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Social comparison and coping with radiation therapy

Bennenbroek, F.T.C.

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Document Version

Publisher's PDF, also known as Version of record

Publication date:

2003

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Bennenbroek, F. T. C. (2003). *Social comparison and coping with radiation therapy: The significance of different dimensions of comparison*. s.n.

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**Social comparison and coping
with radiation therapy**

*The significance of different dimensions
of comparison*

Femke Bennenbroek

Design Extra Bold, Groningen
Printing Grafisch bedrijf Ponsen & Looijen bv, Wageningen

The studies represented in this thesis were supported by a grant from the Dutch Cancer Society (RUG 97-1621).

RIJKSUNIVERSITEIT GRONINGEN

**Social comparison and coping
with radiation therapy**

*The significance of different dimensions
of comparison*

Proefschrift

ter verkrijging van het doctoraat in de
Psychologische, Pedagogische en Sociologische Wetenschappen
aan de Rijksuniversiteit Groningen
op gezag van de
Rector Magnificus, dr. F. Zwarts,
in het openbaar te verdedigen op
donderdag 27 maart 2003
om 16.00 uur

door

Femke Theresia Christina Bennenbroek

geboren op 11 augustus 1975
te Geldrop

Promotores Prof. dr. A.P. Buunk
Prof. dr. R. Sanderman

Beoordelings- Prof. dr. N. Aaronson
commissie Prof. dr. K.I. van Oudenhoven-van der Zee
Prof. dr. D.A. Stapel

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Voorwoord

Toen ik als AIO begon op dit project werd ik meerdere malen gewaarschuwd voor het ‘leven als wetenschapper’. Met name van het feit dat het een eenzame baan zou zijn, schrok ik in het begin wel een beetje. Maar nu ik zo bezig ben met het schrijven van dit voorwoord, vraag ik me af hoe mensen erbij komen om het werk als wetenschapper als eenzaam te beschrijven. De lijst van mensen die ik wil bedanken voor de hulp en de steun de afgelopen vier jaar is namelijk lang. Al deze mensen hebben op hun eigen manier bijgedragen aan dit proefschrift; zonder hun hulp had ik nooit zoveel geleerd of zoveel plezier gehad en was dit proefschrift er waarschijnlijk nooit gekomen. Ik heb me de afgelopen jaren dan ook meerdere malen verbaasd over en me gelukkig geprezen met de geweldige mensen die ik om me heen had (en heb).

Om te beginnen wil ik de projectgroep bedanken. In de eerste plaats ben ik veel dank verschuldigd aan mijn promotor, Bram Buunk. Ondanks zijn overvolle agenda maakte hij altijd tijd voor me vrij en kon ik elke dag een beroep doen op zijn expertise en kennis. Niet alleen heeft hij mij enorm veel geleerd over het doen van (goed) onderzoek, maar heeft hij mij ook de tijd en de ruimte gegeven om me met andere dingen bezig te houden, zoals het geven van onderwijs en het begeleiden van studenten. Robbert Sanderman, mijn tweede promotor, dank ik voor zijn vele suggesties en zijn meer toegepaste blik op het project. Heidi Stiegelis, mijn collega AIO op dit project, heeft mij geleerd wat het is om dingen niet alleen op mijn manier te bekijken, maar ook eens van een andere kant te bezien. Mariët Hagedoorn heeft met veel energie en een kritische blik al mijn stukken grondig doorgenomen en kwam altijd met een (heleboel) op- en aanmerkingen waar zonder uitzondering mijn artikelen beter van werden. Als laatste lid van de projectgroep wil ik Fons van den Bergh bedanken, die niet alleen enorm heeft geholpen met het werven van patiënten voor dit onderzoek, maar ons ook waardevolle informatie vanuit de praktijk gaf, waardoor het onderzoek en met name de interventies zo waarheidgetrouw mogelijk werden.

Uiteraard wil ik ook de patiënten bedanken die in een moeilijke en zware tijd mee wilden werken aan dit onderzoek. Zonder hen was er uiteraard geen onderzoek geweest. Mijn dank en respect zijn daarom groot. Het feit dat zoveel patiënten hebben meegedaan aan het onderzoek is voor een groot deel te danken aan het harde werk van een groot aantal radiotherapeuten en medewerkers van de afdelingen radiotherapie van het Academisch Ziekenhuis Groningen, de Isala Klinieken in Zwolle en het Radiotherapeutisch Instituut Friesland.

Mijn collega's bij S&O hebben er altijd voor gezorgd dat ik met plezier naar mijn werk ging en altijd terecht kon met vragen, problemen, maar ook gewoon voor een kop koffie en een praatje. Mijn kamergenoten Donatien de Graaff en Veerle

Brenninkmeijer wil ik hier in het bijzonder noemen. Ik kon bij jullie altijd terecht met 'domme vragen' of discussies over het een of ander, maar kon met jullie ook eindeloos kletsen over van alles en nog wat.

Dan wil ik nog de mensen bedanken die me met name buiten het werk om hebben gesteund. Als eerste wil ik mijn ouders bedanken. Al van vroeg af aan hebben jullie mij altijd jullie eerlijke mening gegeven en me tegelijkertijd de vrijheid gegeven om mijn eigen keuzes te maken. De steun en het vertrouwen die jullie mij daarbij hebben gegeven, zal ik nooit vergeten. Mijn vrienden wil ik hier ook noemen. Dat jullie het hebben opgebracht om de eindeloze verhalen over mijn werk aan te horen is een prestatie van formaat. Daarnaast zorgden jullie voor de broodnodige afleiding, zodat ik naast mijn werk ook enorm veel plezier heb gehad.

Als laatste wil ik mijn paranimfen, Josine Hagens en Mark Bennenbroek, bedanken. Jullie weten mij, ieder op je op eigen unieke manier, weer met beide benen op de grond te krijgen, als ik weer eens (onnodig) loop te stressen. Ik hoop dat jullie het net zo leuk als ik vinden dat jullie mijn paranimfen zijn.

Femke Bennenbroek

Groningen, 2 januari 2003

Chapter 1

Introduction

After cardiovascular diseases, cancer is the second leading cause of death in the Netherlands; every year, more than 37,000 people die of cancer and almost 63,000 people are newly diagnosed with some form of cancer (Dutch Cancer Society, 1999). About 40% of all cancer patients are treated with radiation therapy, usually in addition to either surgery or chemotherapy (MacLeod & Jackson, 1999). As with most cancer treatments, radiation therapy is a relatively time consuming procedure, with treatment periods varying from several days to two months, in addition to the usual waiting periods. Furthermore, treatment with radiation therapy is associated with physical side effects, including short-term effects like skin alterations, fatigue, nausea, and a sore throat, but also long-term effects like secondary tumors, cognitive impairment, and sterility (Perez & Brady, 1998). In addition, radiation therapy is associated with severe psychological consequences, such as uncertainty, anxiety, depression, psychological distress, feelings of uselessness, shame, and guilt as well as changes in body perception and self-esteem (Andersen & Tewfik, 1985; Chandra, *et al.*, 1998; Munro & Potter, 1996). Of these psychological consequences, uncertainty has been identified as one of the main problems (Van den Borne & Pruyn, 1985). People who are ill often have difficulty obtaining information about the course of their illness and its treatment (Tennen, McKee & Affleck, 2000). Among cancer patients undergoing radiation treatments, the need for information is reportedly high (Harrison, Galloway, Graydon, Palmer-Wickman & Rich-Van der Bij, 1999). Patients typically display a high need for information regarding the disease itself, the prognosis, the tests, the treatment, and the side-effects (Bilodeau & Degner, 1996; Gamble, 1998). In addition, they also report a need for information on how to physically take care of themselves and how to deal with their feelings and concerns (e.g., Galloway, *et al.*, 1997; Graydon, *et al.*, 1997).

The present thesis focuses on how social comparison information (i.e., information about how fellow patients are doing, feeling and coping) can be used by cancer patients to adapt to and cope with cancer and the treatment with radiation therapy. This introductory chapter starts with an overview of the literature on social comparison among cancer patients, reviewing several relevant themes: preferences for social comparison information, reactions to social comparison information, and the role of several relevant factors, particularly several different personality characteristics. The chapter concludes with a summary of the focus of each of the subsequent chapters.

Social comparison

Social comparison is defined as the process of thinking about one or more people in relation to the self (Wood, 1996). It not only involves acquiring social comparison information (i.e., information about how similar others are doing), but also thinking about and reacting to the social comparison information (Wood, 1996). The core feature of social comparison, however, is specified as ‘...looking for or identifying a similarity or a difference between the other and the self on some dimension’ (Wood, 1996, p. 521). This process may involve familiar others, like friends or relatives, but may also involve complete strangers. It may even involve others who do not actually exist, but are cognitively constructed. Taylor, Wood, and Lichtman (1983), for example, found that husbands of women with breast cancer often referred to examples of husbands who had left their wives after surgery. As very few men actually leave their wives after a cancer diagnosis, comparisons with these ‘mythical men’ seem to be based on cognitively constructed comparison others.

People may engage in social comparison for several reasons. Generally, three motives for social comparison are acknowledged. The first motive, self-evaluation, is directly linked to the formulation of the original social comparison theory. Festinger (1950, 1954) hypothesized that people have a drive to accurately evaluate their opinions and abilities. When no objective (i.e., non-social) information is available, people will try to evaluate their opinions and abilities by comparing themselves with similar others. The second motive, self-enhancement, refers to the desire to feel good about oneself and one’s situation. According to Wills’ (1981) downward comparison theory, people compare themselves with others who are worse off (downward comparison) in order to maintain or increase their self-esteem. In other words, by comparing themselves with others doing worse, people may be reminded that their situation could have been worse, and, therefore, may feel better about themselves and their situation. The third motive, self-improvement, refers to the desire to improve oneself or one’s situation. Comparing oneself with others who are doing better (upward comparison) may provide opportunities to learn and to improve one’s situation. Fellow patients can thus function as role models, whose behavior can be copied and imitated.

Social comparison among cancer patients

Particularly when cancer patients experience a lack of objective information, it is assumed that their need for social comparison information is assumed to increase (Festinger, 1954). In fact, some studies indicate that, even when objective information is available, people remain interested in social comparison information (Miller, 1977; Willemsen & Van den Berg, 1986). Research has shown that people tend to compare themselves with others in a similar situation, particularly when they are confronted with a serious health threat (e.g., Buunk, Gibbons & Reis-

Bergan, 1997; Tennen, *et al.*, 2000). This process of social comparison may help patients cope with a novel, stressful and threatening situation (c.f. Stapel & Tesser, 2002). Intervention studies based on social comparison theory have indicated that cancer patients are indeed extremely interested in social comparison information. Van der Zee, Oldersma, Buunk, and Bos (1998), for example, provided cancer patients by way of a computer program with the opportunity to read various parts of interviews with fellow patients. The majority of the patients found the information described in the interviews interesting, useful, and important. Indeed, cancer patients often report that the information they receive from fellow patients is unique, and that only fellow patients can understand what they are going through (Gray, Fitch, Davis & Phillips, 1997). In fact, Wood, Taylor, and Lichtman (1985) found that almost all the comparisons made by women with breast cancer were made in relation to fellow cancer patients and not to healthy family members or friends, indicating that fellow patients are a major source of (social comparison) information.

Cancer patients have numerous opportunities to compare themselves with fellow patients (Wood, *et al.*, 1985). Even when patients do not seek out social comparison information, they are bound to be confronted with it for several reasons. First, cancer and cancer patients are profusely covered in the media. Television programs about patients' experiences in hospital settings are increasingly popular. In addition, interviews with cancer patients frequently appear in magazine articles, newspapers, and on the radio. Second, friends and relatives often tell cancer patients about other patients in an effort to be helpful (Taylor, Aspinwall, Giuliano, Dakof, & Reardon, 1993). Third, cancer patients are inevitably confronted with fellow patients in the hospital setting. Most patients have to wait in a waiting room together with other patients, providing them with ample opportunity for comparison. When patients do decide to seek out social comparison information, the possibilities are also abundant. They can search for information in the media. The Internet provides a new medium for social comparison information (Davison, Pennebaker & Dickerson, 2000). Patients can find personal accounts of fellow patients on the Internet, but they can also join a chatroom to get in touch with other patients. In addition, patients can approach fellow patients in the waiting room of the hospital. Finally, patients can join support groups or patient education programs, which provide ample opportunity for social comparison, as patients discuss their illnesses, but also their thoughts and feelings with fellow patients (Poluszny, Hyman & Baum, 1998).

What kind of social comparison information do people faced with a health threat such as cancer prefer? Do they want to compare themselves with others who are worse off (downward comparison) or with others who are better off (upward comparison)? Research findings on this issue seem to contradict each other. For example, several studies suggest that people who are confronted with a serious

illness mainly compare themselves with others who are doing worse (Affleck & Tennen, 1991; Van der Zee, *et al.*, 1996). Wood *et al.* (1985) found that women with breast cancer compared themselves predominantly with fellow patients who were worse off. Similarly, in a self-report diary study, Bogart and Helgeson (2000) found that women with breast cancer compared themselves mainly with fellow patients who were worse off. However, people may also be motivated to avoid downward social comparison. Brickman and Bulman (1977) argued that, by comparing with others worse off, one may be confronted with the inferiority of the others, which may lead to fear of deteriorating. This seems to be particularly the case when actual contact with the comparison other is involved (Taylor & Lobel, 1989). Indeed, several studies have found that cancer patients actively avoid contact with others who are worse off (e.g., Molleman, Pruyn & Van Knippenberg, 1986). In addition, Dunkel-Schetter and Wortman (1982) found that cancer patients did not like to interact with fellow patients in the waiting room, because the sight of someone else's deterioration was depressing to them.

With respect to upward comparison, similarly divergent findings exist. A study among cancer patients, for example, indicated that they selected and spent more time reading parts of interviews containing information about others who were better off than about others who were worse off (Van der Zee, Oldersma, *et al.*, 1998). Stanton, Danoff-Burg, Cameron, Snider, and Kirk (1999) found that women with breast cancer displayed a greater desire for contact with well-adjusted fellow patients than with poorly adjusted fellow patients. However, other studies indicate that patients may avoid making upward social comparisons (Wood, 1989). Brickman and Bulman (1977) argued that people are especially reluctant to expose themselves to information that will be unfavorable to them. By comparing oneself with others better off, one may be confronted with one's own inferiority, which in turn may lead to embarrassment. Similarly, Wood and Van der Zee (1997) suggested that comparing oneself with others who are better off is likely to be very threatening when one believes it is possible that one's situation will worsen.

In *Chapter 2*, the kinds of social comparison information and social comparison contact cancer patients prefer are examined. In particular, it is examined whether cancer patients prefer to seek out upward or downward comparison, and which factors influence these preferences. First, it is assumed that the mode of comparison (seeking information or seeking contact) influences directional preferences. In particular, it is expected that patients prefer upward comparison when seeking comparison information and contact, but that this preference for upward comparison will be directed more upward when seeking information than when seeking actual contact. Second, it is assumed that the dimension on which the comparison takes place (coping or illness severity) influences the

preference for upward or downward comparison. It is expected that when patients are seeking social comparison information or contact, they prefer more upward comparison on the coping dimension than on the illness severity dimension. Third, it is assumed that a number of psychosocial factors, such as uncertainty, anxiety, depressive symptoms, and subjective evaluation of one's own health influence directional preferences. It is expected that the more people feel they have control, the more they will be interested in information about and contact with others doing better. In addition, the role of uncertainty, anxiety, depressive symptoms, and subjective evaluation of one's own health is examined.

Besides preferences for upward or downward social comparison, the reaction of people to social comparison information is of major interest. How do cancer patients react to different types of social comparison information? What kind of social comparison information has the most beneficial effects? Most research has been done into the differential effects of upward and downward comparisons. Although upward and downward comparisons may both have positive and negative consequences (Buunk, Collins, Taylor, Van Yperen & Dakof, 1990), among cancer patients it is generally found that upward comparison causes more positive affect than downward comparison. Van der Zee, Oldersma, *et al.* (1998), for example, found that reading interviews with fellow cancer patients doing better resulted in more positive and less negative affect. In contrast, downward comparison generally leads to an increase in relative well-being and self-esteem (Bogart & Helgeson, 2000; Van der Zee, *et al.*, 1996). Relatively little attention has been given to the role of the dimension of comparison (e.g., illness severity or coping). Wood and Taylor (1991) have suggested that individuals who compare themselves with others have 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. For different goals, different dimensions may be involved. In other words, the function of social comparison information may depend on the dimension of the information. For example, cancer patients may compare themselves with fellow patients who are coping better for purposes of self-improvement. According to Wood (1989), patients may use these upward comparisons to learn from fellow patients how to improve their own situation. Self-improvement is not likely to be the motive for comparing oneself with fellow patients on the illness severity dimension. There is little to learn from people who are better off physically to help improve one's own situation. From research among rheumatoid arthritis patients (De Vellis, *et al.*, 1991), there is indeed some evidence that patients prefer downward social comparison information on the illness severity dimension, in order to feel better about their own physical condition.

In *Chapter 3*, the short-term effects of social comparison information on three different dimensions are examined. Cancer patients who were about to undergo radiation therapy were provided with audiotaped social comparison information (i.e., information about how other patients have experienced their disease and the radiation treatments). The purpose of these audiotapes was to prepare the patients for the upcoming treatment and to reduce negative emotions. To examine whether information on different dimensions would serve different goals, and would thus yield different effects, information on three potentially relevant comparison dimensions, namely procedures, emotions, and coping was provided. Although 'procedures' may not seem like a dimension of social comparison information at first sight, it can certainly be considered as one. Wood and Taylor (1991) have defined a comparison dimension as 'the specific attribute that is the focal attribute under consideration' (p. 25). The procedural audiotope provides information about the experiences of fellow cancer patients, for example, how the cancer was discovered, what happened during radiation therapy, and which side effects they experienced. As cancer patients with different forms of cancer are being treated with radiation therapy, treatment regimens may differ widely. For example, cancer patients with a tumor in the head or neck region will be fitted with a facemask to make sure the radiation is directed at the same area every time. Furthermore, the number of treatments, experienced side effects, and the procedures during the check-ups went after the treatments had ended may differ widely between patients. In addition, treatment procedures may differ between hospitals. Therefore, the procedural information is provided on a dimension on which cancer patients will be able to compare themselves with fellow patients.

On each of the three audiotapes, individuals who acted as cancer patients who had already undergone radiation therapy recounted different aspects of their experiences with cancer and radiation therapy. However, on each audiotope they focused on different aspects. On the first tape, the patients focused on their experiences with various aspects radiation therapy: how the cancer was discovered, what happened during the treatments, which side effects they experienced, and how the check-ups went after the radiation therapy had ended (procedural tape). On the second tape, the patients focused on a variety of emotional reactions (both positive and negative) to these aspects of the treatment (emotion tape). On the third tape, the patients focused on how they had coped with various aspects of cancer and radiation therapy (coping tape).

Factors influencing the effects of social comparison

In addition to the main effects of social comparison information, the role of several factors in moderating the effects of these types of social comparison information is examined. In *Chapter 4*, the role of uncertainty (i.e., a lack of

knowledge about cancer and radiation therapy) in moderating the effects of social comparison information on mood is examined. It is generally acknowledged that feelings of uncertainty foster the need for social comparison information. It is, therefore, surprising that little attention has been given to the influence of uncertainty in moderating the effects of social comparison information. It would be interesting to examine whether individuals who experienced more uncertainty and would, therefore, be more interested in social comparison, would also benefit more from this information. One would certainly expect this to be the case. However, previous research has indicated that individuals who are dispositionally interested in social comparison information, not always benefit most from social comparison information. In the present study, it is expected that those high in uncertainty would benefit the most from the procedural tape, as this tape provides the most specific information about radiation therapy. As the effects of social comparison information may also be influenced by personality characteristics, it was examined whether the influence of uncertainty on the effects of the social comparison information would remain evident even when taking into account relevant dispositional factors, such as social comparison orientation and neuroticism.

It is increasingly acknowledged that comparison processes are not only influenced by situational factors, such as uncertainty, but also by more stable factors such as personality characteristics. It seems that people differ in the extent to which they are interested in and affected by social comparison information. The interest in the role of individual differences in social comparison processes is rapidly increasing (see Wheeler, 2000 for a review). Most studies have focused on self-esteem (e.g., Aspinwall & Taylor, 1993; Reis, *et al.*, 1993) and depression (e.g., Ahrens & Alloy, 1997), but the present thesis focuses on the roles of neuroticism, extraversion, and social comparison orientation. In *Chapter 5*, the roles of neuroticism, extraversion, and social comparison orientation in moderating the short-term effects of the different types of social comparison information on mood are examined. In *Chapter 6*, the role of social comparison orientation in moderating the long-term effects of the different types of social comparison information on the global quality of life of cancer patients is examined.

Neuroticism

A number of studies have been done into the moderating effects of neuroticism on the affective responses to social comparison information (e.g., Gilbert & Allan, 1994; Van der Zee, *et al.*, 1998; Van der Zee, Oldersma, *et al.*, 1998). Neuroticism is characterized by a tendency to experience negative and distressing emotions and to possess associated behavioral and cognitive traits. Among the traits that define neuroticism are fearfulness, irritability, low self-esteem, social anxiety, poor inhibition of impulses, and helplessness (Costa & McCrae, 1987).

In general, people high in neuroticism tend to set extremely high standards for themselves and tend to underestimate their own performance (Eysenck, 1947). This may cause them to feel less confident in their ability to deal with a situation. More importantly, those high in neuroticism seem to react differently to social comparison information than those low in neuroticism. Van der Zee, Buunk, and Sanderman (1998) exposed cancer patients to simulated interviews with a fellow patient doing better (upward comparison) or doing worse (downward comparison). They found that those high in neuroticism experienced a higher need for social comparison and reported more negative affective consequences of comparison than those low in neuroticism, especially after upward comparison. Similarly, Van der Zee, Oldersma, *et al.* (1998) found that neuroticism was associated with a higher interest in social comparison and with less favorable reactions to social comparison. Thus, those high in neuroticism selected more interviews with fellow patients than those low in neuroticism, but experienced more negative affect after reading the interviews.

It seems that neuroticism is associated with an information processing style that is detrimental to the self (Young & Martin, 1981). When confronted with information about fellow patients, individuals high in neuroticism tend to focus on the negative implications. In a study among nurses, Buunk, Van der Zee, and Van Yperen (2001) found that those high in neuroticism identified more with others doing worse, and identified less with others doing better. That is, those high in neuroticism seem to process social comparison information in a self-defeating way. Similar results have been found among cancer patients. Van der Zee, Buunk, Sanderman, Botke and Van den Bergh (1999) found that patients high in neuroticism generally tended to identify with fellow patients doing worse.

Extraversion

Very little research has been done into the role of extraversion in moderating the effects of social comparison information. Extraversion is characterized by sociability, gregariousness, optimism, and affiliation tendencies (Costa & McCrae, 1985; Hills & Argyle, 2001). Furthermore, individuals high in extraversion are characterized by well-developed social skills, numerous friendships, enterprising vocational interests, and participating in sports and clubs (McCrae & Costa, 1999).

Eysenck (1967) explained the difference between introverts and extraverts in terms of cortical arousal. The extravert has a low level of cortical arousal, and is not easily aroused. Therefore, the extravert seeks stimulation in the company of many people, seeks out people to talk to, and engages in many social interactions, which are a major source of happiness. Accordingly, extraverts are characterized by seeking arousal-producing stimuli (Berlyne, 1960; Eysenck, 1981). In contrast, the introvert has a high level of cortical arousal and consequently has a low

arousal threshold. The introvert can function without high levels of external stimulation. Accordingly, introverts will attempt to avoid arousal-producing stimuli (Berlyne, 1960; Eysenck, 1981).

Several studies have found that extraversion and neuroticism are negatively correlated with each other. Eysenck (1967) proposed that extraversion and neuroticism are correlated only among those high in neuroticism. That is, among those high in neuroticism, there are likely to be more individuals low on extraversion, but among those low in neuroticism, it is not likely that there will be more individuals high in extraversion. However, Buckingham, Charles, and Beh (2001) found a simple relationship between extraversion and neuroticism. They found more introverts among those high in neuroticism and more extraverts among those low in neuroticism.

A few studies have examined the role of extraversion in social comparison processes (e.g., Gilbert & Allan, 1994). In a study among psychology students, Olson and Evans (1999) found that extraverts were more likely than introverts to compare themselves with others worse off. Among cancer patients, similar results have been found. A study among breast cancer patients, for example, revealed that extraverts were more inclined to compare themselves with others doing worse (Van der Zee, *et al.*, 1998). In addition, Van der Zee *et al.* (1999) found that patients high in extraversion tended to identify themselves with other patients regardless of how these patients were doing; that is, they feel a closeness to these fellow patients. At the same time, they tended to contrast their situation with the situation of other patients doing better. This suggests that extraversion may be associated with a greater responsiveness to social comparison information.

Social comparison orientation

A number of researchers have acknowledged that some individuals are more inclined to engage in social comparison than other individuals (e.g., Brickman & Bulman, 1977; Hemphill & Lehman, 1991; Steil & Hay, 1997; Taylor, Buunk, Collins & Reed, 1992). That is, people differ in the extent to which they engage in social comparison. Recently, Gibbons and Buunk (1999) introduced the concept of social comparison orientation. This refers to the disposition of individuals who are strongly focused on social comparison, who are particularly sensitive to their own standing relative to others, and are particularly interested in information about the thoughts and behaviors of others in similar situations. According to Gibbons and Buunk (1999), individuals high in social comparison orientation are characterized by a heightened uncertainty about themselves, accompanied by a relatively strong dependency on other people for their self-evaluation. A study among cancer patients (Van der Zee, Oldersma, *et al.*, 1998), for example, showed that those high in social comparison orientation were more inclined to select and attend to information about fellow patients. The typical high comparer is someone

who is more interpersonally than introspectively oriented, has a relatively high degree of uncertainty about the self, and wishes to reduce this uncertainty by paying attention to how others are doing (Gibbons & Buunk, 1999).

Besides a heightened interest in comparison information, people high in social comparison orientation are also more strongly affected by social comparisons (Gibbons & Buunk, 1999). This seems to be particularly the case when it involves comparison with others doing worse (downward comparison). In several studies, it has been found that people high in social comparison orientation experience more negative affect after downward comparisons than those low in social comparison orientation (Buunk, Ybema, Gibbons & Ipenburg, 2001; Van der Zee, *et al.*, 1998). In contrast, a study on relationship satisfaction indicated that only those high in social comparison orientation reported a higher relationship satisfaction when actively engaging in downward comparison (Buunk, Oldersma & De Dreu, 2001).

The present thesis

The present thesis focuses on social comparison processes among cancer patients. Particularly, it focuses on the kinds of comparison information cancer patients prefer and on how they react to social comparison information on different dimensions.

In *Chapter 2*, the types of social comparison information and social comparison contact cancer patients prefer are examined. In a sample of 60 (ex-) cancer patients who participated in a course 'Coping with cancer', it is examined whether they preferred to receive information about or have contact with fellow patients who were better or worse off than they were. Furthermore, factors that may influence these preferences are examined.

In the subsequent chapters, the effects of an intervention based on social comparison theory (Festinger, 1954) are examined. Among 226 cancer patients who were about to undergo radiotherapy the effects of three different audiotapes containing different types of social comparison information are examined. On the procedural tape, a man and woman discuss their illnesses and radiation treatments; on the emotion tape, they focus on the emotional aspects of these issues; and on the coping tape they focus on the ways they had been coping.

In *Chapter 3*, the main effects of these audiotapes are discussed. The differential effects of these tapes are examined on subjective understanding about radiation therapy, validation and recognition of emotions, self-efficacy, and mood.

In *Chapter 4*, the role of uncertainty about cancer and radiation therapy in moderating the effects of the audiotapes is examined. While previous studies have shown that situational uncertainty fosters the need for social comparison information, the present study examines whether uncertainty about cancer and

radiation therapy influences the reactions to different types of social comparison information.

In *Chapter 5*, the roles of Eysenck's personality dimensions, extraversion and neuroticism, as well as social comparison orientation (Gibbons & Buunk, 1999) in moderating the effects of the audiotapes are examined. Although a number of studies have focused on the influence of neuroticism and extraversion on social comparison among cancer patients, none of these studies has examined the influence of these personality traits on the effects of different dimensions of social comparison information.

In *Chapter 6*, the long-term effects of the audiotapes on global quality of life are examined, and, in particular, the role of social comparison orientation in moderating these effects. While an increasing number of studies indicate that social comparison orientation may moderate the short-term effects of engaging in social comparison, only a few studies have found long-term effects (e.g., Blanton, Buunk, Gibbons & Kuyper, 1999; Buunk, Zurriaga, Gonzalez-Roma, and Subiritas, in press).

In *Chapter 7*, the main findings that are reported in the present thesis are reviewed and discussed. Theoretical as well as practical implications are discussed¹.

¹ *Chapters 3, 4, 5, and 6 are based on research articles that have either been submitted or published. Therefore, there is some overlap in the theoretical introductions of these chapters, especially in the discussion of the intervention. However, this overlap allows the reader to read each chapter independently, without cross-referring to other chapters.*

Chapter 2

Social comparison and patient information: What do cancer patients want?¹

Abstract

The present study focused on social comparison processes among cancer patients. The sample consisted of 60 (ex-) cancer patients who participated in a course 'Coping with cancer'. This study examined several aspects of social comparison: the need for comparison, the preferred direction of comparison, and the influence of mode (information or contact seeking) and dimension (illness severity or coping) of social comparison, as well as the influence of indicators of low well-being. The results show that the need for comparison is particularly enhanced among those who evaluate their own health negatively. In addition, patients preferred to receive information about others who are better off, but also want contact with others who are better off. They are specifically interested in receiving information about others who are coping better. Practical implications are discussed.

'It is very comforting to meet people who know from experience what it means to have cancer and to undergo treatments' (Personal interview, Groningen, 1999).

Statements like these are often made by cancer patients. Patients regularly refer to positive experiences with fellow patients. However, there are also patients who are less positive about confrontations with fellow patients. To what extent are cancer patients interested in the experiences of other patients and in meeting these patients? And if so, what kind of information and contact do they prefer? In the present study, these questions were addressed, using the social comparison theory as a theoretical basis.

A great deal of attention has been given to social comparison processes among people experiencing serious health problems in recent years (e.g., Affleck & Tennen, 1991; Buunk & Gibbons, 1997; Taylor, Buunk, Collins & Reed, 1992; Tennen, McKee & Affleck, 2000). This interest can be traced back to Festinger's work on social comparison (Festinger, 1950; 1954). He theorized that people's opinions, attitudes, and beliefs 'must have some basis upon which they rest for validity' (Festinger, 1950, p. 272). When no objective information is available, people will try to evaluate their abilities and opinions by comparing themselves with others (Festinger, 1954). He further argued that individuals will prefer information about others who are relatively similar, as these others will provide the most relevant

¹ This chapter is based on: Bennenbroek, F.T.C., Buunk, B.P., Van der Zee, K.I., & Grol, B. (2002).

Social comparison and patient information: What do cancer patients want? Patient Education and Counseling, 47, 5-12.

information (Festinger, 1954). Most cancer patients are confronted with a shortage of objective information and have a high need for clarification.

Van den Borne and Pruyn (1985) specified the experience of lack of information as one of the major psychological problems among cancer patients. Patients are left with many questions, often without clear answers available (for example, 'How will the disease progress?', and 'How do I tell my family?'). Because of this lack of objective information, it is assumed that cancer patients have a high need for social comparison, that is, they feel a need to compare their illnesses, treatments, feelings, and their coping strategies with other patients. A study among cancer patients did indeed reveal such a relationship between uncertainty about one's illness and treatment and the need for social comparison (Van den Borne and Pruyn, 1985). In addition to uncertainty, other negative cognitive and emotional states may also promote the need for comparison. For example, a study by Buunk (1995) indicated that anxiety, lack of control, and frustration are associated with a need for social comparison information (i.e., information about how similar others are doing, feeling, and coping). In addition, there is some evidence that people experiencing depressive symptoms are more interested in and more open to social comparison information (Ahrens & Alloy, 1997). In the present study, it was examined whether the need for social comparison is related to uncertainty, lack of control, anxiety, depressive symptoms, and a low subjective evaluation of one's own health.

What kind of social comparison information do people faced with a health threat prefer? Do they want to compare themselves with others who are worse off (downward comparison) or with others who are better off (upward comparison)? Research findings on this issue seem to contradict each other. For example, several studies suggest that people who are confronted with a serious illness compare themselves with others who are doing worse (Affleck & Tennen, 1991; Bogart & Helgeson, 2000), which does not necessarily imply that they want to meet them. Quite in contrast, some studies have found that people actually avoid contact with others who are worse off (Molleman, Pruyn & Van Knippenberg, 1986). With respect to upward comparison, similarly divergent findings exist; a study among cancer patients, for example, indicated that they selected and spent more time reading interview fragments containing information about others who were better off than about others who were worse off (Van der Zee, *et al.*, 1996). However, other studies indicate that patients actively avoid making upward social comparisons (Wood, 1989).

Taylor and Lobel (1989) have tried to integrate these seemingly contradictory findings into one model, describing social comparison processes among people faced with serious health threats. In this model, they distinguish between different modes of social comparison: on the one hand, seeking information and seeking contact with others, and on the other hand, making relative evaluations

(i.e., evaluations of the self in comparison to others). According to Taylor and Lobel (1989), these modes of comparison occur in different directions. People in stressful situations prefer to seek information about or seek contact with others who are *doing better*. By doing so, they may learn how to improve their own situation, and, at the same time, they may obtain hope and motivation. On the other hand, people prefer to evaluate their situation in comparison to others who are *doing worse* in order to feel better about their own situation. The mode of comparison is thus considered as the major determinant of the direction of social comparison: people seek information about and contact with others who are doing better, while evaluations are made in comparison to others who are doing worse (Taylor & Lobel, 1989).

In their model, Taylor and Lobel (1989) consider seeking information and seeking contact as the same mode of comparison. However, Buunk (1995) challenged this notion in a study among individuals receiving payment under the Disablement Insurance Act. Buunk's study showed that, although seeking information and seeking contact are both directed upward (i.e., to others doing better), seeking of information is directed significantly more upward than seeking of contact (affiliation). People with low well-being apparently want information about others who are better off than they are, but are more reluctant to actually meet these upward comparison others. It is assumed that having actual contact with someone who is doing better may be more threatening to one's self-image than obtaining information about those upward others (Brickman & Bulman, 1977). This suggests that seeking information and seeking contact are indeed two distinct processes.

In the present study, the comparison preferences of cancer patients were examined. In particular, it was examined whether cancer patients prefer to seek out upward or downward comparison, and which factors influence these preferences. First, it was assumed that the mode of comparison influences directional preferences. In line with Buunk (1995), two different modes of social comparison were examined, namely seeking comparison contact and seeking comparison information. It was expected that people would prefer upward comparison when seeking comparison information and contact, but that this preference for upward comparison would be greater when seeking information than when seeking actual contact.

Second, it was assumed that the dimension on which the comparison takes place influences the preferences for upward or downward comparison. Complying with Wood and Taylor's (1991) plea for more attention to the dimension of comparison, a distinction was made between two dimensions on which social comparison can take place. The first dimension, coping, refers to the way in which other cancer patients cope with their illness and related issues; the second dimension, illness severity, refers to the physical well-being of other cancer patients. A major

distinction between these dimensions is the level of perceived controllability. Cancer patients may feel they have more control over their coping strategies than over the course and severity of their illness. In addition, it is assumed that upward comparison is motivated by a need to improve oneself (Taylor & Lobel, 1989). If this is indeed the case, people will mostly be interested in comparing themselves with upward others on a dimension over which they feel they have control, in this case, the way they cope with their disease. This will be less so on the illness severity dimension, as there is little to learn from information on this dimension which can help one improve one's own situation. From research among rheumatoid arthritis patients, there is indeed some evidence that patients prefer downward social comparison information on the illness severity dimension, while they prefer upward social comparison information on the coping dimension (De Vellis, *et al.*, 1991). It was, therefore, expected that when patients are seeking information or contact, they would prefer more upward comparisons on the coping dimension than on the illness severity dimension.

Third, it was assumed that a number of psychosocial factors influence the directional preferences. For people whose future is still uncertain, feelings of control seem to be a major factor (Buunk, Collins, Taylor, Van Yperen & Dakof, 1990; Jensen & Karoly, 1992; Major, Testa & Blylsma, 1991). People with low perceived control may consider upward comparison as a reminder of the fact that they will never reach that level. However, when people do feel that they have control over their situation, they display an interest in upward comparison (Testa & Major, 1990). It was, therefore, expected that the more people feel they have control, the more they will be interested in upward information and contact (i.e., information about and contact with others doing better). In addition, because the present study was conducted among cancer patients, the roles of several other relevant indicators of low well-being were examined, namely uncertainty, anxiety, depression, and subjective evaluation of one's own health.

Specification of research issues

Several research questions were formulated in the present study. The first was whether the need for social comparison was influenced by several indicators of low well-being. The second was whether cancer patients prefer upward or downward social comparison information and contact. Furthermore, it was examined whether these directional preferences were influenced by the dimension of comparison (illness severity or coping). The last question was whether directional preferences were influenced by a number of indicators of low well-being.

Method

Sample and procedure

All respondents were (ex-) cancer patients who participated in a course called 'Coping with cancer', which was organized by the Comprehensive Cancer Center North-Netherlands. The main aim of this course was to introduce various coping techniques to the patients and to give them the opportunity to exchange their experiences and ideas with fellow cancer patients. The patients participated in courses that were given in several cities in the northern part of the Netherlands.

A total of 62 patients from ten different groups were approached for this study, and all of them agreed to participate. However, two patients could not continue their participation due to deteriorating health. Therefore, a total of 60 participants filled out the questionnaires. The sample consisted mostly of women (75%). The age of the participants varied from 30 to 82 years ($M = 51$). About 30% of the participants had primary education or lower professional training, 52% had high school education or middle professional training, and 17% had a higher education or higher professional training. Most of the participants were married (78%), 7% lived alone, 3% lived with a partner, 5% was divorced, and 7% was widowed.

The participants had been treated for a wide variety of forms of cancer. However, the most prevalent forms of cancer were breast cancer (42%), lung cancer (14%), and intestinal cancer (12%). Diagnosis was made, on average, 2.4 years before participation to the study, most patients were, therefore, no longer undergoing treatment. Half of the patients reported that their prognosis was good; for others, it was unsure (43%) or bad (7%).

Measures

Before participating in the course, the participants were asked to fill out a questionnaire, which consisted mainly of questions about several social comparison processes and several indicators of low well-being. After participating in the course, another questionnaire was filled out, with questions about the social comparison processes within the group.

Social comparison variables

Need for social comparison was measured using a self-constructed scale, consisting of four items. For examples, 'How often do you want to find out more about how other cancer patients experience problems with their disease?' and 'How often do you want to find out how you are doing in comparison to other patients with the same disease?'. Answers were given on a 5-point scale from 1 = never to 5 = often. Cronbach's alpha = .85.

Direction of preference of comparison information was measured on two dimensions; on the coping dimension (If you could choose, would you prefer

to know more about other cancer patients who are coping better (worse) with their disease than you are?), and on the illness severity dimension (If you could choose, would you prefer to know more about other cancer patients who are better (worse) off than you?). Both questions were answered on a 5-point scale from 1 = much worse to 5 = much better.

Direction of preference of comparison contact was also measured on the coping dimension (Did you prefer to be in contact with other patients from the group who were coping better (worse) with their disease than you are?) and on the illness severity dimension (Did you prefer to be in contact with other patients from the group who were better (worse) off than you?). Both questions were answered on a 5-point scale from 1 = much worse to 5 = much better. These preferences were measured after participation in the course, so that patients could indicate with which group members (upward or downward) they preferred to have contact. This questionnaire was returned by 37 respondents.

Indicators of low well-being

Uncertainty was measured using a scale consisting of six items. For example, 'I feel that I don't know enough about my disease and it's treatment' and 'I am uncertain about what to think of my illness and the effects of the treatment'. This scale is based on a scale developed by Van den Borne and Pruyn (1985) to measure the information needs among cancer patients and a scale developed by Buunk (1994) to measure internal feelings of uncertainty. The scale has previously been used in other studies examining uncertainty among cancer patients with satisfactory reliability (e.g., Van der Zee, Buunk, Sanderman, Botke & Van den Berg, 1999). Answers were given on a 5-point scale from 1 = not at all applicable to 5 = very much applicable. Cronbach's alpha = .76.

The amount of *anxiety* experienced by the patients was measured using the State-Trait Anxiety Inventory (STAI; Ploeg, Defares & Spielberger, 1981), of which only the 'state'-part was issued to the patients. An example is 'I worry about things that might happen'. Answers were given on a 4-point scale from 1 = not at all to 4 = very much. Cronbach's alpha = .97.

Depressive symptoms were measured using the Center for Epidemiology Studies Depression Scales (CES-D; Bouma, Ranchor, Sanderman & Van Sonderen, 1995). The CES-D is a 20-item instrument developed to measure current levels of depression. An example is 'During the past week, I thought my life was a failure'. Answers were given on a 4-point scale from 0 = rarely or never to 3 = often or always. Cronbach's alpha = .90.

Control was measured using a self-constructed scale, consisting of six items. For example, 'I have control over the way my disease influences my daily activities'. Answers were given on a 5-point scale from 1 = not at all to 5 = very much. Cronbach's alpha = .60.

Subjective evaluation of health was measured using a subscale from the RAND-36, consisting of five items (Van der Zee & Sanderman, 1993). For example 'I expect my health to deteriorate'. Answers could be given on a 5-point scale from 1 = completely true to 5 = completely untrue. Some items were recoded so that a higher score on the scale indicated a lower evaluation of health. Cronbach's alpha = .75.

Results

Demographics

First, it was examined whether demographic variables showed any relationship with the other variables. These analyses included gender, age, marital status, education, religion, work status, form of cancer, prognosis, and the presence of metastases. Correlations were calculated between these variables, the indicators for low well-being and the social comparison variables. None of these correlations were significant (p 's > .05). Because of this, the demographic variables were omitted from further analyses.

Need for social comparison

The results show that the need for social comparison was reasonably high ($M = 3.47$). Which indicators of low well-being were related to this need to know more about comparison others (in this case other cancer patients)? Table 1 shows that the need to compare oneself with other cancer patients was strongly related to several indicators of low well-being. The more uncertainty, anxiety, and depressive symptoms the patients experienced, the more they wanted to know about comparison others. In addition, a strong relation between subjective health evaluation and the need for social comparison information was found: people who evaluated their health negatively reported a higher need for social comparison information. No significant relationship was found between feelings of control and the need for social comparison information.

Because the different indicators of low well-being correlated with each other, a stepwise regression analysis was performed to examine which indicator of well-being fostered the most need for social comparison. Table 2 shows that the patients' subjective evaluation of their own health was the best predictor of the need for social comparison information. After that, depressive symptoms were the best predictor. When these two variables were entered into the analysis, none of the other low well-being indicators added a significant amount of variance.

Seeking contact and seeking information

It was expected that people in stressful situations would show a preference for upward social comparison information and contact. The results show that there

Table 1**Correlations between the indicators of low well-being and the need for social comparison**

Well-being indicators	Need for social comparison	Control	Depression	Evaluation of health	Anxiety
Uncertainty	.34**	-.42***	.41***	-.43***	.43***
Control	-.12		-.48***	.32**	-.31
Depression	.39**			-.37**	.58***
Evaluation of health	-.45**				-.30
Anxiety	.14*				

*** $p < .001$, ** $p < .01$, * $p < .05$

Table 2**Summary of regression analysis of the indicators of low well-being, predicting the need for social comparison**

Well-being indicators	β	T	$p <$
Evaluation of health	-.34	-2.75	.01
Depression	.31	2.53	.05
Uncertainty	.12	.84	<i>ns</i>
Control	.13	.97	<i>ns</i>
Anxiety	.06	.40	<i>ns</i>

was indeed a preference for seeking information and seeking contact with equal or upward others (see Table 3). Were these directional preferences for comparison influenced by the mode of comparison and the comparison dimension? Seeking contact and seeking information were both measured on the coping and illness severity dimension. The two comparison modes did not correlate significantly with each other, neither on the coping dimension, nor on the illness severity dimension ($r = -.14$, *ns* and $r = .24$, *ns*, respectively) and could, therefore, be considered as two separate processes.

To examine the effects of mode and dimension of comparison on the preference for comparison direction, a MANOVA Within Subjects analysis was performed. This analysis revealed a significant main effect of mode of comparison, $F(1,30) = 7.09$, $p < .05$, as well as a significant main effect of comparison dimension, $F(1,30)$

Table 3

Percentages of patients who want information about or contact with fellow patients, measured on two dimensions: coping and illness severity

Level of fellow patients	Information		Contact	
	Coping	Illness severity	Coping	Illness severity
Much worse	-	3	3	7
Slightly worse	3	14	7	16
Equal	38	69	71	65
Slightly better	33	3	13	10
Much better	26	10	7	3

= 13.89, $p < .001$. Thus, both mode of comparison and dimension of comparison influenced directional preferences in social comparison. As can be seen in Figure 1, the preference for social comparison information was more upward than for seeking contact. In other words, patients preferred to compare themselves with more upward others when it involved information than when it involved actual contact. Furthermore, patients preferred more upward comparison on the coping dimension than on the illness severity dimension. They were more interested in comparing themselves with others who were coping better than with those who were better off physically. In fact, they actually preferred seeking contact with others who were slightly worse off physically. In addition to these two main effects, a significant interaction effect was found, $F(1, 30) = 4.26$, $p < .05$. This finding indicates a more upward preference for information than for contact, *especially* when it concerned comparison on the coping dimension. Patients were especially interested in fellow patients who were coping better than they were.

Next, it was examined whether the indicators for low well-being influenced these directional preferences. It was found that uncertainty and control influenced directional preferences. The more uncertainty the patients experienced, the more they preferred upward social comparison information on the coping dimension ($r = .29$, $p < .05$). In other words, with increasing levels of uncertainty, the desire for information about fellow patients who were coping better also increased. Feelings of control seemed to influence the preference for social comparison contact only marginally. The more the patients felt that they had control over their situation, the more they preferred to have contact with others who were coping better than they were ($r = .27$, $p < .10$). Apparently, when the patients felt

that they had control over their own situation, they wanted to know how they could exert that control.

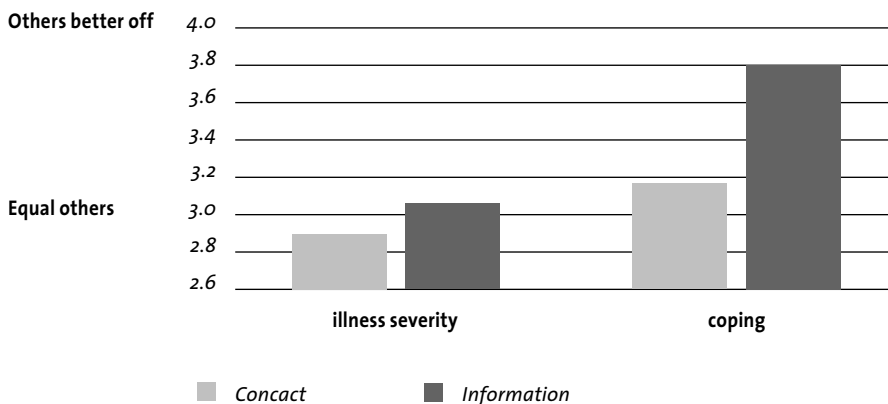
Discussion

In present study, social comparison processes among cancer patients were explored. It was found that the respondents had a relatively high need for social comparison. This need for social comparison was strongly influenced by a number of indicators of low well-being. The predictions were, therefore, largely confirmed: four out of the five indicators of low well-being related significantly to the need for social comparison information. The more patients evaluated their own health negatively, and the higher the level of depressive symptoms, anxiety, and uncertainty, the greater the need for social comparison. However, no relationship was found between feelings of control and the need for social comparison. In contrast to the findings of Buunk (1995), subjective health evaluation, and not uncertainty, was the best predictor. One possible reason for this may be the fact that all participants had been confronted with a life threatening disease, and that health and illness had, therefore, become highly salient for them. Apparently, the way cancer patients evaluate their health is very important and may influence the way they feel about almost every other aspect of their lives, including their need for social comparison.

Furthermore, the factors which influenced the preferences for upward or downward comparison were examined. As expected, the mode of comparison influenced directional preferences. The respondents preferred upward social comparison information and social comparison contact, but this preference was more upward for comparison information. These results are in line with the

Figure 1

Preferred direction of seeking contact and seeking information



assumption that actually meeting the comparison others, however informative, can be very threatening, especially to the self-image (Brickman & Bulman, 1977). One is not only confronted with the fact that another person is doing better, but the other person is also a witness to the fact that one is doing worse.

The dimension of comparison also influenced directional preferences. It was found that patients preferred more upward social comparison information on the coping dimension than on the illness severity dimension. Patients who are coping better are, indeed, the best source of information in order to learn how to improve one's own situation. However, this applied particularly to seeking information; patients were more reluctant to actually meet fellow patients who were doing better. It is possible that seeking information and seeking contact are not only different mechanisms, but also have different underlying motivations. With the present design, however, this was impossible to examine. Future research should provide more clarity on this issue.

Finally, several indicators of low well-being influenced directional preferences. It was found that the more uncertainty patients felt, the more they preferred to receive information about others who were coping better. These results confirm the notion that upward comparison is mainly used for self-improvement purposes (problem focused coping). It was also found that feelings of control influenced the preferences for comparison others. The more patients felt they had control over their situation, the more they wanted to have contact with others who were coping better than they were. As expected, it seemed that when patients felt that they had control over their own situation, they wanted to learn from others how to best use that control to their advantage. In these circumstances, meeting patients who are coping better can be very informative, although it can also be very threatening. It is, therefore, important to note that especially patients with relatively high levels of control are interested in meeting these superior others. If they feel they have control, this situation apparently poses less of a threat.

Taken together, the results of this study provide insight in the social comparison needs preferences among cancer patients. However, the results should be viewed with some caution. For one thing, the conclusions are based on correlational analysis. Strictly speaking, no causal relationships can be deducted from these analyses. This does not mean that these data do not provide relevant information about the social comparison processes of cancer patients. On the contrary, the results should be used as a basis for further study of these processes. Future studies should be designed so that causal relationships between several stress indicators and the need for social comparison can be examined. Another possible problem could be generalizability. The sample consisted of a very specific group of cancer patients, who were participating in a course which they knew would entail contact with other cancer patients. Furthermore, most patients were no longer undergoing treatment. As such, these patients constituted a highly specific group

of cancer patients. Therefore, the conclusions can not be generalized to the whole population of cancer patients. That does not mean, however, that the present study can not provide important insights into to how cancer patients may use social comparison processes in coping with their illness. Furthermore, directional preferences for comparison contact were measured after participation in the course. This may have influenced the answers given by the participants and may have made these answers less comparable to the answers regarding preferences for comparison information, which were measured before the course. However, these answers do provide us with insight into the preferences of cancer patients based on their experiences of contact with very concrete examples of comparison others (i.e., group members).

Practical implications

What may be the practical implications of these results? A very obvious application lies in patient information and education. Patients very much need (and want) information about their diseases (Bilodeau & Degner, 1996; Galloway, *et al.*, 1997; Harrison, Galloway, Graydon, Palmer-Wickham, & Rich-Van der Bij, 1999), especially in the case of such a life-threatening disease as cancer. In addition to the information that is currently provided to patients, it would certainly be worthwhile to include social comparison information in patient information. It is apparent that patients have a need for this type of information. Patients want to know more about fellow patients; how they experience their diseases, how they are doing, and, most importantly, how they are coping with their illnesses and treatments. The present study also provides indications of how to design this type of information. For one thing, it seems most helpful to include upward social comparison information about how other patients are coping. Patients can use this information to improve their own situations. Not only do patients prefer this kind of information, but research shows that comparison with others who are coping well in spite of severe problems is helpful, and generates positive affect (Gibbons & Gerrard, 1991; Ybema & Buunk, 1995). It is very important to note that the aim of including comparison information is not to tell the patients how they *should* cope with their diseases, but to provide concrete examples of how they *could* cope. No one way of coping is *the* best way for all patients. On the basis of social comparison information and contact, people can get a better idea of how other patients are coping and how they might use this to cope better with their own diseases. However, little is known about the reactions to social comparison information on different dimensions. Experimental research should provide patients with social comparison information on different dimensions to examine their different effects.

Given the fact that patients indicate a relatively high need for social comparison information and contact, it is also recommended that doctors provide patients

with information about support groups for patients. Such groups provide a unique opportunity for patients to compare themselves with fellow patients. Although the benefits of such support groups have been widely acknowledged (Fobair, 1997; Gray, Fitch, Davis & Phillips, 1997; Posluzny, Hyman & Baum, 1998), studies have also found that many patients are unaware of the existence of support groups for patients (Eakin & Strycker, 2001). Physicians should, therefore, point out the possibility of participating in a support group to their patients.

To summarize, the present study may constitute a step forward in the understanding of social comparison processes among cancer patients. In general, it confirms the refinements Buunk (1995) made to Taylor and Lobel's model (1989). However, given the complexity of the social comparison theory, it is not surprising that still a lot is to be learned about social comparison processes among cancer patients. Are there individual differences in preference for comparison dimension? Are information seeking and contact seeking based on different motivations? In addition to answering these theoretical questions, it is important to focus on more practical questions. Is patient information that includes social comparison information indeed more suited to the needs of patients? Intervention studies should be carried out to examine whether patient information incorporating social comparison information is, indeed, beneficial to the patients' well-being.

Chapter 3

Audiotaped social comparison information for cancer patients undergoing radiotherapy: Differential effects of procedural, emotional, and coping information¹

Abstract

The present study focused on the short-term effects of social comparison information on subjective understanding of radiation therapy, validation of emotions, and self-efficacy among cancer patients undergoing radiation therapy. The effects of three different audiotapes, containing different types of social comparison information, were examined. On the procedural tape, a man and woman discussed their illness and radiation therapy; 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 tapes. 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.

Currently, roughly 40% of all cancer patients are treated with radiation therapy (MacLeod & Jackson, 1999), making it one of the most frequently used treatments for cancer next to 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 & 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 & Tewfik, 1985; Chandra, *et al.*, 1998; Munro & Potter, 1996).

Of these psychological consequences, Van den Borne and Pruyn (1985) specified uncertainty as one of the main psychological problems among cancer patients. The need for information among cancer patients undergoing radiation therapy is reportedly high (Harrison-Woermke & Graydon, 1993). Patients display a high need for information, especially regarding the disease itself, the prognosis, and tests and treatment(s), but also for information regarding physical care and how

¹ This chapter is based on: Bennenbroek, F.T.C., Buunk, B.P., Stiegelis, H.E., Hagedoorn, M., Sanderman, R., Van den Bergh, A.C.M., & Botke, G. (in press). Audiotaped social comparison information for cancer patients undergoing radiotherapy: Differential effects of procedural, emotional and coping information. *Psycho-Oncology*.

to deal with their feelings and concerns (Bilodeau & Degner, 1996; Galloway, *et al.*, 1997; Graydon, *et al.*, 1997; Harrison-Woermke & 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 & 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 (i.e., 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 & Van den Berg, 1986).

Social comparison information can be a particularly relevant addition to patient information materials, especially information 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 are going through (e.g., Gray, Fitch, Davis & Phillips, 1997). Furthermore, research has shown that people faced with a serious health threat tend to compare themselves with others in a similar situation (Buunk, Gibbons & Reis-Bergan, 1997; Tennen, McKee & Affleck, 2000).

In the present study, cancer patients who were about to undergo radiation therapy were provided with audiotaped social comparison information (i.e., information about how other patients have experienced their disease and the radiation treatments). 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 of radiation therapy (i.e., 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. In the present study, information on three potentially relevant comparison dimensions, namely, procedures, emotions, and coping, were provided to cancer patients who were about to undergo radiation therapy to examine whether information on different dimensions would indeed serve different goals, and thus yield different effects. On each of the three audiotapes, individuals who acted as cancer patients who had already undergone radiation therapy recounted different aspects of their experiences with cancer and radiation therapy. However, on each audiotape, they focused on different aspects. On the first tape, they focused on the procedural aspects of the experience (procedural tape); on the second tape, they focused on the emotional aspects (emotion tape); and on the third tape, they focused on coping aspects (coping tape).

Procedural tape

On the procedural tape, the patients focused on the experiences of fellow patients with various aspects of cancer and radiation therapy: how the cancer was discovered, what happened during radiation therapy, which side effects they experienced, and how the check-ups went 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 disruption of daily activities (see Ream & 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 & 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 the experiences of 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?). The experiences of 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, Pruyn, and Van Knippenberg (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

On the emotion tape, the patients focused on their emotional experiences. 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 kinds 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 the kinds of emotions they experienced while 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, Van Yperen, Taylor, and Collins, 1991; Cottrell & Eppley, 1977; Gerard, 1963; Kulik & Mahler, 2000). However, little attention has been given to the 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 to the comparison of emotions is the fact that the comparison others have firsthand 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

On the coping tape, the patients focused on how they had 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 should, therefore, enable vicarious learning. That is, hearing about other patients coping well with their diseases and treatments may convince patients that if others can cope effectively, they too should be able to cope with their situation (Bandura & 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 stressful events 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 & Lobel, 1989).

A study by Taylor, Aspinwall, Giuliano, Dakof, and Reardon (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, Buunk, Van der Zee & Grol, 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 the coping strategies of fellow patients.

Specification of research issues

The present study examined the effects of three different audiotapes containing social comparison information. As indicators of 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. It was expected that all three audiotapes would have beneficial effects on the dependent variables. However, several differences in the effects were expected. First, it was expected that the procedural tape would have the most effect on subjective understanding of radiation therapy (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 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. In each department, an assistant would check incoming patient files to see whether patients met the inclusion criteria. The patients had to be newly diagnosed cancer patients with breast cancer, cervical cancer, head and neck cancer, or prostate cancer. They had to be treated with external radiation therapy with curative intent for a period of four to seven weeks. They could not be participating in another psycho-oncological study and had to have sufficient knowledge of the Dutch language.

Once it 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 in their own time. They could then send an informed consent form to the researchers, indicating that they would participate in the study. Of the 319 eligible patients, 226 agreed to participate in the study (71% response rate)². The main reasons for non-response were not being interested (12%), feeling it was too burdensome (6%), or a poor physical or mental condition (3%). Next, patients were randomly assigned to one of the three experimental conditions, each with a different audiotape, or to the control group. Patients assigned to an experimental condition who did not own a tape recorder were provided with one. In the week prior to the start of their treatment, the patients received the questionnaire and an audiotape.

² A power analysis performed prior to the study revealed a sample size of 200 would result in a satisfactory power of .89, when the effect size is fixed at low to medium ($r = .20$), using a one-tailed significance test (significance criterion $\alpha = .05$) (Cohen, 1971).

Sample

The majority of the respondents was female (65%). 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. The elapsed time since first diagnosis varied between 1 and 36 weeks, with an average of eight weeks.

Development of the audiotapes

A total of 20 cancer patients were interviewed in order to gather the necessary information for developing the audiotapes. These patients were either still undergoing radiation therapy or had recently received their last treatment. The scripts of the audiotapes were based on information extracted from these interviews, information from medical staff, and information from relevant literature. The scripts of the audiotapes represented an interview in which a male patient and a female patient who had already undergone radiation treatment are recounting their experiences.

Before the audiotapes were recorded, radiation oncologists and a number of cancer patients reviewed the scripts. On the basis of their comments and recommendations, some small alterations were made to the scripts. Next, the audiotapes were recorded with the help of professional actors, a 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 the present study.

Similarities and differences in the audiotapes

Each script was written to match the other scripts as much as possible on the subjects which 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 main subjects that were addressed on all the audiotapes were the way the diagnosis was made, the radiation treatment, the possible side effects of the treatment, and the changes after the treatment had ended. However, the audiotapes differed in the way these topics were addressed, as each audiotape focused on a different dimension. The audiotapes were roughly 25 minutes long.

Table 1
Excerpts from the scripts 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 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'.

Instruments

All patients received a written questionnaire with several different sections. First, a *manipulation check* was performed to examine whether the respondents could identify the emphasis of the audiotape they had received. The patients were asked 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 the patients had *compared* themselves with the patients on the tape was examined. The patients were asked to indicate whether or not they had compared themselves and/or their situation to the (situation of) the 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 audiotape interesting? Was the information on the tape new to them? Was there information missing on the tape? Were they inclined to listen to the tape more than once? Was the tape 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, the 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 scale³. 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 ($r = .67, p < .001$).

Recognition and validation of emotions after listening to the tape was measured using a self-constructed three-item scale³. 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, $\alpha = .80$.

Self-efficacy after listening to the tape was measured using a self-constructed three-item scale³. 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 $\alpha = .80$.

Negative mood was measured using a shortened version of the Profile of Mood States (V-POMS; McNair, Lorr & Doppelman, 1971; Wald & Mellenbergh, 1990), containing 32 adjectives describing different moods. The participant could indicate how much the description applied to their moods over the previous several days on a 5-point scale, 1 = not at all applicable to 5 = very much applicable. The questionnaire contains 5 subscales; depression (8 items; $\alpha = .85$), anger (7 items; $\alpha = .85$), fatigue (6 items; $\alpha = .93$), vigor (5 items; $\alpha = .87$), and tension (6 items, $\alpha = .87$). 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, $\alpha = .94$.

Results

Descriptives

First, descriptive statistics of the respondents in all four conditions were calculated. Demographic characteristics are presented in Table 2. There were no

³ *Subjective understanding, recognition of emotions and self-efficacy were measured in the control condition 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.*

significant differences between the four groups on these demographic variables (p 's > .10).

Manipulation checks

The majority of the patients identified the correct emphasis of the audiotapes (72%). The patients who identified the wrong emphasis either thought that the emotion tape focused on coping or that the coping tape focused on emotions. As the patients received only one audiotape and could not compare the different tapes, it is 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 patients on the tapes, a separate manipulation check was used. The results show that 93% of the patients who had received the procedural tape had indeed compared themselves with the patients on the tape, while this percentage was slightly lower among those who had received the coping and the emotion tapes (79% and 82%, respectively).

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 tapes reported that they had missed information on coping strategies (3%). Furthermore, individual patients indicated that they had missed information on religion, on how people in other stages of life experienced the 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 (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

Table 2**Characteristics of the respondents displayed by experimental condition**

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

Table 3

Mean scores of subjective understanding, validation of emotions, and self-efficacy, displayed by audiotape

	Audiotape					
	Procedural (<i>n</i> = 59)		Emotion (<i>n</i> = 55)		Coping (<i>n</i> = 55)	
	Mean (<i>SD</i>)		Mean (<i>SD</i>)		Mean (<i>SD</i>)	
Subjective understanding	3.73 ^a	(1.14)	3.08 ^b	(1.42)	3.50 ^{ab}	(1.32)
Validation of emotions	3.82 ^a	(.97)	3.78 ^a	(1.13)	3.84 ^a	(1.05)
Self-efficacy	3.65 ^a	(.90)	3.22 ^b	(1.18)	3.75 ^a	(1.05)

Note: Means in the same row with different superscripts differ significantly from each other at a $p < .05$ level

tape more than once mainly because they wanted to hear the whole tape again ($N = 32$), or because they wanted to hear parts of it again (15%). Some patients indicated that they wanted to hear the tape again because they had forgotten information (6%), were inspired by the tape (3%), or felt supported by the tape (4%). The majority (65%) of the 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, $F(2,163) = 3.59, p < .05$. This effect was due to a significantly higher increase in understanding after listening to the procedural tape than after the emotion tape ($p < .05$), and a marginally significantly higher subjective understanding after the coping tape than after the emotion tape ($p = .10$). Subjective understanding differed significantly from the scale's midpoint (i.e., no increase) after listening to the procedural tape and the coping tape ($t(58) = 4.93, p < .001$ and $t(52) = 2.77, p < .01$, respectively), but not after the emotion tape ($t(53) = .43, ns$). These findings indicate that patients who had received the procedural and the coping tapes 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.

Table 4
Mean scores on mood displayed by condition

	Condition							
	Procedural tape (<i>n</i> = 59)		Emotion tape (<i>n</i> = 56)		Coping tape (<i>n</i> = 55)		Control group (<i>n</i> = 55)	
	Mean (<i>SD</i>)		Mean (<i>SD</i>)		Mean (<i>SD</i>)		Mean (<i>SD</i>)	
Depression	10.36 ^b	(2.53)	12.96 ^a	(5.44)	10.66 ^b	(3.66)	11.52 ^a	(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)

Note: Means in the same row with different superscripts differ significantly from each other at a $p < .05$ level

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, $F(2,166) = .06$, *ns*, thus Hypothesis 2 was not confirmed.

The tapes were also compared regarding 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, $F(2,167) = 4.05$, $p < .05$. This effect can be attributed to a significant difference between the coping tape and the emotion tape ($p < .05$). Unexpectedly, there was no significant difference between the coping and the procedural tapes. Levels of self-efficacy differed significantly from the scale's midpoint after the coping tape and the procedural tapes ($t(53) = 5.30$, $p < .001$ and $t(58) = 4.52$, $p < .001$, respectively), but not after the emotion tape ($t(54) = 1.37$, *ns*). These findings indicate that patients who had received the coping and the procedural tapes had indeed increased their self-efficacy, which was not the case for the patients who had received the emotion tape, thus partly confirming Hypothesis 3.

Finally, the effects of the tapes on mood were examined (see Table 4). The analyses revealed a significant difference between conditions, $F(3,219) = 3.20$, $p < .05$. This effect can be attributed to the difference between the emotion tape and the other three conditions (i.e., 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 be traced back to the subscales of depression, $F(3,220) = 3.85, p < .01$, and anger, $F(3,220) = 3.13, p < .05$.

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 tapes increased patients' understanding of radiation therapy. Even though the patients reported that they were satisfied with the information they had previously received 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 & Telch, 1985). However, Bandura (1977) had already indicated that telling patients what to expect, as was done on the procedural tape, may also increase feelings of self-efficacy, but only up to a certain 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 important and helpful (Poluszny, Hyman & Baum, 1998; Pruyn & 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, Cohen, Schulz, & Yasko, 2001). It is, therefore, important to examine the reasons why the emotion tape did not have the 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 explanations may be more plausible.

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, Cacioppo & Rapson, 1992). For both hypotheses, some empirical evidence has been found; however, there is no conclusive evidence (see Kulik & 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 & Mahler, 2000). Furthermore, the patients listening to the tape 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, Czapinski & Peeters, 1992; Rozin & 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 & Royzman, 2001).

Second, it may be that hearing other people talk 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 may 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 evokes negative emotions. According to Hobfoll and London (1986), talking about one's feelings may increase uncertainty and feelings of anxiety. Similarly, a study by Costanza, Derlega and Winstead (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 & 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 ventilate and dissipate 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 is 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, Bennenbroek & Vos, 2001; Helgeson, Cohen, Schulz & Yasko, 1999; Telch & Telch, 1986).

Some considerations may limit the conclusions drawn from the current study. First, the coping tape contains positive role models, as it features patients who are coping well, while the procedural and the emotion tapes 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 the patients had listened 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 present study demonstrates the differential effects of social comparison information on different dimensions. Furthermore, the data clearly support the beneficial effects of the procedural and the coping tapes. 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, requires more research before it can be provided 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 that they greatly appreciated this kind of information. It may be that information about emotions is only desirable when combined with information about coping. A study by Silver, Wortman, and Crofton (1990) indicated that people reacted less favorably to victims of life crises who reported distress but did not report any coping efforts than to 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.

Chapter 4

Uncertainty and social comparison: Do uncertain cancer patients react differently to different kinds of social comparison information?

Abstract

The present study examined the effects of three different kinds of social comparison information using a control group for comparison. Cancer patients were provided with audiotaped social comparison information just prior to undergoing radiation therapy. On the procedural tape, a male and female patient discussed their illness and radiation therapy; on the emotion tape, they focused on emotional reactions; and on the coping tape, they focused on the way they had been coping. More specifically, it was examined whether uncertainty about cancer and radiation therapy influenced the effects of these different kinds of social comparison information. The results indicated that those high in uncertainty seem to benefit the most from the coping tape, and not the procedural tape. These results remain evident even when controlling for the effects of personality characteristics such as social comparison orientation, and neuroticism.

'One of the most striking features of the journey from health to illness and back again is the nearly constant presence of uncertainty' (Sanders, 1982, p. 129).

Illness is generally accompanied by uncertainty. This may be particularly the case with a life-threatening disease such as cancer, with its uncertain treatment efficacy, unknown consequences for daily activities, diverse side effects, and the possibility of recurrence (Christman, 1990). Van den Borne and Pruyn (1985) indicated that uncertainty (i.e., lack of information) is one of the major psychological problems among cancer patients. Indeed, cancer patients undergoing radiation therapy report 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 & Degner, 1996; Galloway, *et al.*, 1997; Graydon, *et al.*, 1997; Harrison-Woermke & Graydon, 1993). Patients have many questions, often without clear answers. Information from fellow patients (e.g., how they are doing, feeling, and coping) may help in answering these questions.

The notion that information about fellow patients could be advantageous to patients' well-being can be traced back to Festinger's social comparison theory (1954). Festinger (1950, 1954) hypothesized that when people experience a shortage of objective (i.e., non-social) information, they will try to accurately evaluate their opinions and abilities by comparing themselves with similar others. In several studies it was found that individuals high in uncertainty indeed appear to have a high need for social comparison information. In a study among patients with various forms of cancer, Molleman, Pruyn & Van Knippenberg (1986) found that,

the more uncertainty the patients experienced, the more they considered fellow patients to be informative. Similarly, Van den Borne and Pruyn (1985) found that uncertainty was the most important predictor of the need for social comparison among cancer patients. The more uncertainty cancer patients felt about their illness, the more they wanted to know how fellow patients reacted to their illness. A study by Kulik and Mahler (1989) demonstrated that patients who were anticipating coronary-bypass surgery preferred to have a roommate who had already undergone the surgery to a roommate who was awaiting the same surgery. These so-called postoperative roommates were preferred mainly because they could provide valuable information about the impending surgery. Furthermore, among a sample of individuals falling under the Disablement Insurance Act, Buunk (1995) found that, the desire to seek out the company of similar others and to learn more about such others was particularly fostered by uncertainty.

Although it is generally acknowledged that uncertainty fosters the need for social comparison, limited attention has been paid to the role of uncertainty in moderating the effects of social comparison. One would expect that those high in uncertainty (who report a high need for social comparison information) would respond differently to social comparison information than those low in uncertainty. In the present study, the role of uncertainty (i.e., the lack of knowledge about cancer and radiation therapy) in moderating the effects of social comparison information on mood was examined. More specifically, it was examined whether cancer patients high in uncertainty would respond differently to different types of social comparison information. Cancer patients who were about to undergo radiation therapy were provided with one of three types of audiotaped social comparison information. On each of the three tapes, individuals who acted as cancer patients who had already undergone radiation therapy recounted their experiences with cancer and radiation therapy. However, on each audiotape they focused on different aspects. On the first tape, they focused on the procedural aspects of the experience (procedural tape); on the second tape, they focused on the emotional aspects (emotion tape); and on the third tape, they focused on coping aspects (coping tape).

Procedural tape

On the procedural tape, the patients focused on their experiences with various aspects radiation therapy: how the cancer was discovered, what happened during the treatments, which side effects they experienced, and the check-ups after the radiation therapy had ended. Interventions to prepare patients for radiation therapy have been effective in increasing knowledge about radiation therapy, reducing anxiety, and reducing disruptions of daily activities (see Ream & Richardson, 1996, for a review). Information about radiation therapy enables patients to have a better idea of what to expect. Information about experiences

from fellow patients can be an important supplement here, as it provides cancer patients with the opportunity to compare themselves and their situation with (the situation of) fellow patients. 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 that threat. Kulik and Mahler 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, and to a lesser extent for their comparison potential. In other words, cancer patients will use information about fellow patients who have already undergone the radiation therapy first of all to get a better idea of what to expect, and to a lesser extent as an opportunity to compare themselves or their situation.

Emotion tape

Even though every individual reacts differently to having cancer and being treated for it, fellow patients who have already undergone the treatment are able to provide information about what kind of emotions they experienced during radiation therapy, thus providing a point of reference. Research has indicated that uncertainty about emotions can promote the need for social comparison (Cottrell & Eppley, 1977; Kulik & Mahler, 2000). However, little attention has been given to the specific consequences of comparing one's emotions with those of similar others when facing a serious health threat. Spiegel and Diamond (2001) suggested that cancer 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 about their emotional reaction can thus normalize and validate patients' emotions. On the emotion tape, the patients, therefore, focused on their emotional reactions to cancer and radiation therapy.

Coping tape

On the coping tape, the patients focused on how they had coped with various aspects of cancer and radiation therapy. Presenting patients with a positive coping model may increase their self-efficacy and their ability to cope with the situation. Self-efficacy refers here to the personal judgments of how well one can implement behavior to cope with one's disease and treatment (Bandura, 1986). Models of positive coping with cancer and the radiation therapy provide an opportunity for upward social comparison. By comparing with similar others who are coping well, patients may learn how to improve their own situation (Berger, 1977; Telch & Telch, 1985), and, at the same time, they may acquire hope and motivation (Taylor & Lobel, 1989). Indeed, studies indicate that people facing a health threat are particularly interested in information about fellow patients who were coping very well (Bennenbroek, Buunk, Van der Zee & Grol, 2001; Buunk,

1995). It seems that comparison on the coping dimension is motivated by a desire to improve oneself. After all, fellow patients who are coping well can provide more useful information on how to improve one's own situation than fellow patients who are better off physically.

The role of personality characteristics

It is not unlikely that the role of uncertainty in moderating the effects of social comparison information may actually be attributed to personality characteristics related to uncertainty. Therefore, it was examined whether the influence of uncertainty on the effects of the social comparison information would remain intact even when taking personality characteristics into account. In other words, it was examined whether the influence of uncertainty could actually be attributed to feelings of uncertainty, and not, for example, to a common factor behind uncertainty and a specific personality characteristic, such as social comparison orientation and neuroticism. Although little is known about the role of uncertainty in moderating the effects of social comparison information on mood, the role of dispositional factors related to uncertainty, such as social comparison orientation and neuroticism, is more established.

An increasing number of studies focus on the role of social comparison orientation in social comparison processes. Gibbons and Buunk (1999) introduced this notion of social comparison orientation to refer to the disposition of individuals who are strongly focused on social comparison, are particularly sensitive to their own standing relative to others, and who are interested in information about the thoughts and behaviors of others in similar situations. Furthermore, individuals high in social comparison orientation are characterized by a heightened uncertainty about themselves, accompanied by a relatively strong dependency on other people for their self-evaluation. A study among cancer patients (Van der Zee, *et al.*, 1998) showed that patients high in social comparison orientation were indeed more inclined to select and attend to information about fellow patients. In addition, people high in social comparison orientation tend to be more strongly affected by social comparisons (Gibbons & Buunk, 1999).

Neuroticism has also been found to moderate the affective responses of cancer patients to social comparison information (e.g., Van der Zee, *et al.*, 1998; Van der Zee, Oldersma, *et al.*, 1998). Neuroticism is a personality trait characterized by a tendency to experience negative, distressing emotions and to possess associated behavioral and cognitive traits. Features that define this trait are fearfulness, irritability, low self-esteem, social anxiety, poor inhibition of impulses, and helplessness (Costa & McCrae, 1987). Neuroticism is also associated with an information processing style that is harmful to the self (Young & Martin, 1981). That is, when confronted with information about fellow patients, individuals high in neuroticism tend to focus on the negative implications of such information.

Specification of research issues

In the present study, the role of uncertainty in moderating the effects of the audiotapes on mood was examined. It was expected that those experiencing high uncertainty would respond most favorably to the procedural tape. This tape provides procedural and sensory information about cancer and radiation therapy, and was expected to provide the most relevant information for reducing uncertainty about cancer and radiation therapy. Therefore, it was expected that this tape would be able to fulfill the need for information the best. Furthermore, it was examined whether the influence of uncertainty in moderating the effects of the social comparison information would remain evident even when taking relevant personality characteristics into account.

Method

Procedure

Patients were approached in the three hospitals with radiation therapy departments in the northern part of the Netherlands. In each department, an assistant would check incoming patient files to see whether patients met the inclusion criteria. The patients had to be newly diagnosed cancer patients with breast cancer, cervical cancer, head and neck cancer, or prostate cancer. They had to be treated with external radiation therapy with curative intent for a period of four to seven weeks. They could not be participating in another psycho-oncological study and had to have sufficient knowledge of the Dutch language.

Once it 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 in their own time. They could then send an informed consent form to the researchers, indicating that they would participate in the study. Of the 319 eligible patients, 226 agreed to participate in the study (71% response rate). The main reasons for non-response were not being interested (12%), feeling it was too burdensome (6%), or a poor physical or mental condition (3%). Next, patients were randomly assigned to one of the three experimental conditions, each with a different audiotape, or to the control group. Patients assigned to an experimental condition who did not own a tape recorder were provided with one. In the week prior to the start of their treatment, the patients received the questionnaire and an audiotape.

Sample

The majority of the respondents was female (65%). 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. The elapsed time since first diagnosis varied between 1 and 36 weeks, with an average of eight weeks.

Development of the audiotapes

A total of 20 cancer patients were interviewed in order to gather the necessary information for developing the audiotapes. These patients were either still undergoing radiation therapy or had recently received their last treatment. The scripts of the audiotapes were based on information extracted from these interviews, information from medical staff, and information from relevant literature. The scripts of the audiotapes represented an interview in which one male patient and one female patient who have already undergone radiation treatment are recounting their experiences.

Before the audiotapes were recorded, radiation oncologists and a number of cancer patients reviewed the scripts. On the basis of their comments and recommendations, some small alterations were made to the scripts. Next, the audiotapes were recorded with the help of professional actors, a 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 the present study.

Similarities and differences in the audiotapes

Each script was written to match the other scripts as much as possible on the subjects which were addressed, the order of the subjects, the use of language, and total length of the audiotape. The main subjects that were addressed on all the audiotapes were the way the diagnosis was made, the radiation treatment, the possible side effects of the treatment, and the changes after the treatment had ended. However, the audiotapes differed in the way these topics were addressed, as each audiotape focused on a different dimension. The audiotapes were roughly 25 minutes long.

Instruments

In the week prior to the start of their radiation treatments, patients received a questionnaire with several different sections.

Uncertainty was measured using a scale of six items. For example, 'I feel that I don't know enough about my disease and its treatment' and 'I am uncertain about what to think of my illness and the effects of the treatment'. This scale is based on a scale developed by Van den Borne and Pruyn (1985) to measure the

information needs among cancer patients and a scale developed by Buunk (1994) to measure internal feelings of uncertainty. The scale has previously been used in other studies examining uncertainty among cancer patients with satisfactory reliabilities (e.g., Bennenbroek, Buunk, Van der Zee & Grol, 2002; Van der Zee, Buunk, Sanderman, Botke & Van den Berg, 1999). Answers were given on a 5-point scale from 1 = not at all applicable to 5 = very much applicable. Cronbach's alpha for the scale was $\alpha = .74$.

Individual differences in *social comparison orientation* were measured using the Iowa-Netherlands Comparison Orientation Measure (INCOM; Gibbons & Buunk, 1999). Participants could answer on a 5-point scale whether they agreed with statements on social comparison habits, ranging from 1 = I disagree strongly to 5 = I agree strongly. For example: 'I always like to know what others in a similar situation would do'. The reversed items ('I am not the type of person who compares often with others' and 'I never consider my situation in life relative to that of other people') were removed from the analyses, because of very low item-total correlations ($r = -.006$ and $r = .159$, respectively). Cronbach's alpha for the resulting scale was $\alpha = .83$.

Neuroticism was measured using a 12-item subscale from the 48-item version of the Eysenck's Personality Questionnaire (EPQ; Eysenck & Eysenck, 1991; Sanderman, *et al.*, 1995). For each item the participants had to respond with 'Yes' or 'No' to a personality describing statement. For example: 'Does your mood often go up and down?'. Cronbach's alpha for this scale was $\alpha = .81$.

After listening to the audiotape, a manipulation check was performed to examine the *extent* to which patients had *compared* themselves with the patients on the tape. The patients were asked to 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'.

Mood was measured using a shortened version of the Profile of Mood States (V-POMS; McNair, Lorr, & Dopperman, 1971; Wald, & Mellenbergh, 1990). This questionnaire contains 32 adjectives describing different mood states. The participants were asked to 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). To construct the total scale of negative mood, the 'vigor' items were reversed, so that a higher score indicated a more negative mood. Cronbach's alpha for the complete scale was high, $\alpha = .94$.

Table 1

Summary of regression analysis of uncertainty and the dummy variables D1 (coping vs. control), D2 (emotion vs. control), and D3 (procedural vs. control), predicting negative mood

	Negative mood	
	<i>Rz change</i>	<i>B</i>
Step 1	.19***	
Uncertainty		6.96***
D1		-1.16
D2		5.67†
D3		-1.44
Step 2	.04*	
Uncertainty x D1		-8.65**
Uncertainty x D2		-.33
Uncertainty x D3		-4.65

*** $p < .001$, ** $p < .01$, $p < .05$, † $p < .10$

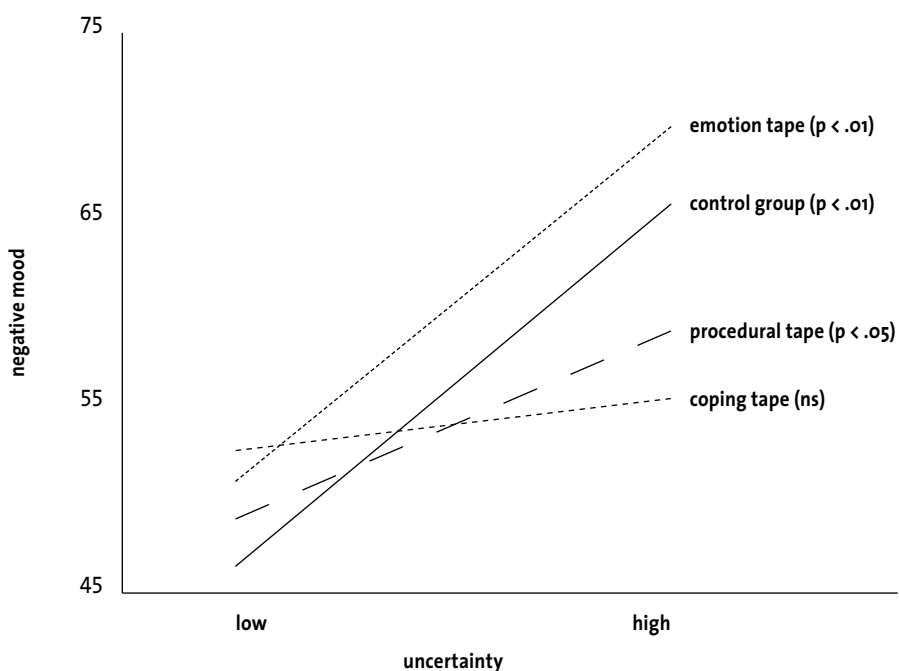
Results

Extent of comparison

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

Uncertainty

In the main analyses, the moderating role of uncertainty about cancer and radiation therapy on the effects of the audiotapes on mood was examined. To examine these effects, multiple regression analyses were used. In the first step, uncertainty and the dummy variables concerning the experimental condition were entered (i.e., the following contrasts: emotion vs. control, procedural vs. control, and coping vs. control). In the second step, the interaction terms of uncertainty and the dummy variables were entered (see Aiken & West, 1991). Additional regression analyses were performed to examine the other possible contrasts between conditions (emotion vs. coping, emotion vs. procedural, and procedural

Figure 1**Uncertainty as related to negative mood in all four conditions**

vs. coping), and to obtain the slopes of all four conditions (Aiken & West, 1991). To facilitate interpretation of the results, uncertainty was standardized (Aiken & West, 1991).

First, the regression analysis revealed a main effect of uncertainty (see Table 1). Not surprisingly, those patients who reported a higher uncertainty reported a more negative mood, $B = 6.96$, $p < .001$. The analysis also revealed a marginally significant main effect of the emotion tape. Those who had listened to the emotion tape reported a more negative mood than the patients in the control group. Furthermore, a significant interaction effect was found (see Figure 1). Uncertainty influenced the effect of the coping tape in comparison to the control group on negative mood. Additional analyses, which examined the other possible contrasts (emotion vs. coping, emotion vs. procedural, and procedural vs. coping) revealed an additional significant interaction. Uncertainty influenced the effect of the coping tape in comparison to the emotion tape on negative mood, $B = 8.35$, $p < .01$. Furthermore, the simple slopes of the three different audiotapes and the control group were tested. The analyses revealed that the slopes were significant for the procedural tape, $B = 5.23$, $p < .05$, the emotion tape, $B = 9.52$, $p < .001$, and

for the control group, $B = 9.87, p < .001$. The slope for the coping tape, $B = 1.21, ns$, was not significant. In other words, with increasing levels of uncertainty, more negative mood was reported by all patients, except by the patients who had listened to the coping tape. More importantly, post-hoc analysis (Aiken & West, 1991) revealed that among those *high* in uncertainty, those who listened to the coping tape reported significantly less negative mood than those in the control group, $B = -16.15, p < .001$, and than those who had listened to the emotion tape, $B = -11.60, p < .05$. Thus, in contrast to expectations, those high in uncertainty did not respond best to the procedural tape, but to the coping tape. Among the patients *low* in uncertainty, no significant differences between conditions were found.

Personality characteristics

Next, it was examined whether the influence of uncertainty would hold up when controlling for personality characteristics, such as social comparison orientation and neuroticism. First, the correlations between uncertainty and these personality characteristics were examined. Social comparison orientation and neuroticism both correlated significantly with uncertainty ($r = .36, p < .001$ and $r = .37, p < .001$, respectively). Similar regression analyses were used to examine whether the effects of uncertainty would hold up, even when controlling for the personality characteristics. Therefore, social comparison orientation or neuroticism was entered in the first step. In the second step, uncertainty and the dummy variables concerning the experimental condition were entered (i.e., the following contrasts: emotion vs. control, procedural vs. control, and coping vs. control). In the third step, the interaction terms of uncertainty and the dummy variables were entered. As can be seen in Table 2, the effects of uncertainty remain essentially the same when controlling for the effects of social comparison orientation and neuroticism. In other words, the B-values and the significance levels are highly similar to those reported in Table 1.

Discussion

In the present study, the influence of uncertainty in moderating the effects of different kinds of social comparison information was examined. Cancer patients who were about to undergo radiation therapy were provided with one of three kinds of social comparison information. It was expected that those high in uncertainty would benefit the most from the procedural tape. This tape provides procedural and sensory information about cancer and radiation therapy and was, therefore, expected to be the most capable in reducing uncertainty about cancer and radiation therapy. However, this was not confirmed by the results. Instead, the coping tape seems to be the most favorable for those uncertain about cancer and radiation therapy. While the patients who listened to the procedural tape, the

Table 2

Summary of regression analysis of uncertainty (U) and the dummy variables D1 (coping vs. control), D2 (emotion vs. control), and D3 (procedural vs. control), predicting negative mood, controlling for social comparison orientation (SCO) or neuroticism (N)

	Covariate			
	SCO		N	
	<i>R</i> ² change	<i>B</i>	<i>R</i> ² change	<i>B</i>
Step 1	.05**		.30***	
Covariate (SCO / N)		4.00***		9.83***
Step 2	.15***		.07***	
U		6.36***		3.96***
D1		-.96		-1.29
D2		5.73†		5.10†
D3		-1.65		-.57
Step 3	.04*		.03*	
U x D1		-8.61**		-7.90**
U x D2		-.27		.81
U x D3		-4.63		-.85

*** $p < .001$, ** $p < .01$, * $p < .05$, † $p < .10$

emotion tape, and those in the control group all reported a higher negative mood with increasing uncertainty, those who listened to the coping tape did not. More importantly, those high in uncertainty who listened to the coping tape reported less negative mood than the patients high in uncertainty in the control group. Apparently, coping information, as provided on the coping tape provides a buffer for the negative consequences of uncertainty. Thus, the coping tape seems to be more beneficial than the procedural tape for those uncertain about their illness and treatment. It may be that the coping tape provided more new and unknown information than the procedural tape. Cancer patients receive a great deal of procedural information from their physicians. They do not, however, receive information about how fellow patients cope with their illness and treatment. However, it may simply be that the coping tape provides information that is

more effective in reducing uncertainty than the procedural tape. This notion is supported by findings from Taylor and Dakof (1988). They asked cancer patients to cite the most helpful actions they experienced in interacting with fellow patients. The most frequent helpful actions included coping well with the cancer and acting as a good role model, while least helpful actions were acting as a poor role model by coping poorly.

Interestingly, these effects of uncertainty hold up even when social comparison orientation and neuroticism are controlled for. This finding suggests that situational need for information is very important in moderating the effects of different kinds of social comparison information. Uncertainty, therefore, predicts a unique component of the effects of social comparison information.

The results of the present study have several important implications. First, it is one of the few studies to examine the role of uncertainty in moderating the *effects* of different types of social comparison information. While previous studies have shown that uncertainty fosters the need for social comparison information, the present study shows that uncertainty also influences the reactions to social comparison information. Furthermore, the fact that the effects of uncertainty remain even when controlling for relevant personality characteristics indicates the importance of situational uncertainty about cancer and radiation therapy.

Furthermore, the present study emphasizes the importance of providing cancer patients with information about how fellow patients are coping with their illness and treatment. This kind of social comparison information seems to function as a buffer to the negative effects of uncertainty. The present study confirms the notion that providing information about similar others who are coping well is a successful strategy for enhancing well-being (Ybema & Buunk, 1995).

Chapter 5

How do cancer patients respond to different dimensions of social comparison information: Is personality important?¹

Abstract

The present study examined the effects of social comparison information on the mood of cancer patients. The effects of three audiotapes, containing different types of social comparison information, were examined using a control group for comparison. On the procedural tape, a man and woman discussed their illness and radiation therapy; on the emotion tape, they focused on emotional reactions to their illness and treatment; while on the coping tape they focused on the way they had been coping. Furthermore, it was examined whether neuroticism, extraversion, and social comparison orientation influenced the effects of these different kinds of social comparison information. The results indicated that individuals high in neuroticism, introverts, and individuals with a high social comparison orientation reacted negatively to the emotion tape. The effects of procedural and coping information seem to be largely unaffected by these personality traits.

In recent years, there has been considerable interest in social comparison processes among cancer patients (e.g., Tennen, *et al.*, 2000; Wood & Van der Zee, 1997). This interest not only concerns theoretical issues, but also the practical uses of social comparison information. More and more, patient information materials contain social comparison information, that is, information about how fellow patients experience or have experienced their disease and related issues. These fellow patients may not only provide information about their disease and treatments, but they may also provide sensory information about how they felt during treatments, or how they experienced the side effects of those treatments. Indeed, cancer patients often report that the kind of information they receive from fellow patients is unique, and that only fellow patients realize what they are going through (Gray, *et al.*, 1997).

The notion that fellow patients can provide valuable information is in line with Festinger's social comparison theory (1950, 1954). He hypothesized that people have a need to accurately evaluate their opinions and abilities. When no objective (i.e., non-social) information is available, people will try to evaluate their opinions and abilities by comparing themselves with similar others.

¹ This chapter is based on: Bennenbroek, F.T.C., Buunk, B.P., Stiegelis, H.E., Hagedoorn, M., Sanderman, R., & Van den Bergh, A.C.M. (submitted). How do cancer patients respond to different dimensions of social comparison information: Is personality important?

When cancer patients experience a lack of objective information, it can, therefore, be assumed that their need for social comparison information (i.e., information about how fellow patients are doing, feeling and coping) is enhanced (Festinger, 1954). In fact, some studies indicate that even when objective information is available, people remain interested in social comparison information (Miller, 1977; Willemsen & Van den Berg, 1986).

Although many studies have focused on social comparison *preferences* among cancer patients, an increasing number of studies focus on the *effects* of social comparison information (see Wood & Van der Zee, 1997, for a review). Van der Zee, Oldersma *et al.* (1998), for example, found that patients experienced more positive and less negative affect after reading interviews with fellow patients doing better (upward social comparison) than after reading interviews with fellow patients doing worse (downward social comparison). However, it seems that the effects of social comparison information are not straightforward. That is, the effects of social comparison information are not inherent to its direction (upward or downward). Two important factors seem to influence the effects of social comparison information. First, individual differences seem to play an important role in social comparison processes (Olson & Evans, 1999; Wheeler, 2000). Reis *et al.* (1993), for example, found that individuals low in self-esteem reported a higher increase in self-esteem following downward comparison than those high in self-esteem. Although most studies have focused on self-esteem (e.g., Aspinwall & Taylor, 1993) and depression (e.g., Ahrens & Alloy, 1997), increasing attention is given to the role of other personality characteristics, such as neuroticism, extraversion, and, more recently, social comparison orientation (e.g., Gibbons & Buunk, 1999; Van der Zee, Oldersma, *et al.*, 1998). Second, the dimension of the comparison information seems to influence social comparison processes. The dimension of comparison concerns a specific feature (e.g., emotional reactions or coping ability) on which people compare themselves with others. Gibbons and Gerrard (1989, 1991) and Wood and Taylor (1991) were the first to acknowledge the importance of the dimension of comparison. Gibbons and Gerrard (1989), for example, found that comparing with others who were coping better, especially when facing adversity, improved mood. Several studies have subsequently examined social comparison processes on two dimensions relevant in health settings, namely, illness severity and coping ability (Bennenbroek, *et al.*, 2002; Buunk, 1995; Ybema & Buunk, 1995). Bennenbroek *et al.* (2002), for example, found that cancer patients prefer information about others doing better when comparing on the illness severity dimension, while their preference for upward comparison information is even more evident when comparing on the coping dimension.

In the present study, the effects of social comparison information on three dimensions were examined, using a control group for comparison. Cancer patients

who were about to undergo radiation therapy were provided with audiotaped social comparison information on one of three dimensions. The purpose of these audiotapes was to prepare the patients for the impending period of radiation treatments and to reduce negative feelings. On each of the three tapes, individuals who acted as cancer patients who had already undergone radiation therapy recounted different aspects of their experiences with cancer and radiation therapy. However, on each audiotape, they focused on different aspects. On the first tape, they focused on the procedural aspects of the experience (procedural tape); on the second tape, they focused on the emotional aspects (emotion tape); and on the third tape, they focused on coping aspects (coping tape). Furthermore, it was examined whether personality traits influenced the effects of these three dimensions of social comparison information on mood. In other words, it was examined what kind of information would be most beneficial for which individual. The focus was on three personality traits, namely, neuroticism, extraversion, and social comparison orientation. First, the different dimensions on which the social comparison information was provided are discussed; then the personality traits and how they may influence the effects of the different dimensions.

Procedural Tape

On the procedural tape, the patients focused on their experiences with various aspects radiation therapy: how the cancer was discovered, what happened during the treatments, which side effects they experienced, and how the check-ups went after the radiation therapy had ended. A large number of interventions to prepare patients for radiation therapy have been effective in increasing knowledge about radiation therapy, reducing anxiety, and reducing disruption of daily activities (see Ream & Richardson, 1996, for a review). Information about experiences from fellow patients can be an important supplement, as it provides cancer patients with the opportunity to compare themselves and their situation with (the situation of) fellow patients. 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 that threat. They further hypothesized that people primarily choose their comparison others for their ability to reduce uncertainty (e.g., provide cognitive clarity) about the threat situation, and to a lesser extent for their comparison potential. In other words, they hypothesized that cancer patients would use information about fellow patients who had already undergone radiation therapy first and foremost to get a better idea of what to expect, and to a lesser extent as an opportunity to compare themselves or their situation.

Emotion Tape

Patients may experience uncertainty about their emotional reactions to their disease and treatment. Even though every individual reacts differently to these kinds of circumstances, fellow patients who have already undergone the treatment are able to provide information about the kinds of emotions they experienced during radiation therapy, thus providing a point of reference. Research has indicated that uncertainty about emotions can promote the need for social comparison (Cottrell & Eppley, 1977; Kulik & Mahler, 2000). However, little attention has been given to the specific effects of comparing one's emotions with those of similar others when facing a serious health threat. Spiegel and Diamond (2001) suggested that cancer patients who are uncertain about their emotional responses may learn from fellow patients that they reacted quite normally to the situation. Information about the emotional reactions of fellow patients can thus normalize and validate patients' emotions. On the emotion tape, the patients, therefore, focused on their emotional reactions to cancer and radiation therapy.

Coping Tape

On the coping tape, the patients focused on how they had coped with various aspects of cancer and radiation therapy. Presenting patients with a positive coping model may increase their ability to cope with the situation and their self-efficacy. Self-efficacy refers here to personal judgments of how well one is able to implement behavior to cope with one's disease and treatment (Bandura, 1986). By comparing with others who are coping well, patients may learn how to improve their own situation, and, at the same time, they may be given motivation and hope (Taylor & Lobel, 1989). Indeed, studies indicate that people facing a health threat are particularly interested in comparing themselves with others who are coping well (Bennenbroek, *et al.*, 2002; Buunk, 1995). It is likely that such comparisons are motivated by a desire to improve oneself and one's situation, while comparison on the illness severity dimension is not. After all, fellow patients who are coping well can provide more useful information on how to improve one's situation than fellow patients who are doing well physically.

Although different dimensions of social comparison information may serve different goals and thus have different effects, each dimension may be more beneficial for some individuals than for others. In the present study, the influence of three personality characteristics, namely, neuroticism, extraversion, and social comparison orientation were examined.

Neuroticism

A considerable amount of research has examined the moderating effects of neuroticism on the affective responses of cancer patients to social comparison

information (e.g., Van der Zee, *et al.*, 1998; Van der Zee, Oldersma, *et al.*, 1998). Neuroticism is a personality trait characterized by a tendency to experience negative, distressing emotions and to possess associated behavioral and cognitive traits. Features that define this trait are fearfulness, irritability, low self-esteem, social anxiety, poor inhibition of impulses, and helplessness (Costa & McCrae, 1987). In general, people high in neuroticism tend to set extremely high standards for themselves and tend to underestimate their own performance (Eysenck, 1947). This may cause them to feel less confident in their ability to deal with a threatening situation. More importantly, neuroticism is associated with an information processing style that is harmful to the self (Young & Martin, 1981). That is, when confronted with information about fellow patients, individuals high in neuroticism tend to focus on the negative implications of such information. Therefore, it is expected that those high in neuroticism will experience a more negative mood after listening to the audiotapes than individuals low in neuroticism (Hypothesis 1).

Furthermore, differences in reactions between those high and low in neuroticism may depend on the dimension of the information. Confrontation with a fellow patient who is coping successfully, for example, may lead to frustration for those high in neuroticism. Van der Zee *et al.* (1998) found less positive and more negative reactions to fellow patients who were adjusting well among cancer patients high in neuroticism. Furthermore, because of the emotional instability characteristic of individuals high in neuroticism (Costa & McCrae, 1985), listening to fellow patients expressing positive as well as negative feelings may upset them further. In contrast, patients talking about procedural aspects may be less likely to be interpreted negatively. Therefore, it is expected that those high in neuroticism will experience more negative moods than those low in neuroticism, especially after listening to the emotion tape and the coping tape (Hypothesis 2).

Extraversion

Very little research has focused on the role of extraversion in moderating the effects of social comparison information. Extraversion is a personality trait characterized by sociability, gregariousness, optimism, and affiliative tendencies (Costa & McCrae, 1985; Hills & Argyle, 2001), as well as by having numerous friendships, well-developed social skills, enterprising vocational interests, and participation in sports and clubs (McCrae & Costa, 1999). Furthermore, extraverts are characterized by seeking arousal producing stimuli, while introverts will attempt to avoid arousal producing stimuli (Berlyne, 1960; Eysenck, 1981).

A link between extraversion and social comparison processes has been established by only a few studies (e.g., Olson & Evans, 1999; Van der Zee, *et al.*, 1996). A study among cancer patients, for example, revealed that extraverts were more inclined to compare themselves with others doing worse than were introverts (Van der

Zee, *et al.*, 1998). However, it has never been examined whether extraverts react differently to different types of social comparison information than introverts. It is, therefore, difficult to formulate a hypothesis based on empirical considerations. However, a difference in the arousal evoking potential of the different audiotapes may prove useful. The emotion tape presents cancer patients talking about positive as well as negative emotions, thus displaying arousal. The coping tape and the procedural tape present cancer patients talking about mostly neutral or positive aspects, thus displaying less arousal. It can, therefore, be argued that the emotion tape will evoke the most arousal in the listener. Because extraverts have a preference for arousal producing stimuli, while introverts have an aversion to arousal producing stimuli, it is expected that extraverts will experience a less negative mood after listening to the emotion tape than introverts (Hypothesis 3). No differences are expected between extraverts and introverts after listening to the procedural and the coping tapes.

Social comparison orientation

A number of researchers have suggested that people vary in their interest in comparing themselves with others (e.g., Brickman & Bulman, 1977; Steil & Hay, 1997; Taylor, *et al.*, 1992). To differentiate between individuals who have a high interest in social comparison and those with a low interest, Gibbons and Buunk (1999) introduced the concept of social comparison orientation. This refers to the disposition of individuals who are strongly focused on social comparison, are particularly sensitive to their own standing relative to others, and are interested in information about the thoughts and behaviors of others in similar situations. According to Gibbons and Buunk (1999), individuals high in social comparison orientation are characterized by a heightened uncertainty about themselves, accompanied by a relatively strong dependency on other people for their self-evaluation. A study among cancer patients found that patients high in social comparison orientation were indeed more inclined to select and attend to information from fellow patients (Van der Zee, Oldersma, *et al.*, 1998).

Besides having a greater interest in comparison information, people high in social comparison orientation are also more strongly affected by social comparison (Gibbons & Buunk, 1999). This seems to be particularly the case when it involves comparing oneself with others doing poorly. In several studies, it was found that people high in social comparison orientation experience more negative affect after comparing themselves with others doing poorly than those low in social comparison orientation (Buunk, *et al.*, 2001; Van der Zee, Oldersma, *et al.*, 1998). Because the emotion tape is the only tape containing aspects that could be interpreted as downward comparison information (as it also presents negative emotional reactions), it is expected that individuals high in social comparison orientation will report more negative mood after listening to the

emotion tape than those low in social comparison orientation (Hypothesis 4). Exploratory analyses were performed to examine whether individuals high in social comparison orientation would react differently to the procedural tape and the coping tape than those low in social comparison orientation.

Method

Procedure

Patients were approached in the three hospitals with radiation therapy departments in the northern part of the Netherlands. In each department, an assistant would check incoming patient files to see whether patients met the inclusion criteria. The patients had to be newly diagnosed cancer patients with breast cancer, cervical cancer, head and neck cancer, or prostate cancer. They had to be treated with external radiation therapy with curative intent for a period of four to seven weeks. They could not be participating in another psycho-oncological study and had to have sufficient knowledge of the Dutch language.

Once it 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 in their own time. They could then send an informed consent form to the researchers, indicating that they would participate in the study. Of the 319 eligible patients, 226 agreed to participate in the study (71% response rate). The main reasons for non-response were not being interested (12%), feeling it was too burdensome (6%), or a poor physical or mental condition (3%). Next, patients were randomly assigned to one of the three experimental conditions, each with a different audiotape, or to the control group. Patients assigned to an experimental condition who did not own a tape recorder were provided with one. In the week prior to the start of their treatment, the patients received the questionnaire and an audiotape.

Sample

The majority of the respondents was female (65%). 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% varied chemotherapy, and 31% other secondary treatment. The elapsed time since first diagnosis between 1 and 36 weeks, with an average of eight weeks.

Development of the audiotapes

A total of 20 cancer patients were interviewed in order to gather the necessary information for developing the audiotapes. These patients were either still undergoing radiation therapy or had recently received their last treatment. The scripts of the audiotapes were based on information extracted from these interviews, information from medical staff, and information from relevant literature. The scripts of the audiotapes represented an interview in which one male patient and one female patient who have already undergone radiation treatment are recounting their experiences.

Before the audiotapes were recorded, radiation oncologists and a number of cancer patients reviewed the scripts. On the basis of their comments and recommendations, some small alterations were made to the scripts. Next, the audiotapes were recorded with the help of professional actors, a 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 the present study.

Similarities and differences in the audiotapes

Each script was written to match the other scripts as much as possible on the subjects which were addressed, the order of the subjects, the use of language, and total length of the audiotape. The main subjects that were addressed on all the audiotapes were the way the diagnosis was made, the radiation treatment, the possible side effects of the treatment, and the changes after the treatment had ended. However, the audiotapes differed in the way these topics were addressed, as each audiotape focused on a different dimension. The audiotapes were roughly 25 minutes long.

Instruments

In the week prior to the start of their radiation treatments, the patients received a questionnaire with several different sections.

Neuroticism was measured using a 12-item subscale from the 48-item version of the Eysenck's Personality Questionnaire (EPQ; Eysenck & Eysenck, 1991; Sanderman, *et al.*, 1995). For each item, the participants had to respond with 'Yes' or 'No' to a personality describing statement. For example, 'Does your mood often go up and down?'. Cronbach's alpha for this scale was $\alpha = .81$.

Extraversion was measured using a 12-item subscale from the same version of the EPQ. Again, the participants had to respond with 'Yes' or 'No' to each personality describing statement. For example, 'Do you like meeting new people?'. Cronbach's alpha for this scale was $\alpha = .81$.

Individual differences in *social comparison orientation* were measured using the Iowa-Netherlands Comparison Orientation Measure (INCOM; Gibbons &

Table 1

Regression analysis of negative mood on neuroticism (N) and dummy variables D1 (procedural vs. control), D2 (emotion vs. control), and D3 (coping vs. control). Additional analyses yielded interaction effects of D4 (emotion vs. coping), D5 (emotion vs. procedural), and D6 (procedural vs. coping)

	Negative mood	
	<i>R² change</i>	<i>B</i>
Step 1	.33**	
Neuroticism		9.60**
D1		-1.35
D2		6.06*
D3		-.04
Step 2	.03*	
N x D1		-7.14**
N x D2		-2.30
N x D3		-6.10*
N x D4		-4.67†
N x D5		3.99
N x D6		-.87

** $p < .01$, * $p < .05$, † $p < .10$

Buunk, 1999). The participants could indicate on a 5-point scale whether they agreed with statements on social comparison habits, ranging from 1 = I disagree strongly to 5 = I agree strongly. For example: 'I always like to know what others in a similar situation would do'. The reversed items ('I am not the type of person who compares often with others' and 'I never consider my situation in life relative to that of other people') were removed from the analyses, because of very low item-total correlations ($r = -.006$ and $r = .159$, respectively). Cronbach's alpha for the resulting scale was $\alpha = .83$.

After the patients had listened to the audiotape, a manipulation check was performed to examine the *extent* to which the patients had *compared* themselves with the patients on the tape. The patients were asked to 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'.

Negative mood was measured using a shortened version of the Profile of Mood States (V-POMS; McNair, *et al.*, 1971; Wald, & Mellenbergh, 1990). This questionnaire contains 32 adjectives describing different mood states. The patients were asked to indicate how much the description applied to their moods over the past several days on a 5-point scale (1 = not at all applicable to 5 = very much applicable). To construct the total scale of negative mood, the 'vigor' items were reversed, so that a higher score indicated a more negative mood. Cronbach's alpha for the scale was high, $\alpha = .94$.

Results

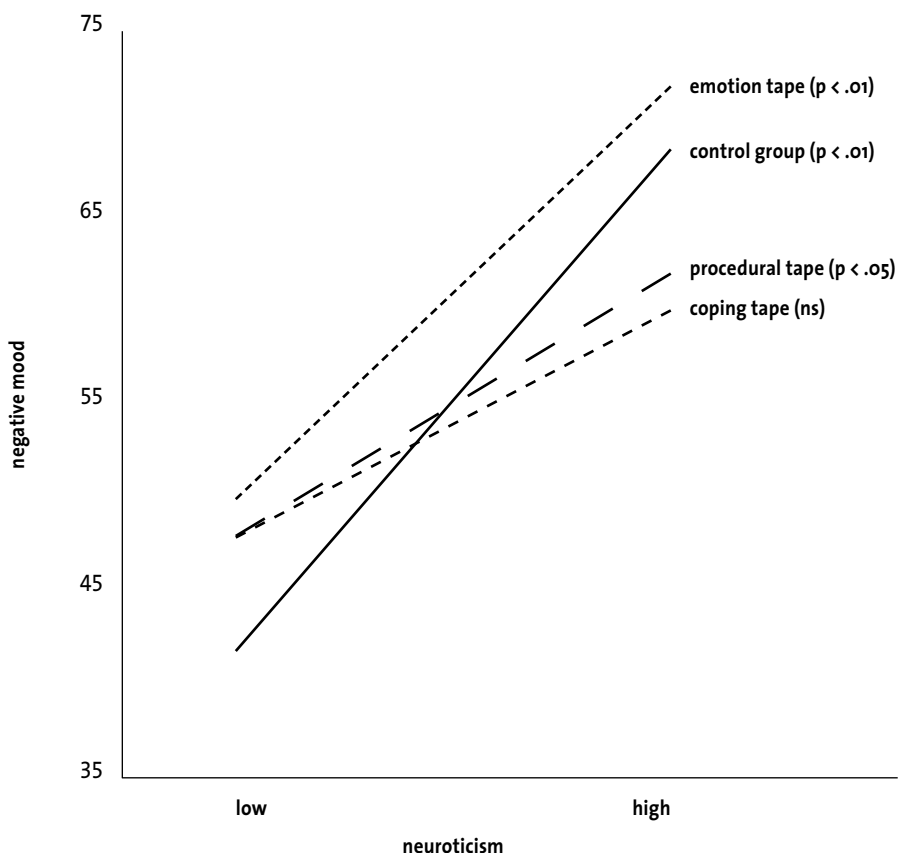
Extent of comparison

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

Neuroticism

In our main analyses, the influence of three personality traits in moderating the effects of the tapes on mood was examined. First, the moderating influence of neuroticism on the effects of the audiotapes was examined. To examine these effects, multiple regression analyses were used. First, social neuroticism and the dummy variables concerning the experimental condition were entered (i.e., the following contrasts: emotion vs. control, procedural vs. control, and coping vs. control). In the second step, the interaction terms between neuroticism and the dummy variables were entered (see Aiken & West, 1991). Additional regression analyses were performed to examine the other possible contrasts (procedural vs. emotion, procedural vs. coping, and emotion vs. coping), and to obtain the slopes of all four conditions (Aiken & West, 1991). To facilitate interpretation of the results neuroticism was standardized (Aiken & West, 1991).

The regression analysis revealed a main effect of the experimental condition on mood (see Table 1)². The patients who listened to the emotion tape reported a significantly more negative mood than those in the control group, $B = 6.06$, $p < .05$. As expected, the analysis also revealed a main effect of neuroticism. Overall, individuals high in neuroticism experienced a significantly more negative mood than those low in neuroticism. In addition, it was expected that those high in neuroticism would experience a more negative mood than those low in neuroticism, especially after listening to the emotion tape and the coping tape

Figure 1**Neuroticism as related to negative mood in all four conditions**

² Because the personality traits were interrelated (neuroticism and extraversion, $r = -.19$, $p < .01$; neuroticism and social comparison orientation, $r = .22$, $p < .001$), regression analyses were performed with these personality traits as covariates. These analyses produced equal results. To facilitate interpretation, only the results of the initial analyses are reported. Furthermore, because neuroticism, extraversion, and social comparison orientation were correlated with uncertainty about cancer and radiation therapy ($r = .37$, $p < .001$; $r = -.17$, $p < .05$; and $r = .36$, $p < .001$, respectively), regression analyses were performed with these personality traits as covariates. These analyses produced highly similar effects. To facilitate interpretation, only the results of the initial analyses are reported.

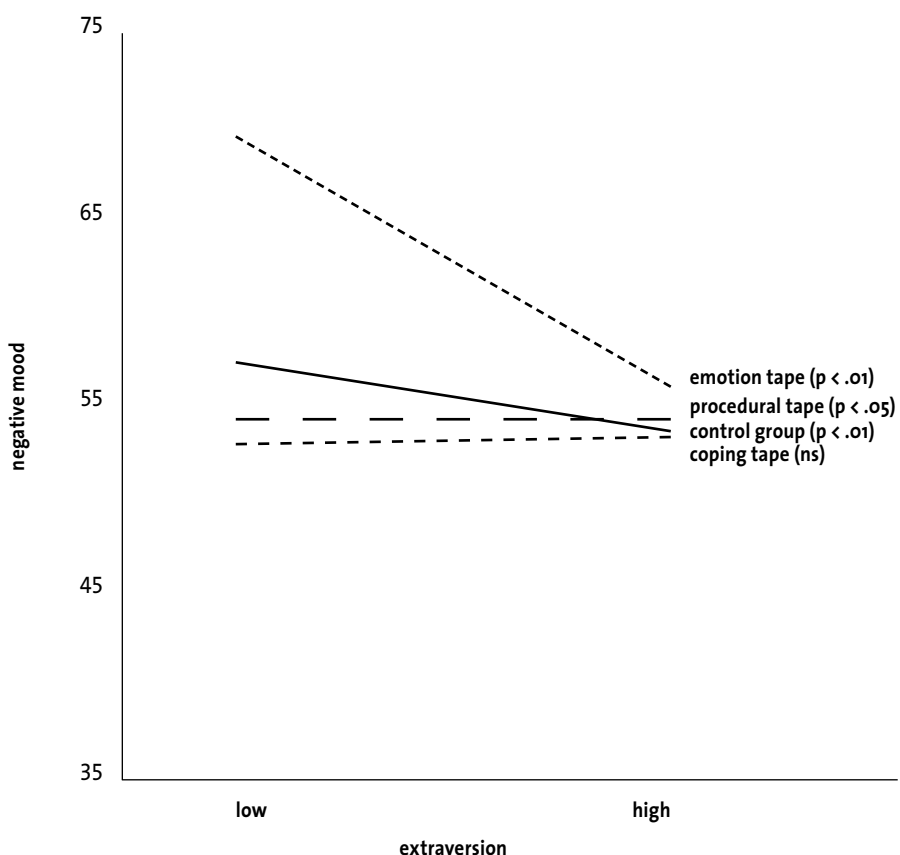
Table 2

Regression analysis of negative mood on extraversion (E) and dummy variables D1 (procedural vs. control), D2 (emotion vs. control), and D3 (coping vs. control). Additional analyses yielded interaction effects of D4 (emotion vs. coping), D5 (emotion vs. procedural), and D6 (procedural vs. coping)

	Negative mood	
	<i>R</i> ² change	<i>B</i>
Step 1	.06*	
Extraversion		-2.14†
D1		-.83
D2		7.87*
D3		-.95
Step 2	.02	
E x D1		1.82
E x D2		-4.75
E x D3		1.75
E x D4		-8.97*
E x D5		5.86†
E x D6		-3.02

** $p < .01$, * $p < .05$, † $p < .10$

(Hypothesis 2). This was partly confirmed by the data (see Figure 1). Neuroticism was positively related to negative mood, especially among those who listened to the emotion tape, but also among those in the control group. Next, it was examined whether those high and low in neuroticism reported significantly different moods in the different conditions. These post hoc analyses indicated that, among those *low* in neuroticism there were no differences between conditions. All patients low in neuroticism reported equally low negative moods. However, individuals *high* in neuroticism did report different moods in the different conditions. Patients high in neuroticism reported a significantly more negative mood after the emotion tape than after the procedural tape, $B = 9.73$, $p < .05$, and after the coping tape $B = -12.23$, $p < .01$, but not a more negative mood than those in the control group, $B = 3.35$, *ns*. Furthermore, those high in neuroticism listening to the coping tape reported a significantly less negative mood than those high in neuroticism in the control group, $B = -8.79$, $p < .05$. In other words,

Figure 2**Extraversion as related to negative mood in all four conditions**

in comparison to the control group, the emotion tape did not improve or worsen mood, while the coping tape did improve mood. It seems that the coping tape served as a buffer to the negative consequences of neuroticism.

Extraversion

To examine whether the effects of the tapes were influenced by extraversion, similar regression analyses were performed (see Table 2). Regression analysis revealed a main effect of extraversion on negative mood. Extraverts reported a significantly less negative mood than introverts. Furthermore, it was expected that extraverts would report the least negative mood after listening to the emotion tape (Hypothesis 3). This was not confirmed by the data. Post hoc analyses revealed that extraverts reported equally low negative moods in all conditions (see Figure 2). Furthermore, it was examined whether the differences in mood found among introverts in the different conditions were significant. Introverts

Table 3

Regression analysis of negative mood on social comparison orientation (SCO) and dummy variables D1 (procedural vs. control), D2 (emotion vs. control), and D3 (coping vs. control). Additional analyses yielded interaction effects of D4 (emotion vs. coping), D5 (emotion vs. procedural), and D6 (procedural vs. coping)

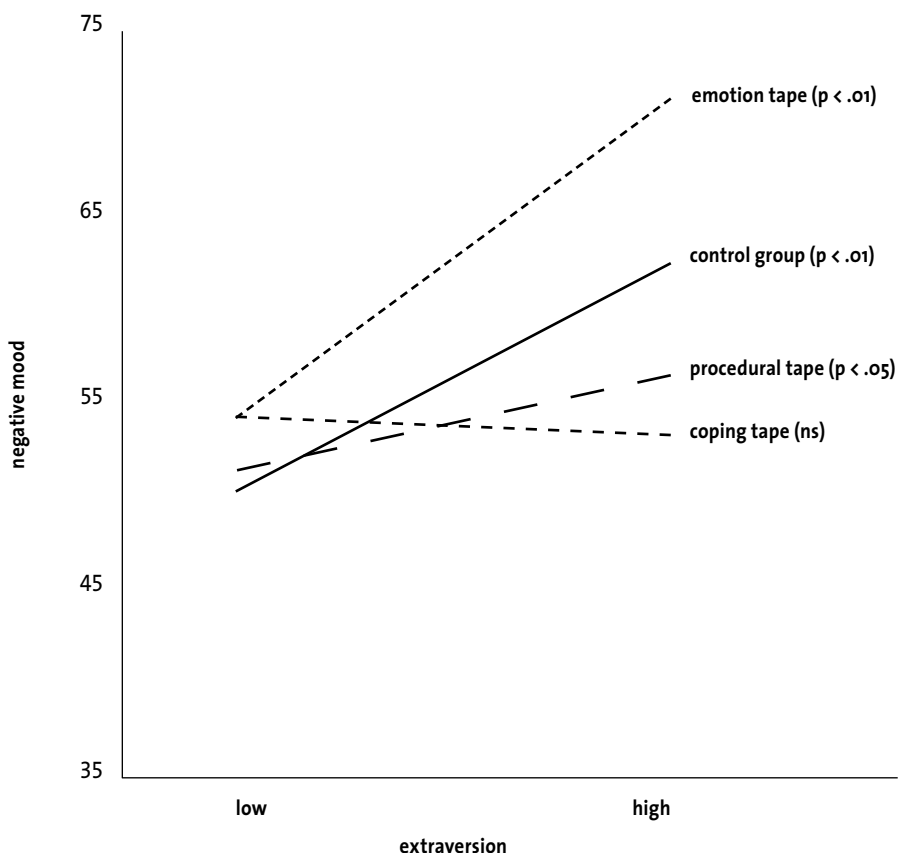
	Negative mood	
	<i>R</i> ² change	<i>B</i>
Step 1	.09*	
SCO		3.94**
D1		-.75
D2		7.55*
D3		-1.31
Step 2	.03†	
SCO x D1		-5.41
SCO x D2		3.46
SCO x D3		-2.50
SCO x D4		-6.45†
SCO x D5		6.47†
SCO x D6		.10

** $p < .01$, * $p < .05$, † $p < .10$

reported significantly more negative moods after the emotion tape than in the control group, $B = 12.96$, $p < .01$, than after the procedural tape, $B = 15.25$, $p < .01$, and than after the coping tape, $B = -15.91$, $p < .01$. In other words, in comparison to the control group, the emotion tape worsened mood among introverts. It seems that for extraverts, it did not matter on which comparison dimension they receive comparison information, but for introverts, it did.

Social comparison orientation

To examine whether the effects of the tapes were influenced by the social comparison orientation of the patients, regression analyses were again performed (see Table 3). A significant main effect of social comparison orientation on negative mood was found. Those with a high social comparison orientation reported significantly more negative moods than those low in social comparison orientation. Furthermore, it was examined whether the differences found among

Figure 3**Social comparison orientation as related to negative mood in all four conditions**

those high in social comparison orientation in different conditions were significant (see Figure 3). Individuals with a high social comparison orientation experienced more a negative mood after listening to the emotion tape than in the control group, $B = 10.73$, $p < .05$, than after listening to the procedural tape, $B = 14.28$, $p < .01$, and than after the coping tape, $B = -17.71$, $p < .01$. In other words, in comparison to the control group, the emotion tape worsened the mood for those high in social comparison orientation. Individuals low in social comparison orientation reported equally negative moods in all conditions³.

Discussion

In the present study, the moderating influence of neuroticism, extraversion, and social comparison orientation on the effects of three different audiotapes containing different dimensions of social comparison information were examined. Although it was not the focus of the present study, it is important to note that

the majority of the patients did indeed compare themselves with the patients on the audiotapes. These results indicate that although the patients may or may not have used social comparison information to reduce uncertainty and promote cognitive clarity (Kulik & Mahler, 2000), they certainly used the information to compare themselves with the patients on the audiotapes.

Focusing on the research questions, it was found that all three personality traits influenced the effects of the social comparison information on mood. As expected, individuals high in neuroticism

reported the most negative mood after listening to the emotion tape. For those high in neuroticism, it is clearly more disturbing to listen to fellow patients talk about their emotions than to listen to fellow patients talk about their experiences with radiation therapy and the way they coped with it. Surprisingly, those high in neuroticism in the control group reported an equally negative mood as those high in neuroticism after the emotion tape. It seems that, for those high in neuroticism, it is very disturbing not to receive an intervention when they know fellow patients did receive an intervention. More importantly, those high in neuroticism who listened to the coping tape reported a significantly less negative mood than those high in neuroticism in the control group. Apparently, the information about positive models on the coping tape was not only less of a threat for those high in neuroticism than expected, but it also seems to have had beneficial effects for them. Because the models on the coping tape were developed to be successful, but not extremely successful, it may be that the models were not successful enough to be threatening. For those low in neuroticism, it did not matter which tape they had listened to. They reported similar moods in all conditions.

Furthermore, it was found that extraversion influenced the effects of the social comparison information. As expected, introverts reported more negative moods after the emotion tape than in the control group, after the procedural tape, and than after the coping tape. It was hypothesized that the emotion tape would evoke more negative moods among introverts than the other conditions, because this tape was more likely to evoke arousal. The finding that the emotion tape evoked more negative moods than the procedural and the coping tapes regardless of the patient's personality supports the notion that the emotion tape evoked the most arousal. It was also expected that extraverts would report the least negative affect after the emotion tape. However, extraverts reported an equally negative mood in all conditions. Even though the emotion tape seemed to evoke the most arousal, extraverts did not seem to favor this tape. It may be that the emotion tape is considered arousal evoking only by introverts and not by extraverts. Further research is needed to examine how emotional information, and emotional social comparison information in particular, affects introverts and extraverts.

Finally, it was found that individuals with a high social comparison orientation reported the most negative mood after listening to the emotion tape. As this tape

has some aspects that could be construed as downward comparison information, this was not unexpected. Other studies have found that individuals with a high social comparison orientation react more negatively to downward comparisons (e.g., Buunk, *et al.*, 2001). Van der Zee, Oldersma, *et al.* (1998), for example, found that cancer patients with a high comparison orientation experienced more negative affect following downward comparisons than patients low in social comparison orientation.

These results have several important implications for the existing literature. First, while many studies on social comparison have examined the effects of upward and downward comparisons, our findings clearly indicate that it is of great importance to take the dimension of comparison into account when examining the effects of social comparison information. Second, the present study showed that those high in neuroticism, introverts, and people with a high social comparison orientation react quite differently to social comparison information on the emotion dimension than those low in neuroticism, extraverts, and people with a low social comparison orientation. It is, therefore, important to include personality characteristics in research designs when examining social comparison processes. Third, the fact that the moderating effects of neuroticism, extraversion, and social comparison orientation were evident even when the other related personality traits were controlled for (see Footnote 3), underlines the conceptual independence of neuroticism, extraversion, and social comparison orientation, and only strengthens our findings. Their effects can thus be attributed to the actual moderating variable, and not, for example, to a common factor between neuroticism and social comparison orientation. As Gibbons and Buunk (1999) noted, although social comparison orientation is correlated with neuroticism, they are clearly distinct concepts, with different effects on social comparison processes.

In addition to these theoretical implications, the present study may also have important practical implications. It constitutes as a step forward in ascertaining what kind of social comparison information should be given to cancer patients, and whether different kinds of information should be provided to different patients. This seems to be a question without a clear-cut answer. However, the present study has shed light on some important issues and can thus contribute to an answer. That is, some recommendations can be made, as the results clearly indicate that people with different characteristics react differently to social comparison information on the emotion dimension. In light of these results, it would be unwise to include emotional information in patient education materials

³ Additional analyses were performed to examine whether a three-way interaction (social comparison orientation X neuroticism X experimental condition) could be found. Regression analyses, however, indicated no significant three-way interaction on negative mood.

without paying attention to specific characteristics of the patient. However, it may be more practical to provide patients with the procedural or the coping tape, as these seem to have favorable effects for all patients, regardless of personality characteristics.

Chapter 6

Long-term effects of social comparison information on the global quality of life of cancer patients: The moderating role of social comparison orientation¹

Abstract

The present study examined whether the long-term effects of social comparison information on the global quality of life of cancer patients were moderated by social comparison orientation. Cancer patients were provided with social comparison information just prior to undergoing radiation therapy, using audiotapes. The first audiotape focused on procedural aspects, the second tape focused on coping strategies, and the third tape focused on emotional reactions. The results show that, with increasing social comparison orientation, a higher quality of life was reported after listening to the coping tape, while a lower quality of life was reported after listening to the emotion tape. These effects were found two weeks as well as three months after the radiation therapy had ended.

As is well known, the disease cancer and its treatment with radiation therapy can have profound effects on the physical and psychological well-being of patients. Traditionally, the emphasis has been on the physical aspects of the cancer experience, and professional care has focused mainly on the prolongation of life. However, since the 1970s and 1980s, there has been growing attention for the psychological consequences of cancer and cancer treatment, such as depression and anxiety (e.g., Chaturvedi, *et al.*, 1996; Derogatis, *et al.*, 1983). Indeed, because survival rates and physical symptoms were no longer considered sufficient criteria for the evaluation of medical treatments (Schou & Hewison, 1999), it was deemed important to incorporate psychological, social, as well as physical aspects of the cancer experience in one concept (Strain, 1990). As a result, the concept of quality of life was introduced. Even though the importance of the concept of quality of life has been widely acknowledged within the field of psychosocial oncology, opinions on the definition of the concept differ considerably (e.g., De Haes & Van Knippenberg, 1985). There seem to be two major areas of disagreement. First, researchers disagree whether quality of life is a global evaluation of the quality of life, or whether it encompasses several different components. Second, researchers disagree whether quality of life is a subjective evaluation made by the patient, or whether it is an objective evaluation of the circumstances. However, most

¹ This chapter is based on: Bennenbroek, F.T.C., Buunk, B.P., Stiegelis, H.E., Hagedoorn, M., Sanderman, R., & Van den Bergh, A.C.M. (submitted). Long-term effects of social comparison information on the global quality of life of cancer patients: The moderating role of social comparison orientation.

researchers agree that quality of life is a multidimensional concept, including physical as well as psychosocial aspects (Muthny, Koch & Stump, 1990; Schou & Hewison, 1999).

Since the emergence of the concept, quality of life has been used in several different ways. For example, different forms of cancer and different treatments are compared on the basis of their differential effects on the quality of life of patients. In addition, the impact of a specific disease has been examined by comparing the quality of life of patients to the quality of life of healthy individuals. Furthermore, psychosocial interventions have been evaluated in terms of their effect on the quality of life of patients (Muthny, *et al.*, 1990). In the present study, a global measure of quality of life was used to examine the long-term effects of social comparison information (i.e., information about how fellow patients are doing, feeling, and coping). Although many interventions have focused on providing patients with objective information about cancer or radiation therapy, it has been recognized that social comparison information can be a particularly relevant addition to patient information materials. The notion that information about patients in a similar situation could be advantageous to patients' well-being is based on Festinger's social comparison theory (1954). Festinger (1950, 1954) hypothesized that people have a drive to evaluate their opinions and abilities. When no objective (i.e., 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 comparing themselves with others in a similar situation (Miller, 1977; Willemsen & Van den Berg, 1986).

On the basis of social comparison theory, it is assumed that cancer patients who experience a lack of information have a high need for social comparison. Indeed, research has shown that people faced with a serious health threat tend to compare themselves with others in a similar situation (e.g., Buunk, Gibbons & Reis-Bergan, 1997; Tennen, McKee & Affleck, 2000). Cancer patients often report that the kind of information they receive from fellow patients is unique, because only fellow patients can understand what they are going through (e.g., Gray, Fitch, Davis & Phillips, 1997). Intervention studies based on social comparison theory have indicated that cancer patients are extremely interested in social comparison information. Van der Zee, Oldersma, Buunk, and Bos (1998), for example, developed a computer program that provided cancer patients with the opportunity to read interviews in which the experiences of fellow patients were recounted. The majority of the patients found the information described in the interviews interesting, useful, and important. Furthermore, a study by Van der Zee *et al.* (1996) indicated that social comparison processes play an important role in contributing to the subjective well-being of cancer patients, even when physical and psychological health were controlled for. Especially comparing with

others who are worse off increased their subjective well-being by enhancing the sense of being better off than fellow patients. Similarly, Hagedoorn, Sneeuw, and Aaronson (2002) found that cancer patients who felt they were better off than other patients were able to sustain their quality of life in the face of worsening physical functioning, while those who felt they were equal or worse off than other patients were not able to do so.

In the present study, cancer patients who were about to undergo radiation therapy were provided with one of three types of audiotaped social comparison information. On each of the three audiotapes, individuals who acted as cancer patients who had already undergone radiation therapy recounted different aspects of their experiences with cancer and radiation therapy. However, on each audiotape, they focused on different aspects. On the first tape, they focused on the procedural aspects of the experience (procedural tape); on the second tape, they focused on the emotional aspects (emotion tape); and on the third tape, they focused on coping aspects (coping tape).

Procedural tape

On the procedural tape, the patients focused on their experiences with various aspects of radiation therapy: how the cancer was discovered, what happened during the treatments, which side effects they experienced, and how the check-ups went after the radiation therapy had ended. Interventions to prepare patients for radiation therapy have been effective in increasing knowledge about radiation therapy, reducing anxiety, and reducing disruption of daily activities (see Ream & Richardson, 1996, for a review). Information about radiation therapy enables patients to have a better idea of what to expect. Poroch (1995) found that patients who were provided with sensory and procedural information reported less anxiety and more satisfaction during radiation therapy. Information about experiences from fellow patients can be an important supplement here, as it provides cancer patients with the opportunity to compare themselves and their situation with (the situation of) fellow patients. 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 that threat. However, they further hypothesized that people tend to prefer to affiliate with others primarily for their ability to reduce uncertainty (i.e., provide cognitive clarity) about the threat situation, and to a lesser extent for their comparison potential. In other words, they hypothesized that cancer patients would use information from fellow patients who had already undergone the radiation therapy first of all to get a better idea of what to expect, and to a lesser extent as an opportunity to compare themselves or their situation.

Emotion tape

In addition to uncertainty about their disease and its treatment, patients may also experience uncertainty about their emotional reactions. Even though every individual reacts differently to these kinds of circumstances, fellow patients who have already undergone the treatment are able to provide information about the kinds of emotions they experienced during radiation therapy, thus providing a point of reference. Research has indicated that uncertainty about emotions can promote the need for social comparison (Cottrell & Eppley, 1977; Kulik & Mahler, 2000). However, little attention has been given to the specific consequences of comparing one's emotions with those of similar others when facing a serious health threat. Spiegel and Diamond (2001) suggested that cancer 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 about their emotional reactions can thus normalize and validate patients' emotions. On the emotion tape, the patients, therefore, focused on their emotional reactions to cancer and radiation therapy.

Coping tape

On the coping tape, the patients focused on how they had coped with various aspects of cancer and radiation therapy. Presenting patients with a positive coping model may increase their self-efficacy and their ability to cope with the situation. Self-efficacy refers here to personal judgments of how well one can implement behavior to cope with one's disease and treatment (Bandura, 1986). Models of positive coping with cancer and radiation therapy provide an opportunity for upward social comparison. By comparing with similar others who are coping well, patients may learn how to improve their own situation (Berger, 1977; Telch & Telch, 1985), and, at the same time, they may acquire hope and motivation (Taylor & Lobel, 1989). Indeed, studies indicate that people facing a health threat are particularly interested in information about fellow patients who are coping very well (e.g., Bennenbroek, Buunk, Van der Zee & Grol, 2002; Buunk, 1995). It seems that comparisons on the coping dimension, unlike comparisons on the illness severity dimension, are motivated by a desire to improve oneself. After all, fellow patients who are coping well can provide more useful information on how to improve one's own situation than fellow patients who are better off physically.

Social comparison orientation

Although different types of social comparison information may have different long-term effects on the quality of life, each type of information may be more beneficial for some individuals than for others. In the present study, it was examined whether the quality of life of patients with a high social comparison

orientation is affected differently by the audiotapes than that of patients with a low social comparison orientation. Gibbons and Buunk (1999) introduced this notion of social comparison orientation to refer to the disposition of individuals who are strongly focused on social comparison, are particularly sensitive to their own standing relative to others, and who are interested in information about the thoughts and behaviors of others in similar situations. According to Gibbons and Buunk (1999), individuals high in social comparison orientation are characterized by a heightened uncertainty about themselves, accompanied by a relatively strong dependency on other people for their self-evaluation. A study among cancer patients (Van der Zee, *et al.*, 1998) showed that patients high in social comparison orientation were indeed more inclined to select and attend to information about fellow patients. In addition, people high in social comparison orientation are more strongly affected by social comparison (Gibbons & Buunk, 1999). This seems to be particularly the case when it involves comparing oneself with others who are worse off (downward comparison). In several studies, it was found that people high in social comparison orientation experience more negative affect after downward comparisons (Buunk, Ybema, Gibbons & Ipenburg, 2001; Van der Zee, *et al.*, 1998), supposedly because downward comparisons represent a undesired future for oneself.

The aim of the present study was to examine whether different types of social comparison information have long-term effects on quality of life, measured six to nine weeks later and four to five months later. The quality of life of the patients who had received one of the three audiotapes was compared with the quality of life of the patients in the control group, who had not received an audiotape. While an increasing number of studies indicate that social comparison orientation may moderate the short-term effects of engaging in social comparison, only a few studies have found long-term effects (e.g., Blanton, Buunk, Gibbons & Kuyper, 1999). In a study among nurses, Buunk, Zurriaga, Gonzalez-Roma, and Subiritas (in press) found that, especially among individuals with a high social comparison orientation, the frequency of comparisons increased feelings of relative deprivation (the perception of having less success at work than one deserves) nine to ten months later. Because the coping tape provided patients with explicit examples of how to cope with their illness and treatment, it was expected that the coping tape would have the most beneficial long-term effects on quality of life, especially among those high in social comparison orientation. Those high in social comparison orientation are more likely to use the social comparison information on the coping dimension to reflect on their own situation and to use this information to improve their situation than those low in social comparison orientation.

Method

Procedure

Patients were approached in the three hospitals with radiation therapy departments in the northern part of the Netherlands. In each department, an assistant would check incoming patient files to see whether patients met the inclusion criteria. The patients had to be newly diagnosed cancer patients with breast cancer, cervical cancer, head and neck cancer, or prostate cancer. They had to be treated with external radiation therapy with curative intent for a period of four to seven weeks. They could not be participating in another psycho-oncological study and had to have sufficient knowledge of the Dutch language.

Once it 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 to the researchers, indicating that they would participate in the study. Of the 319 eligible patients, 226 agreed to participate in the study (71% response rate). The main reasons for non-response were not being interested (12%), feeling it was too burdensome (6%), or a poor physical or mental condition (3%). Next, patients were randomly assigned to one of the three experimental conditions, each with a different audiotape, or to the control group. Patients assigned to an experimental condition who did not own a tape recorder were provided with one. In the week prior to the start of their treatment, the patients received the questionnaire and an audiotape.

Sample

The majority of the respondents was female (65%). 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. The elapsed time since first diagnosis varied between 1 and 36 weeks, with an average of eight weeks.

Development of the audiotapes

A total of 20 cancer patients were interviewed in order to gather the necessary information for developing the audiotapes. These patients were either still undergoing radiation therapy or had recently received their last treatment. The scripts of the audiotapes were based on information extracted from these

interviews, information from medical staff, and information from relevant literature. The scripts of the audiotapes represented an interview in which one male patient and one female patient who have already undergone radiation treatment are recounting their experiences.

Before the audiotapes were recorded, radiation oncologists and a number of cancer patients reviewed the scripts. On the basis of their comments and recommendations, some small alterations were made to the scripts. Next, the audiotapes were recorded with the help of professional actors, a 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 the present study.

Similarities and differences in the audiotapes

Each script was written to match the other scripts as much as possible on the subjects which were addressed, the order of the subjects, the use of language, and total length of the audiotape. The main subjects that were addressed on all the audiotapes were the way the diagnosis was made, the radiation treatment, the possible side effects of the treatment, and the changes after the treatment had ended. However, the audiotapes differed in the way these topics were addressed, as each audiotape focused on a different dimension. The audiotapes were roughly 25 minutes long.

Instruments

The patients received a questionnaire in the week prior to the start of their radiation treatments (T₁), two weeks after the treatment had ended (T₂), and three months after the treatment had ended (T₃).

Individual differences in *social comparison orientation* were measured at T₁, using the Iowa-Netherlands Comparison Orientation Measure (INCOM; Gibbons & Buunk, 1999). The participants could indicate on a 5-point scale whether they agreed with statements on social comparison habits, ranging from 1 = I disagree strongly to 5 = I agree strongly. For example: 'I always like to know what others in a similar situation would do'. The reversed items ('I am not the type of person who compares often with others' and 'I never consider my situation in life relative to that of other people') were removed from the analyses, because of very low item-total correlations ($r = -.006$ and $r = .159$, respectively). Cronbach's alpha for the resulting scale was $\alpha = .83$.

After the patient had listened to the audiotape, a manipulation check was performed to examine the *extent* to which the patients had *compared* themselves with the patients on the tape. The patients were asked to indicate whether or not they had compared themselves and/or their situation to (the situation of) the patients on the tape. They could respond with 'No', 'Yes, I compared myself with

Table 1**Descriptives of the means of the quality of life at three moments in time**

	Condition			
	Procedural Tape (n = 57)	Emotion Tape (n = 54)	Coping Tape (n = 51)	Control Condition (n = 48)
Quality of life T1	7.10	6.89	6.96	6.91
Quality of life T2	6.87	7.04	6.82	6.70
Quality of life T3	7.26	7.14	7.27	7.08

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'.

Quality of life was measured using the Cantril (1965) self-anchoring scale. The patients were asked to define a 'worst possible life' and a 'best possible life' for themselves, and then to rate their lives on this personal scale. The scores range from zero to ten, zero reflecting the worst life and ten reflecting the best life. Quality of life was measured at three points in time. First, it was measured in the week prior to the start of the treatment, and prior to listening to the audiotapes (T1). Subsequently, quality of life was measured two weeks after the radiation therapy had ended (T2), which was six to nine weeks later depending on the number of the treatments. Finally, it was measured three months after the treatment had ended (T3).

Results

Extent of comparison

First, the extent to which the patients in the experimental conditions had actually compared themselves with the patients on the tapes was examined. The results show that 93% of the patients who had received the procedural tape had indeed compared themselves with the patients on the tape, while this percentage was slightly lower among those who had received the coping and the emotion tapes (79% and 82%, respectively).

Quality of life at T2

First, the descriptives of the quality of life at three point in time were measured (see Table 1). No significant differences in quality of life were found ($p' s > .05$). In our main analyses, the moderating role of social comparison orientation on the effects of the tapes on quality of life at T2 and at T3 was examined. To examine these effects, multiple regression analyses were used. In the first step, quality

Table 2

Summary of regression analysis for social comparison orientation (SCO) and the dummy variables D1 (coping vs. control), D2 (emotion vs. control), and D3 (procedural vs. control), predicting quality of life at T2 and quality of life at T3

	Quality of life T2		Quality of life T3	
	<i>R</i> ² change	<i>B</i>	<i>R</i> ² change	<i>B</i>
Step1	.22***		.21***	
Quality of life T1		.56***		.51***
Step 2	.01		< .01	
SCO		-.07		-.03
D1		.08		.16
D2		.34		.06
D3		.03		.04
Step 3	.05**		.03†	
SCO x D1		.25		.61*
SCO x D2		-.83**		-.09
SCO x D3		-.17		.23

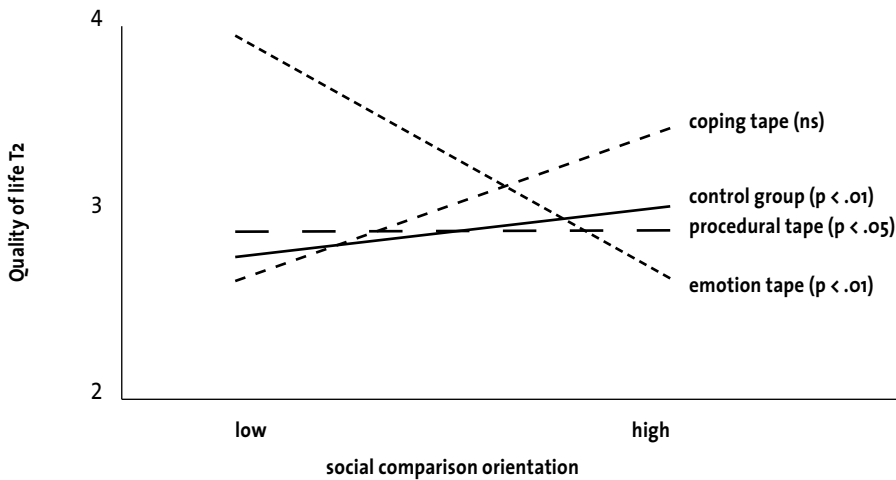
*** $p < .001$, ** $p < .01$, * $p < .05$, † $p < .10$

of life at T1 was entered, to be able to assess changes in the levels of quality of life. In the second step, social comparison orientation and the dummy variables concerning the experimental condition (i.e., the following contrasts: emotion vs. control, procedural vs. control, and coping vs. control) were entered. In the third step, the interaction terms between social comparison orientation and the dummy variables was entered (see Aiken & West, 1991). Additional regression analyses were performed to examine the other possible contrasts between conditions (emotion vs. coping, emotion vs. procedural, and procedural vs. coping), and to obtain the slopes of all four conditions (Aiken & West, 1991). To facilitate interpretation of the results, social comparison orientation was standardized (Aiken & West, 1991).

First, the influence of social comparison orientation on the effects of the tapes on the quality of life at T2 was examined (see Table 2). The regression analysis revealed a main effect of quality of life at T1. Not surprisingly, the patients who reported a higher quality of life prior to the treatment reported a higher quality of life two weeks after the treatment had ended, $B = .56$, $p < .001$. The analysis

Figure 1

Social comparison orientation as related to quality of life at T2 in all four conditions

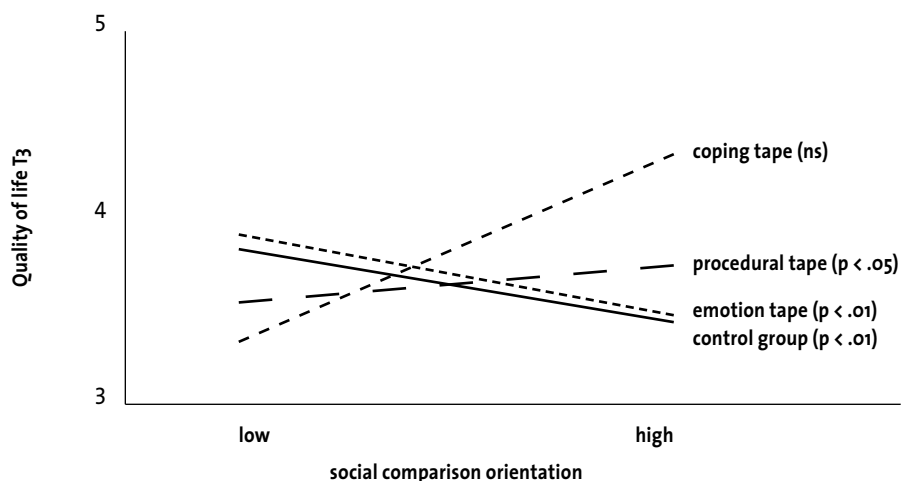


revealed no main effects of the different tapes. However, a significant interaction effect was found (see Figure 1). The effects of the different audiotapes on quality of life at T2 were dependent on the levels of social comparison orientation. Additional analyses, which examined the other possible contrasts (emotion vs. coping, emotion vs. procedural, and procedural vs. coping) revealed a significant interaction between social comparison orientation and the contrast emotion vs. coping, $B = 1.02, p < .001$, and between social comparison orientation and the contrast emotion vs. procedural, $B = -.72, p < .05$.

Furthermore, the simple slopes of the three different audiotapes and the control group were tested. These analyses revealed that the slopes were significant for the coping tape, $B = .43, p < .05$, and for the emotion tape, $B = -.66, p < .01$, although in opposite directions. That is, with increasing levels of social comparison orientation, a lower quality of life at T2 was reported by those who had listened to the emotion tape, while a higher quality of life at T2 was reported by those who had listened to the coping tape. The slopes for the procedural tape, $B < .01, ns$, and the control group, $B = .11, ns$, were not significant.

Quality of life at T3

Next, the influence of social comparison orientation in moderating the effects of the tapes on quality of life at T3 was examined (see Table 2). Regression analysis again revealed a significant main effect of quality of life at T1. The patients who reported a higher quality of life prior to the treatment reported a higher quality of life threemonths after the treatment had ended, $B = .50, p < .001$. And again, no significant main effects of the audiotapes were found. However, the

Figure 2**Social comparison orientation as related to quality of life at T₃ in all four conditions**

analysis did reveal a significant interaction effect (see Figure 2). The effects of the different audiotapes on quality of life at T₃ were dependent on the levels of social comparison orientation. Additional analyses, which examined the other possible contrasts (emotion vs. coping, emotion vs. procedural, and procedural vs. coping) revealed no further significant interactions. Furthermore, the simple slopes of the three different audiotapes and the control group were tested. These analyses revealed that the slope for the coping tape was significant, $B = .49$, $p < .05$, while the slopes for the procedural tape, $B = .10$, ns , for the emotion tape, $B = -.21$, ns , and for the control group, $B = -.19$, ns were not. In other words, with increasing levels of social comparison orientation, a higher quality of life at T₃ was reported by those who had listened to the coping tape, while social comparison orientation did not influence the effects on the quality of life at T₃ of the control group or of the procedural and the emotion tapes. Furthermore, post-hoc analysis (Aiken & West, 1991) revealed that among those with a *high* social comparison orientation, those who listened to the coping tape reported a significantly higher quality of life at T₃ than those in the control group, $B = .94$, $p < .05$.

Discussion

In the present study, the role of social comparison orientation in moderating the long-term effects of three different types of social comparison information was examined. It was found that social comparison orientation influenced the effects of the different types of social comparison information considerably. By including social comparison orientation as a moderator, the results clearly reveal the long-term beneficial effects of the audiotapes, particularly of the coping tape.

It is important to note that the majority of patients did indeed compare themselves with the patients on the audiotapes. These results indicate that, although the patients may or may not have used social comparison information to reduce uncertainty and promote cognitive clarity (Kulik and Mahler, 2000), they definitely used the information to compare themselves with the patients on the audiotapes.

Two weeks after the radiation therapy had ended, the effects of the audiotapes on the quality of life of the patients were strongly influenced by social comparison orientation. With increasing social comparison orientation, patients reported a higher quality of life at T2 after listening to the coping tape, while they reported a lower quality of life at T2 after listening to the emotion tape. Apparently, the coping tape had beneficial effects on global quality of life, particularly for those high in social comparison orientation. This suggests that coping information mainly has beneficial effects when one is inclined to relate the information to one's own situation.

Surprisingly, patients with a low social comparison orientation who had listened to the emotion tape reported the highest quality of life at T2, which was significantly higher than the quality of life of the patients in the control group. It is not clear why this is the case. It could be that the emotion information is particularly beneficial for those who are not inclined to relate the information on the tapes to their own situation. However, it is not clear whether those low in social comparison orientation do not use social comparison information to reflect on their situation at all, or merely less than those high in social comparison orientation. A study by Michinov and Michinov (2001) provides another possible explanation. They found that individuals low in social comparison orientation were attracted to others who were highly similar to them on attitudes, while those high in social comparison orientation did not show this preference. In the present study, the emotion tape was specifically designed to present comparison others who would be highly similar to the respondents. Therefore, it may be that those low in social comparison orientation reacted positively to this tape because it presented comparison others with whom they preferred to compare themselves. Although Gibbons and Buunk (1999) described the prototypical high comparer, they did not describe the prototypical low comparer. The results of the present study suggest that those low in social comparison orientation react in a highly unique way to social comparison information and that they do not simply show the opposite reaction to those high in social comparison orientation. Further research is, therefore, needed to identify the way individuals low in social comparison orientation deal with social comparison information.

Three months after the radiation therapy had ended, highly similar effects to those after two weeks were found. With increasing levels of social comparison orientation, patients who had listened to the coping tape again reported higher

levels of quality of life at T₃. More importantly, they reported a significantly higher quality of life than those in the control group, indicating the long-term beneficial effects of the coping tape for those with a high social comparison orientation. The effects of the emotion tape on the quality of life at T₃ were no longer influenced by social comparison orientation.

The results of the present study have several important implications. First, it is one of the few studies to examine the long-term effects of social comparison information. While previous studies have shown that the frequency of social comparison may have long-term effects on affect (Buunk, *et al.*, in press), and performance (Blanton, *et al.*, 1999), the present study is the first intervention study to show the long-term effects of social comparison information on the quality of life in a sample of cancer patients. The results clearly emphasize the importance of supplementing patient education materials with social comparison information, because such information may not only have short-term, but also long-term beneficial effects on quality of life. Furthermore, the present study emphasizes the importance of personality characteristics, in particular social comparison orientation. By including social comparison orientation in our research, the differential long-term effects of the audiotapes have been clearly demonstrated that would otherwise have been hidden. It is, therefore, very important to acknowledge the role of social comparison orientation in future research. It is important to consider the specific characteristics of the patient when providing patients with information. To ensure optimal effects of patient education materials, attention should be paid to the kind of material which suits the individual best. Bensing, Visser, and Saan (2001) made similar recommendations in their article on patient education in the Netherlands. They argued that information materials are more effective when they are tuned to individual preferences and needs. When providing patients with social comparison information, coping information seems to be the most beneficial for those high in social comparison orientation, while emotion information seems to be the most beneficial for those low in social comparison orientation.

However, some considerations may limit our conclusions. One limitation lies in the fact that quality of life was measured using a one-item scale. Therefore, the criteria on which the patients based their quality of life assessment are unknown. In other words, it is not known what factors influenced the evaluation of their quality of life, nor the relative importance of these factors. However, the use of a one-item measure has important advantages. A major advantage lies in its non-normative nature. That is, instead of the researcher, the patient decides what constitutes a high or a low quality of life. The patients evaluate (the quality of) their lives on the basis of their own criteria. In the present study, the subjective assessment of quality of life made by the patients themselves seems to be the most relevant measurement of their quality of life. Furthermore, a one-item measure of quality

of life is comprehensive and unambiguous. In this light, Bernheim (1999) argued that quality of life could actually be captured best by a global assessment, as it is the result of great many interactions between contributing components, which cannot be accurately measured using multi-item questionnaires.

To summarize, the present study has provided some important insights into the long-term effects of social comparison information and the important role social comparison orientation plays in these processes. For patients with a high social comparison orientation, coping information seems to have highly beneficial short-term as well as long-term effects on quality of life. The present study is an important confirmation of the notion that providing information about similar others who are coping well is a successful strategy for enhancing well-being (Ybema & Buunk, 1995).

Chapter 7

Summary and conclusions

Being confronted with a serious illness such as cancer and being treated for it, is a very threatening experience that may have consequences for almost every part of the patient's life. The present thesis focused on how social comparison information can be used by cancer patients to adapt to their illness and the treatment with radiation therapy. It addressed several questions concerning the social comparison processes of cancer patients; what kind of social comparison information and contact they prefer, how they react to different types of social comparison information and how several factors, particularly the personality of the patients, influences these reactions. The aim of the present thesis was to provide more insight in the role of social comparison in the coping processes of cancer patients. This chapter discusses and summarizes the main findings of the research presented in the previous chapters. By focusing on the practical implications of the findings, an answer is sought to the question: What kind of social comparison information should be provided to cancer patients, particularly when undergoing radiation therapy?

What kind of social comparison information and contact do cancer patients prefer?

Research has shown that people faced with a serious health threat tend to compare themselves with others in a similar situation (Buunk, Gibbons & Reis-Bergan, 1997; Tennen, McKee & Affleck, 2000). This seems certainly the case among cancer patients. Intervention studies based on social comparison theory have indicated that most cancer patients are extremely interested in social comparison information (e.g., Van der Zee, Oldersma, Buunk & Bos, 1998). In Chapter 2, it was examined to what extent cancer patients are interested in social comparison and which factors influence this interest. It was found that cancer patients have a reasonably high need for social comparison. As was expected, this need for social comparison was strongly influenced by a number of indicators of low well-being. The more patients evaluated their own health to be bad, and the higher the level of depressive symptoms, anxiety, and uncertainty, the greater the need for social comparison. In contrast to the findings of Buunk (1995), subjective health evaluation, and not uncertainty, was the best predictor of the need for social comparison.

Furthermore, it was examined what kind of social comparison cancer patients prefer. In particular, it was examined whether cancer patients prefer to seek out upward comparison (comparison with others doing better) or downward comparison (comparison with others doing worse), and which factors

influence these directional preferences. First, it was examined whether mode of comparison (social comparison information vs. social comparison contact) influenced directional preferences. As expected, the patients preferred upward social comparison information and social comparison contact to downward information and contact. However, this preference was more upward for comparison information than for contact. In other words, patients prefer to seek out fellow patients who are doing better, but feel more comfortable with fellow patients similar to them when actually meeting these patients. These results are in line with the assumption that actually meeting comparison others, however informative, can be threatening, especially to the self-image (Gibbons & Gerrard, 1991; Brickman & Bulman, 1977; Buunk, 1995). One is not only confronted with the fact that another person is doing better, but the other person is also a witness to the fact that one is doing worse. Second, it was examined whether the dimension of comparison (illness severity vs. coping) influenced directional preferences. As expected, patients preferred more upward social comparison information on the coping dimension than on the illness severity dimension. Patients who are coping better seem to be the best source of information to learn how to improve one's own situation. However, this was particularly found regarding seeking information; patients were more reluctant to actually meet fellow patients who were coping better. It is possible that seeking information and seeking contact are not only different modes of social comparison, but also have different motivations, such as self-improvement or self-evaluation. Furthermore, it was examined whether indicators for low well-being influenced directional preferences. It was found that the more uncertainty patients felt, the more they preferred to receive information about others who were coping better than about others coping worse. These results are in line with the notion that upward comparison is mainly used for self-improvement purposes (problem focused coping). Feelings of control influenced the preferences for contact with comparison others. The more patients felt they had control over their situation, the more they wanted to have contact with others who were coping better than they were. It seems that when patients feel that they have control over their situation, they want to learn from others how to best use that control to their advantage. In these circumstances, meeting patients who are coping better can be very informative, although it can also be very threatening. It is, therefore, important to note that particularly patients with relatively high levels of control are interested in meeting these superior others. If they feel they have control, this situation apparently poses less of a threat.

To summarize, preferences for social comparison among cancer patients are by no means straightforward. They are highly dependent on the mode of the comparison, the dimension on which the comparison takes place and how the patient is feeling. Nonetheless, it seems that, overall, cancer patients have a

preference for comparing themselves with fellow patients who are coping better.

How do cancer patients react to different types of social comparison information?

For the most part, the present thesis focused on the effects of a patient education intervention based on the social comparison theory (Festinger, 1950, 1954). Cancer patients who were about to undergo radiation therapy were provided with one of three types of audiotaped social comparison information. On each of the three audiotapes, a man and woman acting as cancer patients who had already undergone radiation therapy recounted different aspects of their experiences with cancer and radiation therapy. The purpose of these audiotapes was to prepare patients for the impending period of radiation treatments and to reduce negative feelings. Cancer patients undergoing radiation therapy may use social comparison information for several different reasons, and may thus be interested in social comparison information on different dimensions. Therefore, on each audiotape, the patients focused on different aspects.

On the *procedural tape*, the patients focused on their experiences with various aspects radiation therapy: how the cancer was discovered, what happened during the treatments, which side effects they experienced, and how the check-ups went after the radiation therapy had ended. It was expected that this kind of information would enable patients to have a better idea of what to expect. Poroch (1995), for example, found that patients who were provided with sensory and procedural information reported less anxiety and more satisfaction during radiation therapy. On the *emotion tape*, the patients focused on their emotional reactions to cancer and radiation therapy. 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. On the *coping tape*, the patients focused on how they had coped with various aspects of cancer and radiation therapy. 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 & Barab, 1973), thus increasing their feelings of self-efficacy.

In *Chapter 3*, the short-term effects of these different types of information were examined on subjective understanding about radiation therapy, validation and recognition of emotions, self-efficacy, and mood. It was expected that the procedural tape would increase subjective understanding the most, that the emotion tape would promote feelings of validation and recognition of emotions the most, and that the coping tape would increase self-efficacy the most. All three

audiotapes demonstrated positive effects on subjective understanding about radiation therapy, validation and recognition of emotions, and self-efficacy. As expected, the procedural tape increased subjective understanding the most, although only slightly more than the coping tape. Similarly, the coping tape increased self-efficacy the most, although only slightly more than the procedural tape. Apparently, the procedural and the coping tape had highly similar beneficial effects, and seem to be almost interchangeable in their short-term effects.

Unexpectedly, the emotion tape did not evoke more validation and recognition of emotions than the other tapes. It did, however, evoke more negative mood than the other tapes, even though the patients who had listened to the emotion tape were very positive about the tape. It could be that the emotion tape induced emotional contagion. That is, the emotions recounted on the tape may have rubbed off on the listeners. It has been established that simply hearing about another person's emotions may be enough for emotional contagion to occur (Kulik & Mahler, 2000). Furthermore, the 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, Czapinski & Peeters, 1992; Rozin & Royzman, 2001 for reviews). That is, negative information seems to demand more attention than positive information, but negative information may also be more 'contagious' than positive information (Rozin & Royzman, 2001). Second, other people talking about their emotional reactions 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 too could express these emotions. Third, it may simply be that hearing people talk about emotions evokes negative emotions. According to Hobfoll and London (1986), talking about one's feelings may increase uncertainty and feelings of anxiety. Similarly, a study by Costanza, Derlega and Winstead (1988) indicated that talking about one's feelings 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. 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.

To summarize, the procedural and the coping tapes seem to have highly similar beneficial effects on subjective understanding about radiation therapy, validation and recognition of emotions, and self-efficacy. In contrast, the emotion tape

did not have the expected effect on validation and recognition of emotions and promoted more negative mood among the patients than the other tapes.

Which factors influence the short-term effects of different types of social comparison information?

In *Chapter 4*, the influence of uncertainty (i.e., lack of knowledge about cancer and radiation therapy) in moderating the effects of the audiotapes was examined. It is generally acknowledged that feelings of uncertainty foster the need for social comparison information. It is, therefore, surprising that little attention has been given to the influence of uncertainty in moderating the effects of social comparison information. It would be interesting to examine whether individuals who are more interested in social comparison (as a result of their uncertainty) would also benefit more from this information. One would certainly expect this to be the case. However, previous research has indicated that individuals who are dispositionally inclined to be interested in social comparison information, not always benefit most from social comparison information. In the present study, it was expected that those experiencing high uncertainty would benefit the most from the procedural tape, as this tape provides the most specific information about cancer and radiation therapy. As the effects of social comparison information may also be influenced by personality characteristics, it was also assessed whether the influence of uncertainty on the effects of the social comparison information would hold up when taking the personality of the patients into account. The effects social comparison orientation and neuroticism were examined.

Contrary to the expectations, those high in uncertainty did not benefit the most from the procedural tape. Instead, the coping tape seems to be most beneficial for those experiencing high uncertainty. While the patients who listened to the procedural tape, the emotion tape, and those in the control group all reported a higher negative mood with increasing uncertainty, those who listened to the coping tape did not. More importantly, those high in uncertainty who listened to the coping tape reported less negative mood than the patients high in uncertainty in the control group. Apparently, coping information as provided on the coping tape, buffers against the negative consequences of uncertainty. Interestingly, these effects of uncertainty hold up even when social comparison orientation and neuroticism were controlled for. This finding suggests that situational need for information is very important in moderating the effects of different kinds of social comparison information.

In *Chapter 5*, the roles of neuroticism, extraversion, and social comparison orientation in moderating the short-term effects of the three different audiotapes was examined. It was found that all three personality traits did indeed influence the effects of the social comparison information on mood. It was expected that those high in neuroticism would experience more negative mood than those low

in neuroticism, especially after listening to the emotion and the coping tapes. The confrontation with fellow patients who are coping successfully is likely to lead to frustration for those high in neuroticism. Van der Zee, *et al.* (1998) found that cancer patients high in neuroticism reacted less positively and more negatively to fellow patients who were adjusting well. Furthermore, listening to fellow patients expressing a variety of positive as well as negative feelings is likely to unsettle individuals high in neuroticism. In contrast, fellow patients talking about procedural aspects may be less susceptible to negative interpretation.

Patients high in neuroticism did report more negative mood after listening to the emotion tape than after listening to the procedural tape. For those high in neuroticism, it is clearly more disturbing to listen to fellow patients talking about their emotions than to listen to fellow patients talking about their experiences with radiation therapy. In contrast to the expectations, patients high in neuroticism reported similar moods after listening to the procedural tape as after listening to the coping tape. More importantly, those high in neuroticism who listened to the coping tape reported significantly less negative mood than those high in neuroticism in the control group. Apparently, the information about positive models on the coping tape was not only less of a threat for those high in neuroticism than expected, it also seemed to have beneficial effects for them. Because the models on the coping tape were developed to be successful, but not extremely successful, it may be that the models were not successful enough to be threatening.

Furthermore, it was expected that extraverts would experience less negative mood after listening to the emotion tape than introverts. It was expected that the emotion tape would evoke the most arousal, as it presents cancer patients talking about positive as well as negative emotions, thus displaying arousal. As extraverts are more likely to seek out arousal producing stimuli than introverts are (Berlyne, 1960; Eysenck, 1981), it was expected that extraverts would prefer the emotion tape. Unexpectedly, extraverts reported equally negative moods in all conditions. Even though the emotion tape seemed to evoke the most arousal, extraverts did not react more favorably to this tape. It may be that the emotion tape is considered arousal evoking by introverts and not by extraverts. Furthermore, it was expected that the coping and the procedural tapes would evoke little arousal as these tapes present cancer patients talking about neutral or positive aspects, and therefore would be preferred by introverts. Introverts indeed reported more negative mood after the emotion tape than after the procedural and the coping tape.

Finally, it was expected that individuals high in social comparison orientation would report more negative mood after listening to the emotion tape than those low in social comparison orientation. Individuals high in social comparison orientation seem to be more strongly affected by social comparison information,

especially when comparing with others worse off (Buunk, Ybema, Gibbons & Ipenburg, 2001; Van der Zee, Buunk & Sanderman, 1998). The emotion tape was the only tape containing aspects that could be interpreted as downward comparison information, as it presents negative emotional reactions. As was expected, patients with a high social comparison orientation reported the most negative mood after listening to the emotion tape.

To summarize, people with different personality characteristics react differently to social comparison information, especially to social comparison information on the emotion dimension. Those high in neuroticism and in social comparison orientation, as well as introverts react negatively to social comparison information on the emotion dimension, while they clearly react favorably to social comparison information on the procedural or coping dimension. These effects remain intact even when controlling for the other related personality traits, as well as for uncertainty about cancer and radiation therapy underlines the conceptual independence of neuroticism, extraversion, and social comparison orientation, and only strengthens our findings. Their effects can thus be attributed to the actual moderating variable, and not, for example, to a common factor behind neuroticism and social comparison orientation.

How do personality characteristics influence the long-term effects of different types of social comparison information?

While an increasing number of studies indicate that social comparison orientation moderates the short-term effects of engaging in social comparison, only a few studies have found long-term effects (e.g., Blanton, Buunk, Gibbons & Kuyper, 1999). In a study among nurses, Buunk, Zurriaga, Gonzalez-Roma and Subiritas (in press), for example, found that especially among individuals with a high social comparison orientation, the frequency of comparisons increased feelings of relative deprivation (the perception of getting fewer outcomes at work than one deserves) nine to ten months later. In *Chapter 6*, it was examined whether different types of social comparison information have different long-term effects on quality of life. Global quality of life was measured two weeks after the radiation therapy had ended (T₂; six to nine weeks after receiving the audiotape) and three months after the radiation therapy had ended (T₃; four to five months after receiving the audiotape). Because the coping tape provided patients with explicit examples on how to cope with their illness and treatment, it was expected that the coping tape would have the most beneficial long-term effects on quality of life, especially among those high in social comparison orientation. Those high in social comparison orientation are more likely to use the social comparison information on the coping dimension to reflect on their own situation and to use this information to improve their situation.

Two weeks after the radiation therapy had ended, the effects of the audiotapes on the quality of life were strongly influenced by social comparison orientation. With increasing social comparison orientation, patients reported a higher quality of life at T2 after listening to the coping tape, while they reported a lower quality of life at T2 after listening to the emotion tape. Apparently, the coping tape had beneficial effects particularly for those high in social comparison orientation, suggesting that coping information mainly has beneficial effects when one is inclined to relate the information to one's own situation. Surprisingly, patients with a low social comparison orientation who had listened to the emotion tape reported the highest quality of life at T2, which was significantly higher than the quality of life of the patients in the control group. This suggests that those low in social comparison orientation react in a highly unique way to social comparison information and that they do not simply react opposite to those high in social comparison orientation. Further research is, therefore, needed to identify the way individuals low in social comparison orientation deal with social comparison information.

Three months after the radiation therapy had ended, highly similar effects were found. With increasing levels of social comparison orientation, patients reported higher levels of quality of life after listening to the coping tape. More importantly, those high in social comparison orientation who listened to the coping tape reported a higher quality of life than those high in social comparison orientation in the control group, indicating the long-term beneficial effects of the coping tape. The effects of the emotion tape on the quality of life were no longer influenced by social comparison orientation.

To summarize, coping information seems to have beneficial effects on quality of life, short-term as well as long-term, particularly for patients with a high social comparison orientation.

What are the limitations of the present thesis?

The research conducted in the present thesis has some limitations that should be considered. First, the patients who were asked to participate in the study had to be informed about the possibility of receiving an audiotape, but also about the possibility of being assigned to the control group, and not receiving an audiotape. This may have led to some unwanted effects among the patients in the control group. As they did not receive the additional information, they may have experienced feelings of relative deprivation and resentment, which may have influenced the way they filled out the questionnaires. Indicative is the finding that those high in neuroticism reported a highly negative mood when they were in the control group (see *Chapter 3*).

A second limitation is that, by focusing on the effects of different kinds of social comparison information, the underlying processes have not been addressed. In

other words, the (cognitive) processes responsible for the effects of the different kinds of social comparison information, such as identification and contrast processes, have not been examined. Although the present thesis has provided insight into *how* cancer patients react to different types of social comparison information, it is not possible to determine *why* the cancer patients reacted the way that they did.

A third limitation is that, although the audiotapes have been meticulously developed, they may have differed in more respects than was intended. The coping tape, for example, contains positive role models about fellow patients, while the procedural and emotion tapes do not contain such positive role models. It may be argued that this difference, instead of the difference in content, was responsible for the effects found. However, arguing against this interpretation is the fact that the procedural tape, which did not contain a positive role model, demonstrated short-term results similar to those of the coping tape. It seems more likely that the difference in content is responsible for the effects found. Despite these limitations, however, the present thesis may have several important implications.

What are the theoretical implications of the present findings?

The results of the present thesis may have several important implications for the existing literature on social comparison processes in health settings. First, while many studies have focused on the preferences for upward or downward comparisons, the present thesis provides insight in the factors that influence social comparison preferences of cancer patients. The findings indicate that the directional preferences of cancer patients are highly influenced by the mode of comparison (seeking information vs. seeking contact), and several indicators of low well-being. Furthermore, it is of great importance to take the dimension of comparison into account when examining the preferences of social comparison information among cancer patients.

The dimension of comparison is also important when examining the *effects* of social comparison information. The different audiotapes demonstrate highly different effects, short-term as well as long-term. Although the procedural and the coping tapes demonstrate similar short-term effects, their long-term effects seem to differ greatly. The emotion tape, however, not only had highly unexpected effects, but also effects unequalled by the other tapes. Future research should explore the effects of social comparison information on the emotion tape in more detail.

Second, the present thesis emphasizes the importance of personality characteristics, in particular the role of neuroticism, extraversion, and social comparison orientation. Those high in neuroticism, introverts, and those high in social comparison orientation reacted quite differently to social comparison

information than those low in neuroticism, extraverts, and those with a low social comparison orientation. It is, therefore, important to consider personality characteristics in research designs when examining social comparison processes. By including social comparison orientation in our research, we have clearly demonstrated the differential long-term effects of the audiotapes that otherwise would not have been revealed. It is, therefore, very important to acknowledge the role of social comparison orientation in future research.

Third, the fact that the moderating effects of neuroticism, extraversion, and social comparison orientation stand up even when the other related personality traits were controlled for (see *Chapter 4*), underlines the conceptual independence of neuroticism, extraversion, and social comparison orientation. Their effects can thus be attributed to the actual moderating variable, and not, for example, to a common factor between neuroticism and social comparison orientation. As Gibbons and Buunk (1999) noted, although social comparison orientation is correlated with neuroticism, these concepts are clearly distinctive, with different effects on social comparison processes.

Fourth, the present thesis is one of the few studies to examine the long-term effects of social comparison information. While previous studies have shown that the frequency of social comparisons may have long-term effects on affect (Buunk, *et al.*, in press), and performance (Blanton, *et al.*, 1999), the present study is the first intervention study to show long-term effects of social comparison information on the quality of life in a sample of cancer patients.

What are the practical implications of the present findings?

Given the fact that cancer patients report a need for social comparison information and contact, it is important that cancer patients seek out, or are provided with appropriate social comparison contact and information.

First, patients can meet their needs for social comparison *contact* (affiliation), by approaching fellow patients in the waiting room of the hospital. Patients can also join support groups or patient education programs, which provide ample opportunity for social comparison contact. Although the benefits of such support groups have been widely acknowledged (Fobair, 1997; Gray, Fitch, Davis & Phillips, 1997; Posluzny, Hyman & Baum, 1998), studies have also found that many patients are unaware of the existence of support groups for patients (Eakin & Strycker, 2001). Doctors play an important role here. They should point out the possibility of participating in a support group to their patients, and provide them with information on how to contact organizations that organized these groups.

However, in light of the negative effects of the emotion tape on mood, future research should examine whether sharing emotions in support groups is indeed helpful, or whether other components are responsible for the beneficial effects of these groups. It may be that the combination of sharing emotions and problem-

focused exercises is crucial to the success 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, Bennenbroek & Vos, 2001; Helgeson, Cohen, Schulz & Yasko, 1999; Telch & Telch, 1986).

Second, a very obvious way to meet the needs for social comparison *information* is through patient information and patient education. Patients very much need (and want) information about their diseases (Bilodeau & Degner, 1996; Galloway, *et al.*, 1997; Harrison, Galloway, Graydon, Palmer-Wickham, & Rich-Van der Bij, 1999), especially in the case of a disease like cancer. In addition to the information that is currently provided to patients, it would certainly be worthwhile to include social comparison information in patient information, as it is apparent that patients have a need for this type of information (see *Chapter 1*).

What kind of social comparison information should be provided to cancer patients?

What kind of social comparison information should be included in patient education materials? This seems to be a question without an easy answer. However, the present thesis has shed light on some important issues and can thus contribute to an answer. While many studies on social comparison have examined the effects of upward and downward comparisons, our findings clearly indicate that it is of great importance to take the dimension of comparison into account when providing cancer patients with social comparison information. Social comparison information on different dimensions clearly has different effects, short-term as well as long-term. Furthermore, the personality of the patient influences the effects of these different types of social comparison information.

It seems then, that there are two logical alternatives when one wants to provide cancer patients with (social comparison) information. On the one hand, one can provide each patient with tailor-made information, so that the information is best suited to the specific personality of the patient. There are some important benefits to this option. First, individualized information seems to be more beneficial than standard information (e.g., Sitzia & Wood, 1998). Bensing, Visser, and Saan (2001) argued that information materials are more effective when they are tuned to individual preferences and needs. Bull, Kreuter & Scharff (1999) found that tailored health messages were indeed more effective in promoting daily physical activities among primary care patients than general health messages. Furthermore, several studies have found that when the provision of information is not consistent with the personality of the patient, the information may even have negative effects (e.g., Miller & Mangan, 1983). Second, individualized information seems to produce a higher patient satisfaction (e.g., Haeggmark, *et al.*, 2001). Derdiarian (1989) for

example, found that newly diagnosed cancer patients reported more satisfaction with care when they had received individualized information than when they had received routine (standardized) information.

On the other hand, one can provide every patient with the same information. Providing standardized information may avoid some of the drawbacks of tailored patient information. First, most tailored messages have been tailored to patients on the basis of demographic variables or by the stages of the transtheoretical model of behavior change (Prochaska, Diclemente, and Norcross, 1992), and not on the basis of their personality characteristics (Bull, Kreuter & Scharff, 1999; Haeggmark, *et al.*, 2001). Whether tailoring information on the basis of personality is preferable over the standard information has been established only when tailoring to the patient's coping style (e.g., Miller & Mangan, 1983), but not to personality characteristics such as neuroticism, extraversion, and social comparison orientation. Second, not all tailor-made information seems to be more effective than standardized information. For example, Bull, Jamrozil and Blaksby (1999) examined the effects of a tailored pamphlet to promote physical exercise in comparison to a standard pamphlet. Although both pamphlets increased physical activity, the tailored pamphlet did not increase physical activity more than the standard pamphlet. Similarly, Rimer, *et al.* (2001), found no significant effect of a tailored booklet over the usual care in increasing knowledge about and use of mammography, although they did find significant effects of the tailored booklet in combination with telephone counseling over the usual care.

Furthermore, when tailoring the information to the personality of the patient, physicians have to determine the specific personality characteristics of their patients before providing them with the information, which raises several difficulties. Which characteristics should be identified? Research has shown that a variety of personality characteristics influence the effects of information. Physicians should limit themselves to the most important characteristics. However, which personality characteristics are the most important? Furthermore, how does the physician accurately assess the patient's personality? One possibility is by a questionnaire. However, filling out questionnaires during a consultation may interfere with the consultation, and may disturb both patient and physician. Do physicians even have the time to sit down and assess the patients' personality? Physicians already have limited time for patients. It may be problematic to find the time to assess the patient's personality characteristics. Fourth, tailoring information to the patients is a time consuming and costly affair. Different versions of the same materials have to be developed, which means spending more time devising the different materials.

In conclusion

Which alternative is best when providing social comparison information to cancer patients? It seems to be very beneficial to include procedural information in patient education materials. Procedural information increases subjective understanding of the treatment, as well as feelings of self-efficacy. Patients know better what to expect and can better prepare for the impending treatments. Procedural information as provided on the procedural tape not always demonstrated the most beneficial effects, but it never demonstrated adverse effects either.

Nonetheless, it seems that providing patients information about fellow patients who are coping well is the most beneficial. First, patients seem to be very interested in information about fellow patients who are coping well in spite of adversity (see *Chapter 1*). Furthermore, it seems that this kind of social comparison information has various beneficial effects, short-term, as well as long-term. Although people with different characteristics reacted differently to social comparison information on the different dimensions, the information on the coping tape seems to have the most favorable short-term effects regardless of the personality characteristics of the patient. In addition, the social comparison information on the coping tape also has beneficial long-term effects on the quality of life. Those high in social comparison orientation reported a higher quality of life even 18 to 21 weeks after receiving the audiotape. These findings are consistent with findings from Taylor and Dakof (1988). They asked cancer patients to cite the most helpful actions they experienced in interacting with fellow patients. The most frequent helpful actions included coping well with the cancer and acting as a good role model, while least helpful actions were acting as a poor role model by coping poorly. Ybema and Buunk (1995) also suggested that providing information about similar others who are coping well is a successful strategy for enhancing well-being. It may be that providing cancer patients with information about fellow patients who are coping well with their illness and treatment, is the best way to provide cancer patients with social comparison information.

Samenvatting

Geconfronteerd worden met een ziekte als kanker is een zeer bedreigende situatie die consequenties kan hebben voor bijna elk gebied van het leven van de patiënt. Deze dissertatie richt zich op de vraag hoe kankerpatiënten sociale vergelijkingsinformatie kunnen gebruiken om zich aan te passen aan hun ziekte en aan de behandeling met radiotherapie. Het doel van de huidige dissertatie was om meer inzicht te verschaffen in de rol van sociale vergelijking in de coping processen van kankerpatiënten. Deze samenvatting bespreekt de belangrijkste bevindingen en de belangrijkste implicaties van deze bevindingen.

Voor welke sociale vergelijkingsinformatie en contact hebben kankerpatiënten een voorkeur?

In *Hoofdstuk 2* werd onderzocht in welke mate kankerpatiënten geïnteresseerd zijn in sociale vergelijking en welke factoren deze interesse beïnvloeden. De resultaten laten zien dat kankerpatiënten een redelijk hoge behoefte aan sociale vergelijking hebben. Deze behoefte werd sterk beïnvloed door een aantal indicatoren van laag welzijn. Hoe slechter de patiënten hun gezondheidstoestand inschatten en hoe meer depressieve symptomen, angst en onzekerheid zij rapporteerden, des te groter de behoefte aan sociale vergelijking.

Kankerpatiënten bleken voorkeur te geven aan opwaartse vergelijking (met andere kankerpatiënten die beter af zijn) boven neerwaartse vergelijking (met andere kankerpatiënten die slechter af zijn). Dit bleek mede af te hangen van de manier van vergelijken (het zoeken sociale vergelijkingsinformatie vs. het zoeken van vergelijkingscontact). Zoals verwacht gaven de patiënten de voorkeur aan zowel opwaartse sociale vergelijkingsinformatie als contact. Echter, de voorkeur voor sociale vergelijkingsinformatie was meer opwaarts dan voor contact. Met andere woorden, patiënten gaven de voorkeur aan informatie over medepatiënten die het beter doen, maar voelden zich meer op hun gemak met gelijkwaardige patiënten als zij deze patiënt daadwerkelijk ontmoeten.

Verder bleek dat de voorkeur voor sociale vergelijking beïnvloed werd door de dimensie waarop de vergelijking plaatsvindt (ernst van de ziekte vs. coping). Patiënten gaven de voorkeur aan meer opwaartse sociale vergelijking op de copingdimensie dan op de dimensie van ernst van de ziekte. Dit werd met name gevonden als het ging om sociale vergelijkingsinformatie en minder bij vergelijkingscontact.

De indicatoren van (laag) welzijn bleken ook de voorkeuren te beïnvloeden. Hoe onzekerder de patiënten zich voelden, hoe meer zij de voorkeur gaven aan opwaartse sociale vergelijkingsinformatie op de copingdimensie. Hoe meer controle de patiënten ervoeren, hoe meer zij de voorkeur gaven aan contact met opwaartse anderen op de coping dimensie.

Hoe reageren kankerpatiënten op sociale vergelijkingsinformatie op verschillende dimensies?

De huidige dissertatie onderzocht met name de effecten van een interventie gebaseerd op de sociale vergelijkingstheorie. Kankerpatiënten die op het punt stonden behandeld te worden met radiotherapie kregen sociale vergelijkingsinformatie aangeboden op één van drie verschillende dimensies door middel van cassettebandjes. Op deze bandjes waren een man en een vrouw te horen die over hun ervaringen met kanker en radiotherapie vertelden. Elk bandje legde echter de nadruk op een andere dimensie, namelijk procedures, emoties of coping. Op het *procedurele* bandje vertellen de man en de vrouw met name over hun ervaringen met diverse aspecten van de behandeling met radiotherapie: hoe de kanker was ontdekt, wat er gebeurde tijdens de behandelingen, welke bijwerkingen zij ervoeren en wat er gebeurde tijdens de controleafspraken. Op het *emotie* bandje bespraken de man en de vrouw met name hun emotionele reacties op diverse ervaringen met kanker en radiotherapie. Ze bespraken hier zowel positieve als negatieve emoties. Op het *coping* bandje bespraken de man en de vrouw met name de manier waarop zij waren omgegaan met bepaalde aspecten van de behandeling. Het doel van deze bandjes was om de patiënten voor te bereiden op de komende periode van behandeling. In *Hoofdstuk 3* werden de korte termijn effecten van deze bandjes onderzocht. Alle drie de bandjes hadden positieve effecten op het begrip over radiotherapie, herkenning en erkenning van emoties en self-efficacy. Het procedurele bandje bevorderde het begrip van radiotherapie het meest, terwijl het coping bandje de self-efficacy (zelf-effectiviteit) het meest bevorderde. De effecten van het procedurele en coping bandje waren echter sterk vergelijkbaar. Het emotie bandje bleek de verwachte positieve effecten niet te vertonen en had negatieve effecten op de stemming van de patiënten.

In *Hoofdstuk 4* werd de invloed van onzekerheid (een tekort aan informatie over kanker en radiotherapie) op de effecten van de bandjes nagegaan. De patiënten hadden met toenemende onzekerheid het meest aan het coping bandje en niet (zoals verwacht) aan het procedurele bandje. De patiënten die naar het emotie bandje of het procedurele bandje hadden geluisterd en de patiënten in de controlegroep rapporteerden een negatievere stemming met toenemende onzekerheid. De patiënten die naar het coping bandje hadden geluisterd, rapporteerden echter een vergelijkbare stemming met toenemende onzekerheid. Blijkbaar fungeert het coping bandje als een soort buffer tegen de negatieve effecten van onzekerheid. Met andere woorden, het coping bandje lijkt de negatieve effecten van onzekerheid op te heffen. Deze effecten blijven bestaan zelfs als er gecontroleerd wordt voor persoonlijkheidstrekken die geassocieerd worden met onzekerheid (zoals neuroticisme en sociale vergelijkingsoriëntatie). Dit geeft aan dat onzekerheid een unieke component verklaart van de effecten van verschillende soorten sociale vergelijkingsinformatie.

In *Hoofdstuk 5* werd de invloed nagegaan van verschillende persoonlijkheidstreken op de effecten van de bandjes, namelijk neuroticisme, extraversie en sociale vergelijkingsoriëntatie. Neuroticisme is een persoonlijkheidstrek die gekenmerkt wordt door de neiging om negatieve, verontrustende emoties te ervaren. Daarnaast wordt neuroticisme geassocieerd met de neiging om informatie dusdanig te verwerken dat het negatief uitvalt voor het zelfbeeld. Extraversie is een persoonlijkheidstrek die gekenmerkt wordt door pro-sociaal gedrag, optimisme, de neiging tot affiliatie en het opzoeken van arousal opwekkende stimuli. Sociale vergelijkingsoriëntatie is een persoonlijkheidstrek van individuen die sterk gericht zijn op sociale vergelijking, die gevoelig zijn voor hun eigen positie ten opzichte van anderen en die zeer geïnteresseerd zijn in informatie over de gedachten en gedragingen van anderen. Het bleek dat deze persoonlijkheidstreken alledrie de effecten van de verschillende bandjes beïnvloedden. Bij patiënten hoog in neuroticisme is de stemming na het luisteren naar het emotie bandje negatiever dan na de andere bandjes. Het emotiebandje lijkt dus een negatief effect op stemming te hebben. Voor degenen hoog in neuroticisme is het blijkbaar verontrustend om medepatiënten over hun emoties te horen praten. Daarnaast laten patiënten hoog in neuroticisme een minder negatieve stemming zien na het luisteren naar het coping bandje dan in de controlegroep. Met andere woorden, het coping bandje lijkt een positief effect op stemming te hebben vergeleken met de standaard informatie die patiënten ontvangen. Introverten en patiënten met een hoge sociale vergelijkingsoriëntatie rapporteerden een negatievere stemming na het beluisteren van het emotie bandje dan na het beluisteren van de andere bandjes.

In *Hoofdstuk 6* werd gekeken naar de lange termijn effecten van de verschillende bandjes. Twee weken na het einde van de behandeling met radiotherapie werden de effecten van de bandjes sterk beïnvloed door de mate van sociale vergelijkingsoriëntatie van de patiënten. Met toenemende sociale vergelijkingsoriëntatie rapporteerden de patiënten een hogere kwaliteit van leven na het beluisteren van het coping bandje, terwijl zij een lagere kwaliteit van leven rapporteerden na het beluisteren van het emotie bandje. Opvallend is dat de patiënten met een lage sociale vergelijkingsoriëntatie die het emotie bandje beluisterd hebben de hoogste kwaliteit van leven rapporteerden, zelfs hoger dan in de controlegroep. Drie maanden na het einde van de behandeling met radiotherapie werden vergelijkbare resultaten gevonden. Met toenemende sociale vergelijkingsoriëntatie rapporteren patiënten een hogere kwaliteit van leven na het beluisteren van het coping bandje. Bovendien rapporteren zij een hogere kwaliteit van leven dan de patiënten in de controlegroep. Het coping bandje lijkt dus een positief effect te hebben op kwaliteit van leven op de lange termijn voor mensen met een hoge sociale vergelijkingsoriëntatie.

Wat betekent deze dissertatie voor de praktijk?

Deze dissertatie heeft enkele belangrijke implicaties voor de praktijk. De behoefte van kankerpatiënten aan sociale vergelijkingsinformatie en sociale vergelijkingscontact is duidelijk aanwezig. Patiënten kunnen vergelijkingscontact zelf opzoeken in het ziekenhuis, maar zij kunnen ook deelnemen aan gespreks-groepen of cursussen voor kankerpatiënten. Echter, veel patiënten weten niet van het bestaan van deze groepen of ervaren een hoger drempel. Artsen spelen hier een grote rol. Zij kunnen de patiënten informeren over de mogelijkheden van lotgenotencontact.

Daarnaast geven de patiënten een grote behoefte aan sociale vergelijkingsinformatie aan. Het lijkt dus een goed idee om patiënten naast de normale informatie sociale vergelijkingsinformatie aan te bieden. De huidige dissertatie laat duidelijk zien dat het van groot belang is om aandacht te besteden aan de dimensie van de vergelijkingsinformatie. Het effect van sociale vergelijkingsinformatie hangt af van de dimensie, zowel op de korte als op de lange termijn. Daarnaast blijkt de persoonlijkheid van de patiënt een grote rol te spelen.

Bij het aanbieden van sociale vergelijkingsinformatie lijken dan ook twee opties voor de hand te liggen. Ten eerste kan men iedere patiënt individueel informatie aanbieden, zodat de informatie het best wordt toespitst op de persoonlijkheid en het individu van de patiënt. Daarnaast kan men iedere patiënt dezelfde informatie aanbieden. Uit de huidige dissertatie blijkt dat het aanbieden van procedurele sociale vergelijkingsinformatie belangrijke voordelen heeft. Het bevordert zowel het begrip van de radiotherapie als self-efficacy gevoelens. Patiënten weten beter wat ze kunnen verwachten van de behandeling met radiotherapie en hebben meer het gevoel met deze behandeling om te kunnen gaan.

Echter, het blijkt dat het aanbieden van sociale vergelijkingsinformatie op de copingdimensie de meest positieve gevolgen heeft. Ten eerste blijken patiënten zeer geïnteresseerd te zijn in informatie over medepatiënten die succesvol omgaan met hun ziekte en behandeling. Daarnaast blijkt die informatie ook belangrijke positieve gevolgen te hebben, zowel op de korte als op de lange termijn. Alhoewel patiënten met verschillende karaktertrekken verschillend reageren op de bandjes, blijkt de informatie op het coping bandje positieve gevolgen te hebben, ongeacht de persoonlijkheid van de patiënt. Daarnaast heeft het coping bandje ook positieve lange termijn effecten op de globale kwaliteit van leven van de patiënten.

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