Effects of persuasive message order on coping with breast cancer information

Steven Prentice-Dunn, Donna L. Floyd and James M. Flournoy

Abstract

The current study explored the impact of varying the order of message components on coping with breast cancer information. In a $2 \times 2 \times 2$ factorial design, threat information, coping information and order of information were manipulated. College students read persuasive essays that varied in emphasis on threat of developing breast cancer and effectiveness of breast self-examination (BSE) in averting the threat of cancer. Participants who read the high-threat message reported higher intentions to perform BSE, more rational problem solving and more hopelessness than did those who read a low-threat message. The coping information messages produced a similar pattern of results. In addition, those who read the high-coping message reported less fatalism than did participants who read the low-coping message. When threat information was presented first, the high-threat message led to less hopelessness and reliance on religious faith than when the coping information was presented first. These results demonstrate the threatening health information energizes one to act in both adaptive and maladaptive ways, and that coping information decreases the tendency to respond maladaptively to the health threat. They also suggest that the order of presentation of the information may affect the extent to which people respond adaptively.

Introduction

Breast self-examination (BSE) is an easily learned, effective procedure that is still not practiced regularly by the majority of American women (Miller et al., 1996). Health professionals often attempt to increase BSE use through the use of persuasive messages that are based on convincing women of their risk of developing breast cancer. Concern about breast cancer can be a powerful motivator of preventive actions. For example, McCaul et al. found that higher levels of concern predicted the likelihood of performing BSE, attending mammography screening and getting a clinical breast examination (McCaul et al., 1996). Unfortunately, not all studies have demonstrated a positive relation between threat and BSE performance. Some researchers [e.g. (Lerman et al., 1991; Kash et al., 1992)] have found that threatening information can increase anxiety and thereby lead to avoidance rather than to taking preventive measures.

Protection Motivation Theory (PMT) (Rogers, 1983; Prentice-Dunn and Rogers, 1986; Rogers and Prentice-Dunn, 1997) provides a model for understanding the contradictory impact of threatening information on BSE by detailing the cognitive processes involved in health decisions. Information about a health threat initiates a threat appraisal and a coping appraisal that then influence the individual’s decision to react adaptively or maladaptively to the information. For example, threat appraisal is influenced by information about the severity of breast cancer and one’s vulnerability to it. Coping appraisal is affected by information on
the effectiveness of BSE in detecting early cancer (i.e. response efficacy) and by judgments that one is capable of successively performing BSE (i.e. self-efficacy).

PMT investigations have revealed the importance of perceived threat to oneself as a motivator of subsequent actions. In a meta-analysis of 65 studies, PMT threat-based messages were shown to be effective in several health domains (Floyd et al., 2000). However, these studies also demonstrate that providing individuals with an effective way to reduce the threat is crucial to the person’s decision to take preventive action. For example, Rippetoe and Rogers found that a high-threat message about breast cancer not only energized adaptive means of coping (e.g. intention to perform BSE and rational problem solving), it also energized maladaptive methods of coping such as fatalism, avoidance and hopelessness (Rippetoe and Rogers, 1987). It was only when high-threat was paired with information about the effectiveness of BSE that the use of adaptive coping modes increased and maladaptive modes decreased.

Results from the PMT literature suggest that the conflicting effects of threat on BSE may be due to the omission of information about the effectiveness of BSE and the ability of women to correctly perform it. The current study investigated another factor that may influence the reaction to threatening messages about cancer, i.e. the order of the information presented. PMT researchers have traditionally presented the information about a health threat first, followed by suggestions about how one can cope with the threat. The current study explored the impact of varying the order of PMT message components on coping with breast cancer information. It was expected that presenting threat information first would produce greater use of adaptive coping modes than would presenting coping information first.

**Method**

A 2×2×2 factorial design was used. Threat information (low versus high), coping information (low versus high) and message order (threat–coping versus coping–threat) were between-subjects manipulations. Seven composite measures of coping (rational problem solving, behavioral intentions, avoidance, religious faith, fatalism, wishful thinking and hopelessness) served as the dependent variables.

Participants were 196 college females who participated to satisfy a course requirement in introductory psychology. Students were ineligible to participate if they had performed BSE in the past 3 months and or had a history of breast cancer. Six participants were excluded for performing BSE, leaving a sample of 190.

Procedures and materials were similar to those used in Rippetoe and Rogers (Rippetoe and Rogers, 1987). Participants met in groups of five to 20. The study was described as an effort to develop an educational program to provide college-age women with current information about breast cancer.

Participants were randomly assigned to read one of eight persuasive essays that stressed PMT components. The high-threat essay described breast cancer in graphic detail with accompanying photos of cancerous breasts. It contained vivid descriptions of chemotherapy side effects and a radical mastectomy, and emphasized susceptibility due to stress and high-fat diets. The low-threat essay described breast cancer as a less severe disease with fewer physical and emotional consequences. It also emphasized the rarity of this disease among college-age women. Photographs of normal breasts were included in this essay.

The high-coping essay stressed the importance of BSE and its efficacy in detecting cancer early. Information emphasized a woman’s ability to perform BSE correctly and to easily incorporate it into her health routine. Conversely, the low-coping essay argued that BSE is not especially effective in detecting breast cancer early enough to increase life expectancy. In addition, the low-coping message conveyed the difficulty in actually detecting a breast lump and the inconvenience of routinizing the procedure.

After reading the essay, participants completed a questionnaire containing manipulation checks.
Coping with breast cancer information

and measures of the seven coping modes. The coping modes were taken from Rippetoe and Rogers and included two adaptive modes (i.e. intentions to perform BSE and rational problem solving) and five maladaptive modes (avoidance, fatalism, hopelessness, religiosity and wishful thinking) (Rippetoe and Rogers, 1987). All items in each coping mode were four-point Likert scales. Examples included ‘If I examine my breast regularly, my chances of detecting breast cancer are extremely high’ (coping appraisal manipulation check) and ‘In this day and age, it sometimes seems a hopeless task to stay healthy’ (hopelessness). Each manipulation check sum and coping mode sum was based on three to seven items.

Next participants completed a questionnaire assessing hypothesis guessing and the credibility of the messages. Four participants were excluded from the data analysis after indicating that they did not believe the misinformation about breast cancer presented in the low-threat condition. Everyone was then debriefed using the guidelines suggested by Mills (Mills, 1976), and given American Cancer Society pamphlets answering questions about breast cancer, describing the importance of BSE and detailing the correct method for performing an exam.

**Results**

Alphas on the threat information and coping information independent variables were 0.91 and 0.92, respectively. A 2 × 2 × 2 ANOVA on each of the manipulation check sums revealed that the threat information and coping information independent variables significantly affected only their respective manipulation check sum. In each case, participants in the high information condition scored higher on the manipulation check sum than did those in the low information condition. Order did not affect either sum and there were no interactions. These results indicate that the independent variables were successfully manipulated.

Alphas on the seven coping modes were 0.92 (intentions), 0.88 (rational problem solving), 0.90 (religiosity), 0.73 (avoidance), 0.73 (hopelessness), 0.67 (fatalism) and 0.52 (wishful thinking). Wishful thinking was excluded from the analyses due to its lack of internal consistency.

A 2 × 2 × 2 multivariate ANOVA was conducted on the coping modes. The significant MANOVA effects found for threat information (P < 0.001) and coping information (P < 0.001) were followed by univariate ANOVAs. The same procedure was followed for the multivariate trend found for threat information × order (P < 0.06). Threat and coping information produced significantly different means in the predicted direction for behavioral intentions, rational problem solving and one maladaptive coping mode (see Table I).

Of particular interest is the threat information × order multivariate interaction. Significant univariate ANOVA interactions were found for hopelessness, religiosity and fatalism. An examination of the cell means revealed that when threat information was presented first, high-threat content led to significantly less hopelessness compared to the same content presented when the coping information was given first (M = 16.9 and 20.3, respectively, P < 0.05). The same pattern was found for religiosity (M = 26.8 and 31.3, respectively, P < 0.05). No significant difference was found between the two orders on fatalism.

**Discussion**

These results demonstrate that threatening health information energizes one to act in a variety of
ways to minimize the perceived danger. They corroborate the findings of others [e.g. (McCaul et al., 1996; Rimer, 1995)] that emphasizing personal vulnerability to breast cancer can be an effective means of motivating women to act to protect their health. However, the addition of coping information moves the individual away from a maladaptive reaction to the threat. This is seen most clearly when high-threat information is followed by high-coping information. Presenting coping information second (as is done traditionally in PMT studies) provides the individual with suggestions for what to do to control the sensed danger. Reversing this order may leave the individual alarmed and overwhelmed by the threat. Given this situation in our study, participants used coping strategies such as hopelessness and religiosity, perhaps indicating their lack of perceived control over breast cancer.

Several limitations must be acknowledged. First, our study did not assess the behavioral impact of the essays. Although PMT variables have been found to have effects of substantial magnitude on both intentions and behaviors [see meta-analysis (Floyd et al., 2000)], several factors may interfere with intentions being put into practice. Second, our definition of religiosity as maladaptive should be explained. The religiosity items targeted a fatalistic reliance on God without changing one’s current behavior. Thus, they do not capture fully the range of possible uses of religious beliefs and practices when confronting challenges to health.

Finally, we should note that main effects and interactions were not found for all the coping modes assessed. This may be due to the brief time frame in which the essay components were presented. For example, the order of the components was manipulated in a matter of a few minutes. Longer intervals may have produced larger effects on the coping modes used. Alternatively, it may be that the content of the essays has sufficient impact to overwhelm message order.

These findings suggest that the order of presentation of the information may affect the extent to which people respond maladaptively. Further, they attest to the value of emphasizing one’s risk of developing a health problem. As McCaul et al. have noted, ‘If such an emphasis creates periodic emotional moments, the minimal cost of that anxiety could be offset by the benefits of the self-protective behavior it induces’ [(McCaul et al. 1996), p. 432].

Acknowledgements

The authors thank Natalie Johnston and Jennifer McKernan for their assistance in data collection.

References


Received on November 22, 1999; accepted on June 19, 2000