I don't pay any attention to it.

_____ 22. I have faith in doctors that someday there will be a cure for my pain.

_____ 23. No matter how bad it gets, I know I can handle it.

_____ 24. I pretend it is not there.

_____ 25. I worry all the time about whether it will end.

_____ 26. I replay in my mind pleasant experiences in the past.

_____ 27. I think of people I enjoy doing things with.

_____ 28. I pray for the pain to stop.

_____ 29. I imagine that the pain is outside of my body.

_____ 30. I just go on as if nothing happened.

_____ 31. I see it as a challenge and don't let it bother me.

_____ 32. Although it hurts, I just keep going.

_____ 33. I feel I can't stand it any more.

_____ 34. I try to be around other people.

_____ 35. I ignore it.

_____ 36. I rely on my faith in God.

_____ 37. I feel like I can't go on.

_____ 38. I think of things I enjoy doing.

_____ 39. I do anything to get my mind off the pain.

_____ 40. I do something I enjoy, such as watching TV or listening to music.

_____ 41. I pretend it is not a part of me.

_____ 42. I do something active, like household chores or projects.

Based on all the things you do to cope or deal with your pain, on an average day, how much control do you feel you have over it? Please circle the appropriate number. Remember, you can circle any number along the scale.

0	1	2	3	4	5	6
No Control			Some Control			Complete Control

Based on all the things you do to cope or deal with pain, on an average day, how much are you able to decrease it? Please circle the appropriate number. Remember, you can circle any number along the scale.

0	1	2	3	4	5	6
Can't decrease it at all			Can decrease it somewhat			Can decrease completely

Appendix J

Debriefing information presented to subjects in Study #2

Thank you for taking part in this study about the effects of media portrayals of back pain. I am writing to provide you with additional information about the study. As I mentioned to you on the phone, the study was designed to assess the effects of different brochures that differed in how severely back pain and back pain treatment were described. The four different types of brochures were:

A: Back pain is severe and treatment is effective
B: Back pain is mild and treatment is effective
C: Back pain is severe and treatment is not effective
D: Back pain is mild and treatment is not effective

The brochure you received is circled above. The main point of this study is to see if any of the brochures will reduce or improve individuals' confidence in their ability to manage pain. Portrayals of pain and suffering are often seen in commercials for charities trying to raise funds. While portrayals of untreated pain and suffering (e.g., Brochure C) may raise more money, it may lead those with the portrayed problem to feel that there is little they can do to cope with the pain. Whereas, this is definitely not the case. All major treatment approaches encourage people to take control and participate in their treatment (e.g., by exercising). People who received Brochure C or D, however, are not expected to experience lasting negative effects because the brochures were written in a relatively mild manner, no dramatic pictures were used, and treatment is scheduled to begin soon. To help insure that their are no negative effects, people who received brochures C or D will be mailed brochure A, which is an optimistic portrayal of pain and pain treatment and they will be invited to a session dealing with psychological approaches to pain management.

The charity named in the brochures is not a real charity. The name was made up for this study. It was necessary to disguise the charity so that we could be sure that you had not heard of the charity before. This research, however, is supported by a real charitable organization, the International Pain Foundation.

If you are interested in contacting an organization to receive additional information about pain you can write to: North American Chronic Pain Association of Canada, Handel Ct., Bramalea, Ontario, L6S 1Y4. Also, there are several good books about pain management available in bookstores and libraries. For example, Mastering Pain, by R. Sternbach and Your Guide to Coping with Back Pain, by J. Fine.

Thank you again for your help.

Appendix K

Marginal and Cell Means and Standard Deviations for the Manipulation Checks and CSQ Scale Scores

Response Efficacy manipulation check

Potential Range = 0 to 12

Independent Variable	Level	Mean	SD	N
Response Efficacy		4.99	2.32	56
	High	5.64	2.54	28
	Low	4.34	2.09	28
Threat		4.98	2.36	56
	High	4.78	1.85	29
	Low	5.20	2.90	27
Response Efficacy	High			
Threat	High	5.50	1.99	14
Response Efficacy	High			
Threat	Low	5.79	3.07	14
Response Efficacy	Low			
Threat	High	4.07	1.44	15
Response Efficacy	Low			
Threat	Low	4.62	2.69	13

Threat manipulation check

Potential Range = 0 to 36

Independent Variable	Level	Mean	SD	N
Response Efficacy		23.60	6.77	54
	High	25.73	6.29	26
	Low	21.64	7.21	28
Threat		23.78	6.43	54
	High	26.41	5.51	28
	Low	20.96	7.42	26
Response Efficacy	High			
Threat	High	27.15	5.10	13
Response Efficacy	High			
Threat	Low	24.31	7.22	13
Response Efficacy	Low			
Threat	High	25.67	5.94	15
Response Efficacy	Low			
Threat	Low	17.62	6.19	13

Ability to control pain

Experimental Condition	N	Time	
		Pre-test	Post-test
Marginal Means			
	56	2.88 (1.55)	3.21 (1.30)
RE = High	28	2.96 (1.37)	3.18 (1.29)
RE = Low	28	2.79 (1.73)	3.25 (1.35)
Threat = High	29	3.00 (1.49)	3.35 (0.97)
Threat = Low	27	2.74 (1.63)	3.08 (1.59)
Cell Means			
RE = High/Threat = High	14	3.21 (1.12)	3.43 (1.09)
RE = High/Threat = Low	14	2.71 (1.59)	2.92 (1.44)
RE = Low/Threat = High	15	2.80 (1.78)	3.27 (0.88)
RE = Low/Threat = Low	13	2.77 (1.74)	3.23 (1.79)

Note: [a]Standard Deviations are in parentheses
[b]Potential range of variable is 0 - 6

Ability to decrease pain

Experimental Condition	N	Time	
		Pre-test	Post-test
Marginal Means			
	56	2.63 (1.47)	2.92 (1.26)
RE = High	28	3.04 (1.45)	3.00 (1.36)
RE = Low	28	2.22 (1.40)	2.84 (1.16)
Threat = High	29	2.74 (1.48)	2.97 (0.98)
Threat = Low	27	2.51 (1.48)	2.87 (1.52)
Cell Means			
RE = High/Threat = High	14	3.27 (1.27)	3.07 (1.00)
RE = High/Threat = Low	14	2.79 (1.63)	2.93 (1.69)
RE = Low/Threat = High	15	2.20 (1.52)	2.87 (1.00)
RE = Low/Threat = Low	13	2.23 (1.30)	2.81 (1.38)

Note: [a]Standard Deviations are in parentheses
[b]Potential range of variable is 0 - 6

Experimental Condition	N	Time	
		Pre-test	Post-test
Marginal Means			
	56	11.48 (8.83)	9.86 (8.30)
RE = High	28	11.61 (8.75)	10.77 (9.05)
RE = Low	28	11.39 (9.08)	8.91 (7.53)
Threat = High	29	10.57 (7.53)	9.48 (6.99)
Threat = Low	27	12.46 (10.10)	10.27 (9.62)
Cell Means			
RE = High/Threat = High	14	10.07 (7.36)	9.71 (7.12)
RE = High/Threat = Low	14	13.14 (9.98)	11.86 (10.81)
RE = Low/Threat = High	15	11.00 (7.91)	9.20 (7.11)
RE = Low/Threat = Low	13	11.77 (10.58)	8.62 (8.26)

Note: [a]Standard Deviations are in parentheses
[b]Potential range of variable is 0 - 36

Coping self-statements

Experimental Condition	N	Time	
		Pre-test	Post-test
Marginal Means			
	56	21.91 (6.59)	21.30 (7.19)
RE = High	28	21.93 (6.54)	21.71 (6.32)
RE = Low	28	21.97 (6.76)	20.97 (8.06)
Threat = High	29	20.90 (6.10)	19.84 (7.00)
Threat = Low	27	23.00 (7.03)	22.80 (7.19)
Cell Means			
RE = High/Threat = High	14	20.93 (5.69)	19.21 (5.00)
RE = High/Threat = Low	14	22.93 (7.37)	24.21 (6.68)
RE = Low/Threat = High	15	20.87 (6.66)	20.47 (8.61)
RE = Low/Threat = Low	13	23.08 (6.93)	21.39 (7.69)

Note: [a]Standard Deviations are in parentheses
[b]Potential range of variable is 0 - 36

Experimental Condition	N	Time	
		Pre-test	Post-test
Marginal Means			
	56	9.91 (7.37)	10.68 (8.52)
RE = High	28	10.47 (7.47)	11.21 (8.97)
RE = Low	28	9.21 (7.36)	9.95 (8.14)
Threat = High	29	10.45 (7.04)	10.97 (8.61)
Threat = Low	27	9.22 (7.79)	10.19 (8.54)
Cell Means			
RE = High/Threat = High	14	9.57 (6.20)	9.27 (8.21)
RE = High/Threat = Low	14	11.36 (8.71)	13.14 (9.57)
RE = Low/Threat = High	15	11.33 (7.86)	12.67 (8.93)
RE = Low/Threat = Low	13	7.07 (6.25)	7.23 (6.25)

Note: [a]Standard Deviations are in parentheses
[b]Potential range of variable is 0 - 36

Experimental Condition	N	Time	
		Pre-test	Post-test
Marginal Means			
	56	14.46 (9.02)	13.32 (8.94)
RE = High	28	11.32 (7.38)	12.07 (8.86)
RE = Low	28	17.67 (9.53)	14.67 (9.02)
Threat = High	29	14.08 (8.27)	12.13 (8.76)
Threat = Low	27	14.92 (9.91)	14.61 (9.14)
Cell Means			
RE = High/Threat = High	14	11.43 (7.17)	10.93 (8.70)
RE = High/Threat = Low	14	11.21 (7.86)	13.21 (9.19)
RE = Low/Threat = High	15	16.73 (8.63)	13.33 (8.96)
RE = Low/Threat = Low	13	18.62 (10.74)	16.00 (9.23)

Note: [a]Standard Deviations are in parentheses
[b]Potential range of variable is 0 - 36

Experimental Condition	N	Time	
		Pre-test	Post-test
Marginal Means			
	56	14.77 (7.75)	16.52 (8.49)
RE = High	28	16.89 (7.19)	17.86 (8.37)
RE = Low	28	12.61 (7.82)	15.11 (8.56)
Threat = High	29	14.78 (7.75)	16.50 (8.75)
Threat = Low	27	14.72 (7.89)	16.47 (8.38)
Cell Means			
RE = High/Threat = High	14	16.50 (7.16)	16.93 (8.80)
RE = High/Threat = Low	14	17.29 (7.48)	18.79 (8.14)
RE = Low/Threat = High	15	13.07 (8.15)	16.07 (8.99)
RE = Low/Threat = Low	13	12.15 (7.71)	14.15 (8.27)

Note: [a]Standard Deviations are in parentheses
[b]Potential range of variable is 0 - 36

Experimental Condition	N	Time	
		Pre-test	Post-test
Marginal Means			
	56	13.05 (9.14)	12.86 (9.00)
RE = High	28	15.64 (10.69)	16.18 (10.60)
RE = Low	28	10.36 (6.49)	9.54 (5.47)
Threat = High	29	13.83 (9.33)	13.17 (9.41)
Threat = Low	27	12.17 (9.05)	12.59 (8.73)
Cell Means			
RE = High/Threat = High	14	15.79 (10.96)	16.79 (11.22)
RE = High/Threat = Low	14	15.50 (10.83)	15.57 (10.33)
RE = Low/Threat = High	15	11.87 (7.41)	9.47 (5.69)
RE = Low/Threat = Low	13	8.87 (5.05)	9.62 (5.42)

Note: [a]Standard Deviations are in parentheses
[b]Potential range of variable is 0 - 36

Experimental Condition	N	Time	
		Pre-test	Post-test
Marginal Means			
	56	3.88 (4.70)	5.95 (5.99)
RE = High	28	3.07 (4.04)	5.43 (5.34)
RE = Low	28	4.64 (5.22)	6.44 (6.64)
Threat = High	29	4.42 (4.85)	6.61 (6.56)
Threat = Low	27	3.29 (4.54)	5.25 (5.35)
Cell Means			
RE = High/Threat = High	14	3.71 (4.62)	6.43 (6.05)
RE = High/Threat = Low	14	2.43 (3.41)	4.43 (4.52)
RE = Low/Threat = High	15	5.13 (5.13)	6.80 (7.21)
RE = Low/Threat = Low	13	4.15 (5.51)	6.08 (6.18)

Note: [a]Standard Deviations are in parentheses
[b]Potential range of variable is 0 - 36

Ignoring pain (ANCOVA adjusted means)

Experimental Condition	N	Time 2
Adjusted Marginal Means		
Response Efficacy	56	13.37 (7.17)
High	28	15.60 (7.16)
Low	28	11.13 (7.17)
Threat	56	13.33 (6.38)
High	29	12.18 (6.38)
Low	27	14.55 (6.39)
Adjusted Cell Means		
RE = High/Threat = High	14	14.48 (6.96)
RE = High/Threat = Low	14	16.72 (6.79)
RE = Low/Threat = High	15	9.88 (6.91)
RE = Low/Threat = Low	13	12.38 (6.79)

Note: [a]Standard Deviations are in parentheses
[b]Potential range of variable is 0 - 36

Appendix L

Analysis of Variance and Multivariate Analysis of Variance and Analysis of Covariance Source Tables for Study #2

Multivariate Analysis

Between Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Response Efficacy	149.60	1	149.60	0.60	0.443
Threat	9.01	1	9.01	0.04	0.850
Inter-action	125.80	1	125.80	0.50	0.482
Error	13016.68	52	250.33		

Within Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Time	35487.73	17	2087.51	56.21	0.000
Time X Response Efficacy	2037.19	17	119.84	3.23	0.000
Time X Threat	449.34	17	26.43	0.71	0.793
Time X Response Efficacy X Threat	522.62	17	30.74	0.83	0.661
Error	32830.04	884	37.14		

Response Efficacy manipulation check

Source	Sum of Squares	DF	Mean Square	F	P
Response Efficacy	23.67	1	23.67	4.25	0.044
Threat	2.43	1	2.43	0.44	0.512
Inter-action	0.24	1	0.24	0.04	0.836
Error	289.88	52	5.57		

Threat manipulation check

Source	Sum of Squares	DF	Mean Square	F	P
Response Efficacy	224.94	1	224.94	5.95	0.018
Threat	399.26	1	399.26	10.57	0.002
Inter-action	91.09	1	91.09	2.41	0.127
Error	1888.87	50	37.78		

Ability to Control Pain

Between Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Response Efficacy	0.08	1	0.08	0.03	0.876
Threat	1.97	1	1.97	0.59	0.448
Inter-action	1.52	1	1.52	0.45	0.506
Error	176.68	52	3.40		

Within Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Time	3.21	1	3.21	3.73	0.059
Time X Response Efficacy	0.44	1	0.44	0.51	0.480
Time X Threat	0.00	1	0.00	0.00	0.994
Time X Response Efficacy X Threat	0.00	1	0.00	0.00	0.994
Error	44.84	52	0.86		

Ability to Decrease Pain

Between Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Response Efficacy	6.75	1	6.75	2.48	0.122
Threat	0.79	1	0.79	0.29	0.593
Inter-action	0.66	1	0.66	0.24	0.625
Error	141.62	52	2.72		

Within Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Time	2.40	1	2.40	2.37	0.130
Time X Response Efficacy	3.02	1	3.02	2.98	0.090
Time X Threat	0.13	1	0.13	0.12	0.730
Time X Response Efficacy X Threat	0.35	1	0.35	0.34	0.560
Error	52.66	52	1.01		

Catastrophizing

Between Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Response Efficacy	30.81	1	30.81	0.22	0.640
Threat	50.88	1	50.88	0.37	0.549
Inter-action	44.16	1	44.16	0.32	0.576
Error	7256.92	52	139.57		

Within Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Time	75.96	1	75.96	5.91	0.019
Time X Response Efficacy	19.14	1	19.14	1.49	0.228
Time X Threat	9.09	1	9.09	0.71	0.404
Time X Response Efficacy X Threat	0.32	1	0.32	0.03	0.876
Error	668.08	52	12.85		

Coping Self-Statements

Between Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Response Efficacy	3.88	1	3.88	0.05	0.821
Threat	179.06	1	179.06	2.39	0.128
Inter-action	26.17	1	26.17	0.35	0.557
Error	3890.99	52	74.83		

Within Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Time	11.09	1	11.09	0.53	0.470
Time X Response Efficacy	4.83	1	4.83	0.23	0.633
Time X Threat	5.09	1	5.09	0.24	0.624
Time X Response Efficacy X Threat	32.16	1	32.16	1.54	0.220
Error	1087.04	52	1087.04		

Diverting Attention

Between Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Response Efficacy	44.51	1	34.51	0.39	0.533
Threat	28.62	1	28.62	0.25	0.617
Inter-action	410.49	1	410.49	3.64	0.062
Error	5867.99	52	112.85		

Within Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Time	15.58	1	15.58	1.34	0.252
Time X Response Efficacy	0.00	1	0.00	0.00	0.996
Time X Threat	1.39	1	1.39	0.12	0.731
Time X Response Efficacy X Threat	18.45	1	18.45	1.59	0.213
Error	603.12	52	11.60		

Ignoring Pain

Between Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Response Efficacy	559.06	1	559.06	4.22	0.045
Threat	76.50	1	76.50	0.58	0.451
Inter-action	10.71	1	10.71	0.08	0.777
Error	6885.33	52	132.41		

Within Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Time	35.59	1	35.59	1.49	0.227
Time X Response Efficacy	98.59	1	98.59	4.14	0.047
Time X Threat	18.83	1	18.83	0.79	0.378
Time X Response Efficacy X Threat	5.14	1	5.14	0.22	0.644
Error	1239.09	52	23.83		

Increasing Activities

Between Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Response Efficacy	30.81	1	30.81	0.22	0.640
Threat	50.88	1	50.88	0.37	0.549
Inter-action	44.16	1	44.16	0.32	0.576
Error	7256.92	52	139.57		

Within Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Time	75.96	1	75.96	5.91	0.019
Time X Response Efficacy	19.14	1	19.14	1.49	0.228
Time X Threat	9.09	1	9.09	0.71	0.404
Time X Response Efficacy X Threat	0.32	1	0.32	0.03	0.876
Error	668.08	52	12.85		

Praying and Hoping

Between Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Response Efficacy	992.73	1	992.73	7.02	0.011
Threat	33.36	1	33.36	0.24	0.629
Inter-action	3.29	1	3.29	0.02	0.879
Error	7356.46	52	141.47		

Within Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Time	0.55	1	0.55	0.05	0.833
Time X Response Efficacy	12.75	1	12.75	1.05	0.311
Time X Threat	8.76	1	8.76	0.72	0.400
Time X Response Efficacy X Threat	29.31	1	29.31	2.41	0.127
Error	633.42	52	12.18		

Between Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Response Efficacy	46.55	1	46.55	1.02	0.317
Threat	43.43	1	43.43	0.95	0.333
Inter-action	4.38	1	4.38	0.10	0.758
Error	2366.34	52	45.51		

Within Subjects

Source	Sum of Squares	DF	Mean Square	F	P
Time	120.37	1	120.37	8.67	0.005
Time X Response Efficacy	2.21	1	2.21	0.16	0.692
Time X Threat	0.37	1	0.37	0.03	0.872
Time X Response Efficacy X Threat	1.65	1	1.65	0.12	0.732
Error	721.56	52	13.88		

ANCOVA Source Table for Ignoring Pain

Source	Sum of Squares	DF	Mean Square	F	P
Main Effects					
Response Efficacy	169.47	1	169.47	4.38	0.042
Threat	71.02	1	71.02	1.84	0.182
Inter-action	0.21	1	0.21	0.01	0.942
Covariates					
Ignoring pain	881.85	1	881.85	22.80	0.001
Catastro-phizing	61.95	1	61.95	1.60	0.212
Control pain	42.78	1	42.78	1.11	0.299
Decrease pain	246.89	1	246.89	6.38	0.015
Diverting attention	69.85	1	69.85	1.81	0.186
Increasing behaviour	37.37	1	37.37	0.97	0.331
Praying & hoping	138.92	1	138.92	3.59	0.065
Reinterpreting pain	3.04	1	3.04	0.08	0.781
Self-statements	65.13	1	65.13	1.68	0.201
Error	1663.13	43	38.68		