Audiotaped social comparison information for cancer patients undergoing radiotherapy

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AUDIOTAPED SOCIAL COMPARISON INFORMATION FOR CANCER PATIENTS UNDERGOING RADIOTHERAPY: DIFFERENTIAL EFFECTS OF PROCEDURAL, EMOTIONAL AND COPING INFORMATION

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SUMMARY

The present study focused on the effects of social comparison information on subjective understanding of radiation therapy, validation of emotions, and self-efficacy of cancer patients undergoing radiation therapy. The effects of three different audiotapes, containing different kinds of social comparison information, were examined. On the procedural tape a man and woman discussed their illness and radiation treatment, on the emotion tape they focused on the emotional aspects of these issues, and on the coping tape they focused on the way they had been coping. The effects of these tapes were measured on subjective understanding about radiation therapy, validation and recognition of emotions, self-efficacy, and mood. The results indicate positive effects of the tapes, especially of the procedural and the coping tape. These audiotapes increased understanding of radiation therapy, self-efficacy and the feeling of validation of emotions. Therefore, these tapes may be an important supplement to existing patient education information. Possible explanations and practical implications are discussed. Copyright © 2003 John Wiley & Sons, Ltd.

INTRODUCTION

Currently, roughly 40% of all cancer patients are treated with radiation therapy (MacLeod and Jackson, 1999), making it one of the most frequently used treatments for cancer besides surgery and chemotherapy. Radiation treatments can have physical side effects including short-term effects like skin alterations, fatigue, and nausea, but also long-term effects like secondary tumors, cognitive impairment and sterility (Perez and Brady, 1998; Smets *et al*., 1998). Furthermore, these treatments can have severe psychological consequences, such as uncertainty, anxiety, depression, psychological distress, feelings of shame and guilt, as well as changes in body perception and self-esteem (Andersen and Tewfik, 1985; Chandra *et al*., 1998; Munro and Potter, 1996).

Of these psychological consequences, Van den Borne and Pruyn (1985) specified uncertainty as one of the major psychological problems among cancer patients. The need for information among cancer patients undergoing radiation therapy is reportedly high (Harrison-Woermke and Graydon, 1993). Patients display a high need for information, especially regarding the disease itself, the prognosis, tests and treatment(s), as well as for information regarding physical care and how to deal with their feelings and concerns (Bilodeau and Degner, 1996; Galloway *et al*., 1997; Graydon

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et al., 1997; Harrison-Woermke and Graydon, 1993).

As several studies have shown that uncertainty has negative effects on the well-being of patients (e.g. Christman, 1990), it is not surprising that a lot of effort has been put into developing interventions to provide patients with the information they want and need. In addition, these interventions have demonstrated beneficial effects (e.g. Johnson, 1996; Ream and Richardson, 1996). Social comparison theory can provide some useful insights here. When cancer patients experience a lack of information, it is assumed that their need for social comparison information (i.e. information about how fellow patients are doing, feeling and coping) increases (Festinger, 1954). Festinger (1950, 1954) hypothesized that people have a drive to evaluate their opinions and abilities. When no objective (that is non-social) information is available, people will try to accurately evaluate their opinions and abilities by comparing themselves with similar others. In fact, some studies indicate that even when objective information is available, people remain interested in social comparison information (Miller, 1977; Willemsen and Van den Berg, 1986). In the past few decades, there has been an increased interest in social comparison processes as related to health and illness.

Social comparison information can be a particularly relevant addition to patient information materials, because it is, by definition, based on experiences from fellow patients. Indeed, cancer patients have often reported that the kind of information they receive from fellow patients is unique, and that only fellow patients can understand what they were going through (e.g. Gray *et al.*, 1997). Furthermore, research has shown that people faced with a serious health threat tend to compare themselves with others in a similar situation (Buunk *et al.*, 1997; Tennen *et al.*, 2000).

In the present study, we provided audiotaped social comparison information (i.e. information about how other patients have experienced their disease and the radiation treatments) to cancer patients who were about to undergo radiation therapy. Patients who have already undergone radiation therapy may not only provide information about the factual features of radiation treatments, but they can also provide sensory information. That is, these patients can provide information about how they experienced different aspects, for example, if they experienced pain or discomfort during treatments. Up to now, the focus has been on providing patients with upward or downward social comparison information (i.e. information on others who are doing better or worse) and relatively little attention has been given to the dimension of comparison (e.g., physical state, coping, or mood). Wood and Taylor (1991) have suggested that individuals compare themselves with others for a specific goal, such as evaluating themselves and their situation (self-evaluation) or improving their situation and their skills (self-improvement). These specific goals may be served by choosing comparison others on a specific dimension. With every goal, a different dimension may be involved. In other words, the function of social comparison information may depend on the dimension of the information.

Cancer patients receiving radiation therapy may use social comparison information for several different reasons, and may thus be interested in social comparison information on different dimensions. We provided information on three potentially relevant comparison dimensions, namely procedures, emotions, and coping, to examine whether information on different dimensions would indeed serve different goals, and thus yield different effects. The first tape focused on the nature of various aspects of the treatment (procedural tape), the second tape focused on emotional reactions to these aspects of the treatment (emotion tape), and the third tape focused on coping with these aspects (coping tape).

Procedural tape

The procedural tape focused on experiences from fellow patients with various aspects of cancer and radiation therapy: how the cancer was discovered, what happened during radiation therapy, possible side effects, and the check-ups after the treatments had ended. Interventions to prepare patients for radiation therapy have been shown to be effective in increasing knowledge about radiation therapy, reducing anxiety, and reducing disruptions of daily activities (see Ream and Richardson, 1996 for a review). Self-regulation theory assumes that these interventions reduce the negative impact of the treatments by providing patients with a schema of the treatment situation (Leventhal and Johnson, 1983). Such a schema allows the patient to anticipate what will happen and to plan for ways to manage the experience (Johnson, 1999). Information about experiences

from fellow patients may enable cancer patients to form a more complete schema about the impending treatments.

Kulik and Mahler (2000) have suggested that when people are faced with a novel (health) threat, they experience an increased desire for social comparison information relevant to the threat. Kulik and Mahler (2000) further hypothesized that people are likely to choose comparison others primarily for their ability to reduce uncertainty (e.g. provide cognitive clarity) about the threat situation. People who are faced with a severe health threat, typically have many questions about their illness and their treatment (What exactly is going to happen? How long will side effects last?). Experiences from fellow patients can help answer some of these questions. However, the information provided on the procedural tape may also provide patients with the opportunity to compare their situation with the situation of fellow patients. In a study among cancer patients, Molleman *et al*., (1986) found that the more uncertainty the patients experienced, the more they considered fellow patients to be informative. The first tape, therefore, consisted of social comparison information about procedural and sensory aspects of radiation therapy, enabling patients to increase their knowledge about radiation therapy as well as to evaluate their own situation.

Emotion tape

The emotion tape focused on the emotional experiences from patients undergoing radiation therapy. Emotional reactions to (radiation) treatments are often disregarded in interventions, as such interventions mainly focus on procedural information. This seems to be an important oversight, as having cancer and being treated for it has been shown to have considerable emotional consequences (Jacobsen *et al*., 1998). Not surprisingly, patients experience uncertainty about these emotions (How should I feel about this news? Is it all right to feel angry? Why do I feel guilty when I am doing well?). Even though every individual reacts to these kind of circumstances in a different way, fellow patients who are undergoing radiation therapy or have already undergone the treatment, are able to provide information about what kind of emotions they experienced receiving radiation therapy.

By comparing one's emotions to those of similar others, one can recognize and validate one's own emotional reaction to a situation. Schachter (1959) was the first to expand Festinger's (1954) hypotheses to emotions. He found that people awaiting a stressful event seek out the company of others awaiting the same event. He inferred that when people are uncertain about the appropriateness of their emotions, they seek the company of similar others so that they can compare their own emotions to those of others. Research has indicated that uncertainty about emotions can indeed promote the need for social comparison (Buunk *et al*., 1991; Cottrell and Eppley 1977; Gerard, 1963; Kulik and Mahler, 2000). However, little attention has been given to the specific effects of comparing one's emotions with those of others when facing health threats. Spiegel and Diamond (2001) suggested that patients who are uncertain about their emotional responses, may learn from fellow patients that they reacted quite normally to the situation. Information from fellow patients can thus normalize and validate patients' emotions.

Kulik and Mahler (2000) have suggested that the key for emotional comparison is the fact that the comparison others have first hand experience with a similar threat. Whether these comparison others currently face or have already faced the threat is of less importance. Comparing one's emotions to those of other patients may help to reduce some of the uncertainty about one's emotional state. The second tape, therefore, consisted of social comparison information on a variety of emotions, both positive and negative, enabling patients to evaluate and validate their emotions.

Coping tape

The coping tape focused on how fellow patients have coped with the various aspects of radiation therapy. Providing procedural and emotional information about aspects of radiation therapy is based on the notion that when patients know more about what they can expect, they can prepare for the experience. However, it provides no information about *how* to prepare for the experience. The coping tape provided models of positive coping with cancer and radiation treatment. According to Bandura's self-efficacy theory (1977, 1982), the coping tape would therefore enable vicarious learning. That is, hearing about other patients coping well with their disease and treatments may convince patients that if others can cope

effectively, they too should be able to cope with their situation (Bandura and Barab, 1973), thus increasing their feelings of self-efficacy.

The concept of vicarious learning is heavily based on principles from social comparison theory. Festinger (1954) already hypothesized that 'There is a unidirectional drive upward in the case of abilities...' (p. 124). Wood (1989) interpreted this to mean that people experience a constant drive to improve their skills and abilities. Positive stories about others adjusting well to a stressful event provide an opportunity for upward social comparison, that is, to compare themselves with fellow patients who are doing better. According to Wood (1989), patients may use these upward comparisons to learn from fellow patients how to improve their own situation, particularly when these fellow patients are coping better. Fellow patients can thus function as a role model, whose behavior patients can copy and imitate. Furthermore, seeing these fellow patients can provide the necessary inspiration, motivation and hope for the future (Taylor and Lobel, 1989).

A study by Taylor *et al.*, (1993) indicated that people facing a stressful event indeed prefer to hear positive stories about other people in a similar situation. Furthermore, studies indicate that people facing a health threat are particularly interested in upward comparison information on the coping dimension (Bennenbroek *et al.*, 2002; Buunk, 1995). That is, they are especially interested in information about others who are coping better. The third tape, therefore, provides social comparison information about coping strategies of fellow patients.

Specification of research issues

The present study examined the effects of three different audiotapes. As indicators for the effectiveness of these tapes, several measures were used, namely evaluation of the tapes, subjective understanding of radiation therapy, validation and recognition of emotions, self-efficacy, and mood.

Several hypotheses were formulated. First, it was expected that the procedural tape would have the most effect on subjective understanding of radiation therapy in comparison to the other audiotapes (Hypothesis 1). Second, it was expected that the emotion tape would have the most effect on feelings of validation and recognition of emotions (Hypothesis 2). Third, it was expected that that the coping tape would have the most effect on self-efficacy (Hypothesis 3). Furthermore, it was examined which tape was evaluated most positively by the patients and which condition had the most beneficial effects on mood.

METHOD

Procedure

Patients were approached in the three hospitals with radiation therapy departments in the northern part of the Netherlands. From each department an assistant checked incoming patient files to see whether the patient met the inclusion criteria. Patients were included when they were newly diagnosed with breast-, cervical-, head and neck-, or prostate cancer and were about to be treated with external radiation therapy with curative intent over a period of four to seven weeks. In addition, only patients who were not participating in another psycho-oncological study and had sufficient knowledge of the Dutch language were included.

Once was determined that a patient met the inclusion criteria, (s)he was approached by his/her radiation oncologist with a request to participate in the study. The patients were given written information about the study, which they could read at their leisure. They could then send an informed consent form back to the researchers, indicating they would be participating in the study. Of 319 eligible patients, 226 agreed to participate in the study (71% response rate)[1]. The main reasons for non-response were not being interested (12%), feeling it was too burdensome (6%), or a poor physical or psychological condition (3%). Next, patients were randomly assigned to one of the three experimental conditions (each with a different audiotape) or to a control condition. Patients who were assigned to an experimental condition, but did not own a tape recorder, were provided with one. In the week prior to the start of their treatment, patients received the questionnaire and an audiotape (for respondents in the experimental conditions).

Sample

Of the respondents, 65% was female and 35% was male. Their ages ranged between 29 and 81

years of age (M = 60). The sample consisted of patients who were treated for breast cancer ($N = 131$), prostate cancer ($N = 61$), cervical cancer ($N = 17$) and head and/or neck tumors ($N = 17$). About 36% of the patients had primary education or lower professional training, 49% had high school education or middle professional training, and 15% had a higher education or higher professional training. All patients were about to undergo radiation therapy. In addition, 53% of the patients had received or were receiving a secondary treatment; 46% surgery, 23% chemotherapy, and 31% other secondary treatment. Time since diagnosis varied between 1 and 36 weeks, with an average of eight weeks.

Development of the audiotapes

In the present study, social comparison information was provided by means of audiotapes for several reasons. By using audiotapes we were able to provide standardized information to a large number of patients, even to patients who have trouble understanding written information because of, for example, reading difficulties. Furthermore, audiotapes enable patients to examine the information whenever and wherever they want, as many times as they want, thus increasing the chance that patients actually process and understand the (sometimes complicated) information. In addition, audiotapes are very cost and time efficient.

A total of 20 cancer patients were interviewed to gather the necessary information for developing the audiotapes. Patients from the University Hospital in Groningen were approached for these interviews. Of these respondents, 62% was female and 38% was male. Their ages ranged between 42 and 83 years of age (M = 61). The sample consisted of patients who were treated for breast cancer (44%), prostate cancer (19%), cervical cancer (19%), and head and/or neck tumors (19%). All patients were treated with radiation therapy. In addition, 69% of the patients also had surgery, and 7% had also had surgery and chemotherapy. Time since diagnosis varied between 4 and 15 months, with an average of eight months. The information from the interviews was combined with information from the medical staff of the radiation therapy departments and with information from relevant literature. The scripts of the audiotapes represent an interview during which two patients who have already undergone radiation treatment recount their experiences.

Before actually recording the audiotapes, the radiation oncologists from two different radiation therapy centers, as well as several cancer patients reviewed the scripts. On the basis of their comments and recommendations, some small alterations to the scripts were made. Next, the audiotapes were recorded with the cooperation of three professional actors (one interviewer, one male and one female cancer patient), a professional director and a sound technician. After recording, the audiotapes were once again reviewed and approved by the medical staff of all three hospitals involved in this study.

A number of (ex-) cancer patients listened to the tapes and provided comments to the tapes. Generally, they were very positive about the content of the audiotapes. In response to comments of these patients, some small changes were made in the audiotapes, by means of editing.

Similarity and differences of the audiotapes

All three audiotapes were based on the same information, namely interviews with patients, interviews with members of the medical staff and literature. Each script was written to match the other scripts as much as possible on the topics that were addressed, the order of the subjects, the use of language, and total length of the audiotape (see Table 1 for excerpts from the scripts). The tapes were approximately 25 min long. Several (ex-) cancer patients listened to the tapes and clearly detected the different emphasis of each tape.

Instruments

All patients received a written questionnaire with several different segments.

First of all, a *manipulation check* was performed to examine whether the respondents could identify the emphasis of the audiotape they had received. We asked the patients to identify what topic was discussed the most by the patients on the tape. They could respond with 'the emotions they had experienced', 'the process of their treatments' or 'how they had coped with their treatments'.

Furthermore, the *extent* to which patients had *compared themselves* with the fellow patients on the tape was examined. We asked the patients to

Table 1. Excerpts of material of the procedural, emotion and coping audiotape

Procedural tape	Emotion tape	Coping tape
'So, every day to the hospital, with a taxi that brought me there, and home again. Except in the weekends. No treatments during the weekend'.	'I can't say that I was scared. It is overwhelming, though. It is all so new and unfamiliar . . .'.	'I wanted to stay positive, I would say to myself: 'Come on, you may be apprehensive, but in a few days you will know that's not at all necessary'.
'You then go to the radiation room, and you lie on a table, which they then place under the radiation device. They tell you it's really important to lie still, so you concentrate on that'.	'They are very nice at the hospital. Of course I have felt uncomfortable, especially in the beginning. But I felt they were very understanding and respectful'.	'A lot changes when you hear you have cancer. But you have to remember that a lot of people are working very hard to make you healthy again'.

indicate whether or not they had compared themselves and/or their situation to the (situation of) the fellow patients on the tape. They could respond with 'no', 'yes, I compared myself with the man on the tape', 'yes, I compared myself with the woman on the tape', or 'yes, I compared myself with the man and the woman on the tape'.

Evaluations of the audiotapes were measured using several separate items. Did the patients find the audiotapes interesting? Was the information on the tapes new to them? Was there information missing on the tapes? Were they inclined to listen to the tapes more than once? Were the tapes too long, too short, or just long enough? These questions were used to get an impression of how the patients evaluated the tapes. After the treatment had ended patients were asked to indicate how many times they had listened to the tape and why they had actually listened to it more than once.

Subjective understanding of radiation therapy after listening to the tape was measured using a self-constructed two-item scale[2]. The items were 'I know better what to expect during treatment' and 'I know more about the way things work at the radiation therapy department'. The patients could indicate how much they agreed with these statements on a 5-point scale, 1 = disagree completely to 5 = agree completely. These two items were highly correlated with each other ($r = 0.67$, $p < 0.0001$).

Recognition and validation of emotions after listening to the tape was measured using a self-constructed three-item scale. The items were 'It is nice to know that others experience the situation the same way as I do',' I am more aware that I am not the only one with negative feelings', and 'I enjoyed learning about the feelings that others experienced during the radiation therapy'. The patients could indicate how much they agreed with these statements on a 5-point scale, 1 = disagree completely to 5 = agree completely. Cronbach's alpha was high, $\alpha = 0.80$.

Self-efficacy after listening to the tape was also measured using a self-constructed three-item scale. The items were: 'I have more confidence that I can keep a positive attitude', 'I know better what the best way of coping with my illness is for me' and ' I feel stimulated by the way other people cope with their illness'. The patients could indicate how much they agreed with these statements on a 5-point scale, 1 = disagree completely to 5 = agree completely. Cronbach's alpha for this scale was $\alpha = 0.80$.

Mood was measured using a shortened version of the Profile of Mood States (V-POMS: McNair *et al.*, 1971; Wald and Mellenbergh, 1990), containing 32 adjectives describing different moods. The participant could indicate how much the description applied to their mood over the past several days on a 5-point scale, 1 = not at all applicable to 5 = very much applicable. The questionnaire contains 5 sub-scales; depression (8 items; $\alpha = 0.85$), anger (7 items; $\alpha = 0.85$), fatigue (6 items; $\alpha = 0.93$), vigor (5 items; $\alpha = 0.87$), tension (6 items, $\alpha = 0.87$). To construct the total scale of negative mood, the 'vigor' items were recoded, so that a higher score indicated a more negative mood. Cronbach's alpha for the complete scale was high, $\alpha = 0.94$.

RESULTS

Descriptives

First, descriptive statistics were calculated of the respondents in all four groups. Demographic

characteristics are presented in Table 2. There were no significant differences between the four groups on these demographic variables.

Manipulation checks

The majority of the patients identified the correct emphasis of the audiotapes (72%). The patients that identified the wrong emphasis either thought that the emotion tape focused on coping or that the coping tape focused on emotions. As the patients only received one audiotape and could not compare the different tapes, it is only likely that some patients mistook coping strategies and emotional reactions for each other.

To examine the extent to which the patients had compared themselves with the fellow patients on the tapes, we used a separate manipulation check. Results show that 93% of the patients who had received the procedural tape had indeed compared themselves, while this percentage was slightly lower among those who had received the coping and emotion tape (respectively, 79 and 82%).

Evaluation of the audiotapes

The results show that the patients were very satisfied with the information on the audiotapes. However, there were no significant differences between the tapes. Most patients (59%) reported that the information was very interesting, especially the patients who had received the procedural tape. Only 6% of the patients indicated that they did not find the information interesting. Most patients (68%) indicated that the information on the tapes was sufficient and complete. However, some patients indicated that they felt the information was incomplete. Patients who had received the emotion and the procedural tape reported that they had missed information on coping (3%). Furthermore, individual patients indicated they had missed information on religion, on how people

Table 2. Characteristics of the respondents displayed by condition

	Condition			
	Procedural tape ($n=59$) (%)	Coping tape ($n=56$) (%)	Emotion tape ($n=55$) (%)	Control group ($n=56$) (%)
Gender				
Female	68	65	62	68
Male	32	35	38	32
Age (yr)				
18–64	63	43	58	61
>64	37	57	42	49
Marital status				
Partner	80	77	78	82
No partner	20	23	22	18
Education				
Lower (professional)	32	40	35	39
Middle (professional)	49	45	49	50
Higher (professional)	17	15	16	11
Cancer site				
Breast	59	57	55	61
Prostate	27	27	29	25
Head and Neck	5	7	9	9
Cervix and uterus	9	9	7	5
Time since diagnosis (months)				
0–1	38	58	38	34
2–3	42	38	48	51
>3	20	4	15	15

in other stages of life experienced their disease, and on practical guidelines.

Surprisingly, most patients (87%) indicated that there was no new information on the tapes. As one patient put it: 'The tape was a pleasant confirmation of what I already learnt through talking with people and reading information'. Most patients reported that they were very satisfied with the information they received from the medical staff in the hospitals, or that they had sought out information for themselves (for example from friends, books, and the Internet). The vast majority of patients (98%) indicated that the information on the tapes had not upset them. However, some patients were surprised that the patients (1%) on the tapes had '... so quickly associated cancer with dying'.

Almost half of the patients (46%) indicated that they intended to listen to the tape more than once. After the treatment ended it became clear that 41% of the patients had actually done so. They indicated that they had listened to the tape more than once mainly because they wanted to hear the whole tape again ($N = 32$), or that they wanted to hear parts of it again (15%). Some patients indicated that they wanted to hear the tape again because they were inspired by it (3%), felt supported by it (4%), or that they had forgotten information (6%). The majority (65%) of patients who had listened to the tape repeatedly found it useful to listen to the tape more than once.

Effects of the audiotapes

First, the effects of the audiotapes on subjective understanding were examined. As expected, all patients indicated that they had learned more about radiation therapy, especially those patients who had received the procedural tape and the coping tape (see Table 3). Oneway Analysis of Variance (ANOVA) revealed a significant difference between the three audiotapes, $F(2,163) = 3.59$, $p < 0.05$. This effect was due to a significant higher increase in understanding after listening to the procedural tape than after the emotion tape ($p < 0.05$), and a marginally significant higher subjective understanding after the coping tape than after the emotion tape ($p = 0.10$). Subjective understanding differed significantly from the scale's midpoint (that is, no increase) after listening to the procedural tape and coping tape ($t(58) = 4.93$, $p < 0.0001$ and $t(52) = 2.77$, $p < 0.01$, respectively), but not after receiving the emotion tape, $t(53) = 0.43$, *ns*. These findings indicate that patients who had received the procedural and the coping tape had indeed increased their understanding of radiation therapy, which was not the case for patients who had received the emotion tape, thus partly confirming Hypothesis 1.

Second, the effects of the tapes on validation and recognition of emotions were examined. As expected, all patients indicated that they had received validation of their emotions by listening to the tapes. However, there were no significant differences between the three conditions, $F(2,166) = 0.06$, *ns*, thus not confirming Hypothesis 2.

The tapes were also compared on their effect on self-efficacy. Again, as expected, all patients indicated increased feelings of self-efficacy after listening to the tapes. The ANOVA revealed a significant difference between the tapes, $F(2,167) = 4.05$, $p < 0.05$. This effect can be attributed to a significant difference between the coping tape and the emotion tape ($p < 0.05$). Unexpectedly, there was no significant difference between the coping and procedural tape. Levels of self-efficacy differed significantly from the scale's midpoint after receiving the coping tape and the

Table 3. Mean scores of subjective understanding, self-efficacy, validation of emotions displayed by audiotape

	Audiotape		
	Procedural ($n = 59$) Mean (SD)	Emotion ($n = 55$) Mean (SD)	Coping ($n = 55$) Mean (SD)
Subjective understanding	3.73^{a} (1.14)	3.08^{b} (1.42)	3.50^{ab} (1.32)
Validation of emotions	3.82^{a} (0.97)	3.78^{a} (1.13)	3.84^{a} (1.07)
Self-efficacy	3.65^{a} (0.90)	3.22^{b} (1.18)	3.75^{a} (1.05)

^{a,b}Means in the same row with different superscripts differ significantly from each other at a $p < 0.05$ level.

procedural tape ($t(53) = 5.30$, $p < 0.0001$ and $t(58) = 4.52$, $p < 0.0001$ respectively), but not after receiving the emotion tape, $t(54) = 1.37$, *ns*. These findings indicate that patients who had received the coping tape and the procedural tape had indeed increased their self-efficacy, which was not the case for patients who had received the emotion tape, thus partly confirming Hypothesis 3.

Finally, the effects of the tapes on mood were assessed (see Table 4). The analyses revealed a significant difference between conditions, $F(3,219) = 3.20$, $p < 0.05$. This effect can be attributed to the difference between the emotion tape and all the other conditions (procedural tape, coping tape and control condition). Patients who had received the emotion tape reported a relatively high level of negative mood. For the other three conditions, negative mood was significantly lower. This difference in negative mood can traced back to the subscales depression, $F(3,220) = 3.85$, $p < 0.01$, and anger, $F(3,220) = 3.13$, $p < 0.05$.

DISCUSSION

In the present study, the effects of three audiotapes containing social comparison information were compared. To our knowledge, this is the first study to use these different kinds of social comparison information in patient education materials. It is, therefore, very encouraging to find that patients indicated that they wanted information on all three topics and evaluated the tapes positively. In addition, the tapes demonstrated positive effects on subjective understanding; both the procedural and the coping tape increased patients' understanding of radiation therapy. Even though the patients reported that they were satisfied with the information they had received previously and that there was relatively little new information on the tapes, they nevertheless indicated that they had learned a great deal from the tapes. As expected, the procedural tape had the most effect on subjective understanding, although only slightly more than the coping tape. Apparently, the coping tape also made patients feel they had learned about radiation therapy.

The tapes also demonstrated positive effects on self-efficacy. The coping tape increased self-efficacy the most, however, only slightly more than the procedural tape. A study among cancer patients indicated that vicarious information sources, such as those that are used on the coping tape, are the most effective in increasing self-efficacy (Telch and Telch, 1985). However, Bandura (1977) had already indicated that telling patients what to expect, as it was done on the procedural tape, may also increase feelings of self-efficacy, but only up to a point.

Unexpectedly, the emotion tape did not have the intended effects. From a theoretical as well as a practical point of view, it is very important to understand the effects of the emotion tape. In most support groups for cancer patients, talking about emotions and listening to emotional accounts is regarded as an important and helpful component (Poluszny *et al*., 1998; Pruyn and Van den Borne, 1987). However, some researchers have suggested that discussion with fellow patients may not be beneficial to patients as it may remind patients of their own distress (e.g. Carkhuff, 1973; Helgeson *et al*., 2001). It is therefore relevant to examine the reasons why the emotion tape did not have the

Table 4. Mean scores on mood displayed by condition

	Condition			
	Procedural tape ($n = 59$) Mean (SD)	Emotion tape ($n = 55$) Mean (SD)	Coping tape ($n = 55$) Mean (SD)	Control group ($n = 55$) Mean (SD)
Depression	10.36^{b} (2.53)	12.96^{a} (5.44)	10.66^{b} (3.66)	11.52^{ab} (5.58)
Anger	9.14^{b} (2.79)	11.66^{a} (5.32)	10.15^{ab} (3.81)	9.98^{b} (5.42)
Fatigue	10.61^{ab} (5.33)	12.11^{a} (5.09)	9.89^{b} (5.10)	10.93^{ab} (6.06)
Vigor	15.34^{a} (4.05)	15.31^{a} (4.69)	16.63^{a} (5.55)	16.80^{a} (4.59)
Tension	9.81^{b} (3.48)	11.58^{a} (4.59)	10.00^{ab} (4.14)	10.69^{ab} (5.36)
Negative mood	54.58^{b} (13.43)	63.02^{a} (19.12)	53.99^{b} (15.07)	55.18^{b} (22.09)

^{a,b}Means in the same row with different superscripts differ significantly from each other at a $p < 0.05$ level.

expected beneficial effects. It would be far too easy to conclude that the patients did not like the tape. Written remarks from respondents even suggest the opposite: 'I really enjoyed hearing about how other people experience their illness and the treatments' and 'The tape greatly contributed in the sense of validating my feelings'. Several other plausible explanations should be mentioned here.

First, the emotion tape might have induced emotional contagion. That is, the emotions recounted on the tape may have rubbed off on the listeners. How exactly this emotional contagion takes place is as yet unclear. Schachter (1959) hypothesized that emotional reactions to a certain situation will be influenced by another person's emotional state through social comparison. However, an alternative view suggests that emotional contagion is an automatic and spontaneous tendency to mimic and synchronize expressions, vocalizations, postures, and movements with those of another person, and that people consequently converge emotionally (Hatfield *et al*., 1992). For both hypotheses some empirical evidence has been found; however, there is no conclusive evidence (see Kulik and Mahler, 2000 for a review). Nevertheless, it is clear that actual contact is not necessary for emotional contagion to take place. Simply hearing about another person's emotions may be enough for emotional contagion to occur (Kulik and Mahler, 2000). Furthermore, listeners appear to have been more easily contaminated by the negative emotions than by the positive emotions discussed on the tape. This could be due to a slightly greater emphasis on negative emotions than on positive emotions on the audiotape. However, it is also consistent with the notion of negativity bias (see Lewick *et al*., 1992; Rozin and Royzman, 2001 for reviews). That is, negative information seems to attract more attention than positive information, and negative information may also be more 'contagious' than positive information (Rozin and Royzman, 2001).

Second, it may be that hearing other people talking about their emotional reactions may have shaped a social norm concerning the expression of emotions. The way the patients on the audiotape expressed their emotions may have acted as a reference point for the listening patients. As the patients on the tape freely expressed their emotions (negative as well as positive), the listening patients might have felt they could also express these emotions. As it is mostly the expression of negative emotions that is repressed by normative beliefs, these negative emotions would be the most likely to emerge after listening to the emotion tape.

Third, it may simply be that hearing people talk about emotions can evoke negative emotions. According to Hobfoll and London's (1986), talking about one's feelings may increase uncertainty and feelings of anxiety. Similarly, a study by Costanza *et al*., (1988) indicated that talking about one's feelings with a friend in anticipation of a stressful event is less beneficial than talking about problem solving or unrelated topics. Talking about one's feelings was associated with a relatively high level of negative affect. It may aggravate one's negative mood by creating a 'pressure-cooker effect', especially when those others are in a similar situation (Hobfoll and London, 1986). Although hearing other people talk about their feelings is not the same as talking about one's own feelings, the same mechanism may apply. Costanza *et al*., (1988) have suggested that timing may play a key role here. Communication about emotions prior to the stressful event may aggravate stress, while communication about emotions *after* the stressful event may help ventilating and dissipating these emotions.

Even though it is not exactly clear why the emotion tape demonstrated these unexpected results, there is a clear need to learn more about this issue. Furthermore, it needs to be examined if sharing emotions in support groups is indeed helpful, or if other components are responsible for the beneficial effects of these groups. It may be that the combination of sharing emotions and problem-focused exercises are crucial to the usefulness of support groups. There is some support for this notion, as it has been shown that groups that combine peer discussion with addressing problem focused coping strategies are more effective than groups focusing solely on peer discussion (Grol *et al*., 2001; Helgeson *et al*., 1999; Telch and Telch, 1986).

Some considerations may limit the conclusions drawn from the current study. First, the coping tape contains positive role models about fellow patients who are coping well, while the procedural and emotion tape do not contain such positive role models. It may be argued that this difference, instead of the differences in content, was responsible for the effects found in the current study. However, this seems unlikely, considering that the procedural tape, which did not contain a positive role model, demonstrated similar results to those of the coping tape. It seems more likely that

the differences in content are responsible for the effects found. Second, the effects of the audiotapes were measured shortly after listening to the audiotape. It would be very interesting to see whether the audiotapes have long term effects during and even after the treatment has ended.

To summarize, the data in this study demonstrate the differential effects of social comparison information on different dimensions. Furthermore, the data clearly support the beneficial effects of the procedural and the coping tape. These audiotapes increase understanding and knowledge of radiation therapy, self-efficacy, and the feeling of validation of emotions. Therefore, these tapes may be an important supplement to the existing patient education information. The emotion tape, however, warrants more research before providing it to patients. However, it should be emphasized that the data of the current study should not be used as a reason to disregard information about emotions in patient education material. On the contrary, patients indicated they greatly appreciated this kind of information. It may be that information about emotions is only appealing when combined with information about coping. A study by Silver *et al*., (1990), indicated that when victims of life crises reported distress but did not report any coping efforts, they were regarded less attractive than victims who did report coping efforts (especially when these efforts were successful). Further research should examine the effects of audiotapes combining elements from the emotion tape and the coping tape.

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NOTES

1. A power analysis performed prior to the study revealed a sample size of 200 would result in a satisfactory power of 0.89, when the effect size is fixed at low to medium ($r = 0.20$), using a one-tailed significance test (significance criterion $a = 0.05$) (Cohen, 1971).
2. Subjective understanding, recognition of emotions and self-efficacy in the control condition were measured using similar items. However, written comments of the respondents in the control condition indicated they had misinterpreted these items. These data were, therefore, omitted from the analyses.

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