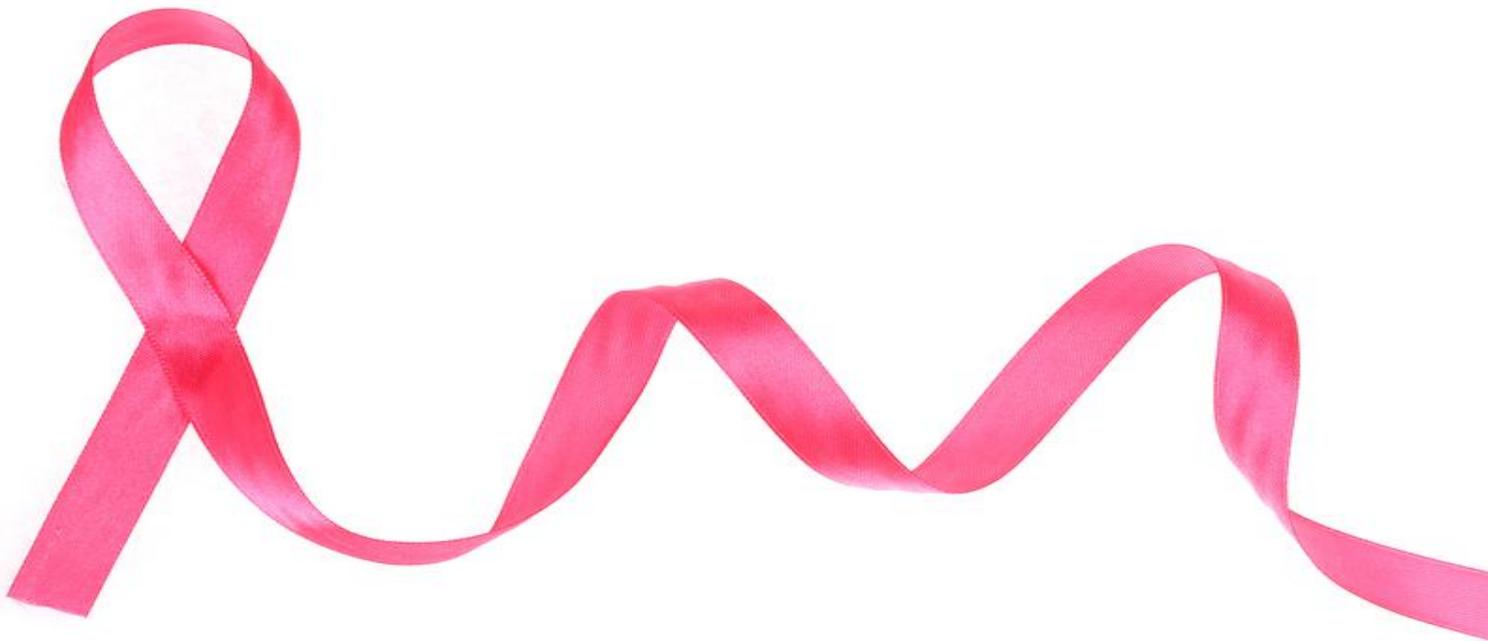


**The influence of physicians' communication style
on the nocebo response in analogue breast cancer patients**

An experimental study using health anxiety as a moderator



Lisette te Hennepe (4132106)
Radboud University Nijmegen
Communication- and Information Science
Supervisor: Wendy Jacobs
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Table of contents

Abstract	1
Introduction	3
Hypothesis 1.....	4
Hypothesis 2.....	6
Hypothesis 3.....	7
Method	8
Research design	8
Overview of research design	8
Materials	9
Subjects.....	9
Instruments.....	10
Procedure.....	12
Statistical analysis	13
Results	14
Manipulation check	14
Reported cognitive complaints and cognitive performance	14
Moderator: health anxiety.....	15
Mood and anxiety.....	15
Control variables.....	15
Conclusion and discussion	17
Limitations and future research	18
Practical implications	19
References	20
Appendix A	23
Appendix B	28

Abstract

Sixty participants acted as analogue breast cancer patients in an investigation to the nocebo response, communication styles and health anxiety. The results showed that informing patients about the possible cognitive side effects of chemotherapy does actually increase the reported side effects. Earlier research found that a physician's affective communication style can indirectly improve health. Participants were shown either an videotaped consultation with an affective communication style or an non-affective communication style. It was hypothesized that an affective communication style can reduce the cognitive complaints and diminished cognitive performance inflicted by being informed about the side effects of chemotherapy, also known as the nocebo response. This hypothesis was rejected. Furthermore, it was found that health anxiety did not function as a moderator.

The findings indicated that physicians should be careful while discussing the cognitive side effects of chemotherapy, as provided information about cognitive impairments did increase the cognitive complaints. Additionally, more research should be undertaken to the impact of communication styles and health anxiety on the nocebo response.

Keywords: Cognitive side effects, Breast Cancer, Patient-physician relationship, Communication Styles, Health Anxiety, Nocebo response

THE INFLUENCE OF PHYSICIANS' COMMUNICATION STYLE

'I am sorry to tell you that you have breast cancer.'

With these words, the lives of many patients are turned upside down. One in eight women is diagnosed with breast cancer and it is considered the most commonly found cancer in women (National Breast Cancer Foundation, 2014). Breast cancer is the second leading cause of death among women (National Breast Cancer Foundation, 2014). Men are relatively unaffected, but breast cancer is also found in men (National Breast Cancer Foundation, 2014). Patients are not only confronted with a diagnosis, but also with their own mortality and with worries about their quality of life. Often they may feel that the control over their lives has been impaired (Arora, 2003).

Chemotherapy has proven itself to be effective in treating breast cancer. It is often used to target malignant cells and causing them to shrink or disappear (National Breast Cancer Foundation, 2014). However, several short and long term side effects can occur, as normal cells can also be affected by the treatment. Those side effects can have a tremendous impact on the patient's quality of life. Studies concerned with side effects of chemotherapy showed that reduction of red blood cells, hair loss, changes in intestinal tract and in nerve cells are regularly found (National Breast Cancer Foundation, 2014). Another reported side effect of chemotherapy in breast cancer patients happens to be memory and concentration problems (Falletti, Sanfilippo, Maruff, Weih, & Philips, 2005; Schagen, Das & Vermeulen, 2012). The number of patients suffering from cognitive impairments can range from forty to fifty percent (Ahles & Saykin, 2002) and these differences may be due to the fact that many studies do not use the same criteria for cognitive impairment (Vardy, Rourke, & Tannock, 2007). The effect has been found to be stronger in patients with high-dose chemotherapy than with standard-dose therapy (Boogerd, et al., 1998).

Although the underlying mechanisms for the cognitive impairment caused by chemotherapy are still unclear, some suggestions have been made. The cognitive side effects may be caused by biological mechanisms, such as a lowered efficiency of efflux pumps, inadequate DNA-repair mechanisms or changes in the immune system (Ahles & Saykin, 2007), but could also be explained by psychological mechanisms, such as the nocebo response and health anxiety (Hadjistavropoulos, et al., 1997; Hadjistavropoulos, et al., 2000; Schagen et al., 2012). This study is focused on these psychological mechanisms.

Informed consent and chemotherapy

Making an informed choice is strongly related to informed consent. Informed consent means that the patient needs to know all the aspects that may influence their choice for a particular treatment (Katz, 2002), such as the efficiency of the treatment and possible short-term or long-term side effects. Informed consent came into existence as patients are considered to only be able to make a decision about their treatment if they have all the information available (Katz, 2002). The information provided by the physician can greatly influence the patient's final decision. As informed consent is an important basis for the patient-physician relationship, patients are informed about the possible side effects of chemotherapy, including possible cognitive problems. However, informing patients about side effects can actually increase the side effects patients experience (Verheul, Sanders & Bensing, 2010; Schagen et al., 2012; Wells & Kaptchuk, 2012; Bingel, 2014). When patients were informed about the cognitive side effects of chemotherapy, they reported to have more cognitive complaints than those uninformed (Schagen et al., 2012). The informed patients also scored lower on a cognitive task than the uninformed.

This effect of reporting more negative (or positive) health outcomes after being informed about them, is also called the nocebo response. The definition of Häuser, Hansen & Enck (2012) is that "a nocebo effect is the induction of a symptom perceived as negative by sham treatment and/or by the suggestion of negative expectations". The expectations towards experiencing side effects seemed to be of considerable influence. This was also reported in an earlier study that showed that side effects may be induced by knowing that the side effects can occur, prior experience with side effects and contextual factors (Barsky, Saintfort, Rogers, & Borus, 2002). In summary, and by a way of conclusion, communication and expectations about side effects can inflict the nocebo response in patients. Yet, the literature does not fully consider the extent to which cognitive problems are induced by the provided information. Moreover, earlier research mainly focused on providing written information about side effects, instead of a physician-patient consultation. This has led to the first hypothesis:

Hypothesis 1: Informing patients about cognitive impairments caused by chemotherapy induces a nocebo response, thus more cognitive complaints

Communication

Physicians play an important role in the lives of their patients. They are involved in many serious decisions and are the ones bringing the bad news. Patients reported that the most positive way to hear that they have cancer was by having a physician that was caring, compassionate and seemed to be telling the truth (Kim & Alvi, 1999). The way of communicating the bad news did not only predict the immediate well-being of the patient, but also predicted the health outcomes weeks and months later. It was found that especially affective communication can lead to a reduction in the anxiety and worries the patient is experiencing (Sep, Van Osch, Van Vliet, Smets, & Bensing, 2014).

In affective communication, the physician uses a patient-centred communication style (Van Dulmen & Bensing, 2002; Epstein & Street, 2011). The patient is invited to be involved in decisions (Epstein & Street, 2011) and the physician is showing empathy and providing patients with enough space and time to voice their thoughts (Van Dulmen & Bensing, 2002). Feeling recognized by their doctor, may have led patients to report feelings of understanding, trust and support. These feelings motivated patients to take better care of themselves and make them more likely to stick to their medication, making patient-centred communication an indirect way to improve health (Street, Makoul, Arora, & Epstein, 2009). The patient-physician communication and the patient's expectations towards the treatment can both positively and negatively influence the patient's health (Häuser, et al., 2012).

Similar results can be found outside the medical domain. Managers who are truthful and open to their employees, show tolerance, self-expression and respect are using a so-called assertive management style (Dasgupta, Suar, & Singh, 2013). This assertive style is comparable to the affective style described above and is also providing comparable results. Employees working for managers with an assertive style have higher communication satisfaction and organization-based self-esteem, which leads them to perform better in their job. Students can also be affected by the communication styles of their teachers (Noels, Clément, & Pelletier, 1999). When teachers are considered to be supportive and providing useful feedback, students become more intrinsically motivated. This intrinsic motivation is associated with better learning performance, reduction of anxiety and higher self-evaluations about their competences. Again, the link between the communication style and performance, self-evaluations and anxiety reduction is not direct but indirect.

THE INFLUENCE OF PHYSICIANS' COMMUNICATION STYLE

Affective communication may not only improve health, but also improve the informed choice people wish to make. When people are emotionally aroused, their attention is mainly directed to the source of arousal instead of on any other details (Sep et al., 2014). This effect of *attentional narrowing* is causing patients to mainly focus on diagnosis-related information and thus making recall for medical information poor and inaccurate, especially in anxious patients (Kessels, 2003). Attentional narrowing may be an explanation for why patients seemed to forget 40-80% of what they were told (Sep et al., 2014). However, by using affective communication, the patients can become less stressed and are also reported to have a better information recall (Sep et al., 2014). Affective communication can thus not only improve the physical health but also ensure that patients can make a more informed choice. Furthermore, physical health cannot only be improved by giving out medication and conducting surgery, but also by changes in behaviour and psychological effects such as the placebo effect (Street et al., 2009). Using an affective communication style may thus have an influence on both the mental and physical health. However, the literature does not investigate the relationship between the communication style and the earlier-mentioned nocebo effect. When crossing the literature on informing patients about side effects and thereby inducing more side effects (Barsky et al., 2002; Verheul, et al., 2010; Schagen et al., 2012; Wells & Kaptchuk, 2012; Bingel, 2014) and the affective communication style, it can be hypothesized that using an affective communication style may diminish the induced side effects. This may result in less cognitive impairments in breast cancer patients being treated with chemotherapy.

Hypothesis 2: An affective communication style reduces the nocebo response, thus the cognitive complaints and diminished cognitive performance breast cancer patients experience after been informed about cognitive side effects of chemotherapy

Vulnerable patients

Being diagnosed with breast cancer is often quite wearisome and horrendous for patients. Depression and/or anxiety are reported by nearly half of the patients in the first year after the diagnosis (Burgess, et al., 2005). All patients are different and have different ways of coping with the diagnosis. Yet some patients are more vulnerable for having negative thoughts about their health and the eventual outcome of the treatment. These

THE INFLUENCE OF PHYSICIANS' COMMUNICATION STYLE

patients are more anxious than others, causing them to respond differently to physical sensations and to adapt different coping strategies (Hadjistavropoulos, et al., 2000). Patients high on anxiety worry more about health and injury and misinterpret physical sensations for disastrous side effects, while they are actually normal physical occurrences. This is especially true for patients who already have a history of anxiety and depression (Wells & Kaptchuk, 2012). Patients high on anxiety are more afraid for illnesses and are more focused on gaining information about health (Hadjistavropoulos, et al., 1997), an effect called health anxiety. Earlier research has not yet investigated the role of health anxiety on the cognitive impairments caused by provided information. It is also unknown whether there is any relationship between the physician's communication style and health anxiety. However, as patients high on health anxiety worry more about side effects, the provided information about cognitive impairments after chemotherapy may affect those patients more strongly than those low on health anxiety.

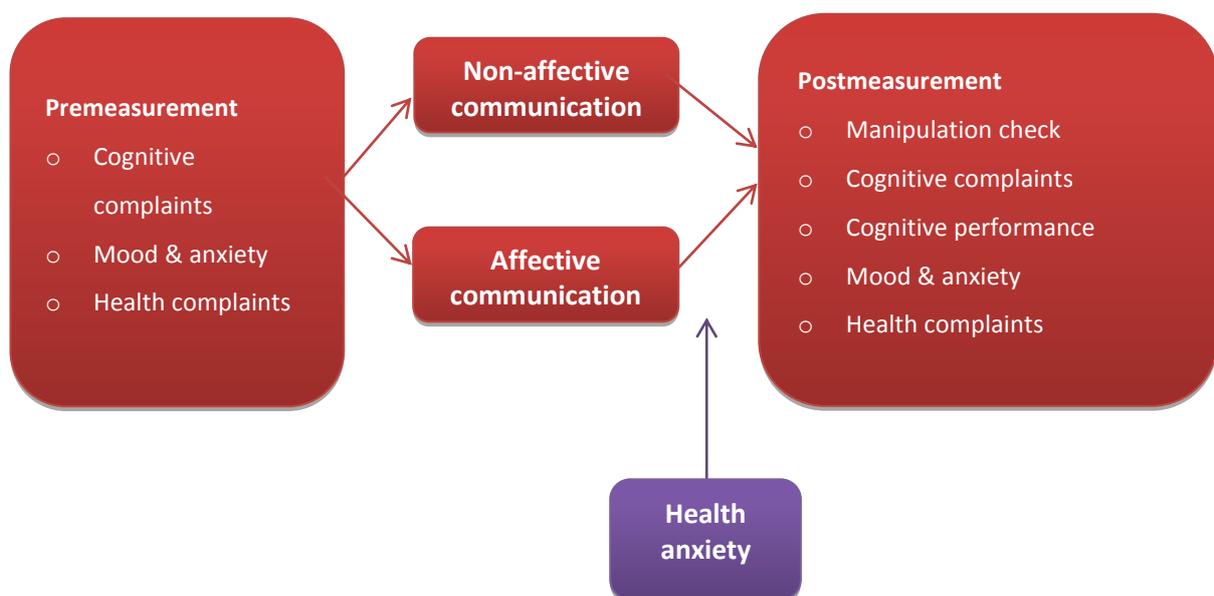
Hypothesis 3: The provided information about cognitive side effects of chemotherapy induces a higher nocebo response (thus cognitive complaints and diminished cognitive performance) in breast cancer patients high on health anxiety than in those low on health anxiety

Method

Research design

The experiment used a (2 x 2) between-subject factorial design. The physician's communication style was the independent variable (affective / non-affective style) and included showing randomly assigned participants a videotaped consultation. High or low health anxiety was used as a moderator. The dependent variables were reported cognitive complaints, reported health problems and cognitive performance. Reported cognitive complaints and reported health problems were measured before and after having seen the videotaped consultation, whereas cognitive performance was only measured during the post measurements. The results were gathered through an online questionnaire. As involving real breast cancer patients created an ethical and time-related dilemma, healthy participants were asked to act as analogue patients. Earlier research has shown that healthy participants can strongly identify themselves with a patient in a video (Van Vliet, Van der Wall, Spreeuwenberg, Verheul, & Bensing, 2012; Sep et al., 2014). A within-subjects design was chosen for the pre and post measurement of the reported cognitive complaints and health problems. A between-subjects design was used for checking for differences among the conditions.

Overview of research design



Materials

Two scripted videotaped consultations were used to distinguish between the affective and non-affective communication style. The scripts were not pretested as they were based on earlier research using videotaped consultations (Sep et al., 2014; Verheul et al., 2010). The script can be found in Appendix A. A student from the Medicine Department and a researcher from the Faculty of Arts acted as the physician and the patient. At the beginning of each video, the patient introduced herself to facilitate the identification process with the video patient. In the second part, the physician notified the patient about the possible cognitive side effects of chemotherapy. The videos were the same in both conditions, except for some added statements and behaviours of the physician to show affection (see Table 1).

Table 1. Physician's non-affective and affective communication: the differences

Non-affective communication	Affective communication
<ul style="list-style-type: none"> ○ No added statements to show empathy and affection. 	<ul style="list-style-type: none"> ○ Added statements to show empathy and affection. The patient is frequently told that the physician is there for her and will help her.
<ul style="list-style-type: none"> ○ Making little eye-contact 	<ul style="list-style-type: none"> ○ Making frequent eye-contact
<ul style="list-style-type: none"> ○ Closed posture and attitude 	<ul style="list-style-type: none"> ○ Open posture and attitude

Subjects

After having deleted the incomplete questionnaires (n = 8), a total of sixty healthy participants took part in the study. The non-affective communication condition consisted out of thirty-three participants whereas the affective communication condition had twenty-seven participants. The participants asked were all female, as breast cancer is rarely affecting any men (National Breast Cancer Foundation, 2014). None of the participants was diagnosed with breast cancer, as involving breast cancer patients had both an ethical and time-related dilemma. One participant, however, reported to have had cancer in the past. All other participants, except for two of them, reported to be acquainted or befriended with someone who has had cancer. The average age of the women was 36.9 (SD = 14.98, range

THE INFLUENCE OF PHYSICIANS' COMMUNICATION STYLE

19 – 64). Almost half of them (48.3%) had completed a university degree, whereas the other half had either done HBO (31.7%), MBO (10.0%), MAVO (5.0%), HAVO (3.3%) or LBO (1.7%). Participants were either employed (55.0%), unemployed (36.7%) or temporarily unemployed (8.3%). Age ($t(58) = 1.14, p > .05$), education level ($\chi^2(5) = 2.34, p > .05$) and employment ($\chi^2(2) = 3.14, p = .208$) were found to be distributed equally among the conditions. An independent samples t-test was used to check for differences in the trait empathy of the participants among the conditions. No significant difference was found ($t(58) = 1.03, p > .05$).

Instruments

An online questionnaire was used to check for the affective communication of the physician, reported cognitive complaints and cognitive performance, health anxiety, mood and anxiety, reported health problems, identification with the patient, relationship between the physician and the patient, authenticity of the videotaped consultation and the participants empathy trait.

Manipulation check

The physician's affection was measured using seven items that were related to the statements and behaviour of the physician, such as 'the physician gave the patient enough attention' (1 = strongly disagree to 5 = strongly agree). The items used a five-point Likert scale and were based on the QUOTE-com questionnaire (Van der Eijk, et al., 2001). A full overview of the items can be found in Appendix B. The reliability of the items was excellent ($\alpha = .93$). A higher score indicated higher levels of affection.

Reported cognitive complaints and cognitive performance

Cognitive problems were measured by two five-point Likert scale items (1 = not at all to 2 = a lot). The participants were asked for the occurrence of memory problems and concentration problems in the last week including today. The items were derived from the Physical Complaints Questionnaire (Van Hemert, 2003). The reliability was low before ($\alpha = .38$) and after ($\alpha = .57$) the video, causing the items to be treated separately. A higher score indicated more cognitive complaints.

THE INFLUENCE OF PHYSICIANS' COMMUNICATION STYLE

A word learning task was used to measure cognitive performance (Van den Burg, Saan, & Deelman, 1985). Participants were asked to remember fifteen words in three learning trials (immediate recall score; maximum score of 45). Close to the end of the experiment, they were asked to do a delayed recall (maximum score of 15) and recognition task (maximum score of 15). A higher score indicated better cognitive performance.

Health anxiety

Fourteen items were used for measuring health anxiety (Pilowsky, 1967), using five-point Likert scales ranging from 1 = strongly disagree to 5 = strongly agree. The questions were related to the participant's fear to get health problems, such as 'Do you often worry about the possibility of having a serious illness?'. The reliability of the items was good ($\alpha = .79$). Higher scores indicated being higher on health anxiety.

Mood and anxiety

The mood before and after the video was measured with 'I am feeling well / strong / excited / miserable / annoyed' (Watson, Clark, & Tellegen, 1988) followed by a 5-points scale (1 = strongly disagree to 5 = strongly agree). The reliability for mood before ($\alpha = .85$) and after ($\alpha = .80$) the video was good. Higher scores indicated a better mood.

Anxiety before the video was measured with 'I am feeling tense / worried / upset' using the same Likert scales as for mood. The reliability was acceptable ($\alpha = .69$). The items of anxiety after the video included 'I am feeling tense / worried / upset / content / calm / relaxed' (Marteau & Bekker, 1992). The reliability for those was found to be good ($\alpha = .81$). Higher scores indicated less anxiety.

Control variable: reported health problems

Reported health problems were measured by asking for the occurrence of the following problems in the last week including today: fatigue / dizziness / insomnia / soreness of muscles / nausea / stomach ache / headache / pain in the arm or legs (Van Hemert, 2003). Five-point Likert scale was used (1 = not at all to 5 = a lot). The reliability analysis showed a good reliability after the video ($\alpha = .79$), but not before ($\alpha = .59$). Therefore, all the items were treated separately. Higher scores indicated more health problems.

THE INFLUENCE OF PHYSICIANS' COMMUNICATION STYLE

Control variable: identification with the patient

For the identification with the analogue patient, four items like 'I find it hard to place myself in the shoes of the patient' were provided. Five-point Likert scales were used (1 = strongly disagree to 5 = strongly agree). The reliability for identification with the patient was good ($\alpha = .70$). Higher scores indicated higher identification with the analogue patient.

Control variable: relationship between physician and patient

The relationship of the physician and the patient was measured with three items, for example 'the physician and patient have a good relationship'. Five-point Likert scales were anchored by 1 = strongly disagree to 5 = strongly agree. The reliability for relationship of physician and patient was excellent ($\alpha = .94$). Higher scores indicated a better relationship.

Control variable: authenticity of the videotaped consultation

The authenticity of the video consisted out of three items, for example 'it seemed like a real conversation'. Five-point Likert scales were anchored by 1 = strongly disagree to 5 = strongly agree. The reliability for authenticity of the video was good ($\alpha = .87$). Higher scores indicated a video closer to reality.

Control variable: participants' empathy

Participants' empathy (trait) was measured with eight items, using five-point Likert scales anchored by 1 = never – 5 = always (Spreng, McKinnon, Mar, & Levine, 2009). One of the items was 'when someone else is happy, I also tend to be happy'. The reliability for the participants' empathy ($\alpha = .75$) was good. Higher scores indicated higher levels of participants' empathy.

Procedure

An online questionnaire was created using Qualtrics and administered for two weeks in April 2015. Participants were either friends and acquaintances of the ten experimenters or found through word-of-mouth. As they needed to act like analogue patients, the participants were requested to project themselves into the patient in the video. The beginning of the questionnaire was mainly focused on mood, anxiety, reported cognitive complaints and reported health problems. After these questions, the participants were

THE INFLUENCE OF PHYSICIANS' COMMUNICATION STYLE

shown one of the two versions of the video (the duration was approximately five minutes). The second part of the questionnaire again included mood, anxiety, reported cognitive complaints and reported health problems, but also checked for cognitive performance, health anxiety, the affective communication of the physician, the empathy trait of the participant, the identification with the patient and the authenticity of the videotaped consultation. Participants were asked for demographics (age, education level and employment) and whether they had any experience with cancer themselves or in their direct environment at the very end of the questionnaire. The experiment took approximately 20-30 minutes.

Statistical analysis

Data were analysed using IBM SPSS Statistics 22. An independent samples t-test, paired samples t-test and two-way ANOVA were used.

Results

Manipulation check

An independent samples t-test was used to see whether the difference in the physician's shown affection in the videos worked. A significant difference was found in the physician's affection among the two conditions ($t(58) = 8.40, p < .001$). The physician was considered to be showing more affection in the affective communication condition ($M = 3.52, SD = .48$) than in the non-affective communication condition ($M = 2.14, SD = .73$). Hence, the manipulation was successful.

Reported cognitive complaints and cognitive performance

To test for differences in memory problems and concentration problems between the two conditions, an independent samples t-test was performed. No significant differences were found between the two conditions for memory problems before ($t(58) = .79, p = .432$) and after ($t(58) = 1.38, p = .173$) the video. There was also no significant difference between the two conditions for the concentration problems before ($t(58) = .32, p = .754$) or after the video ($t(58) = .21, p = .833$).

A paired-samples t-test was used to check for any differences in cognitive complaints before and after the video (among all participants). A significant difference was found for memory problems ($t(59) = 2.52, p = .014$) and concentration problems ($t(59) = 3.43, p = .001$). Participants report less memory problems ($M = 1.40, SD = .59$) and concentration problems ($M = 1.67, SD = .82$) before watching the video. After the video the reported memory problems ($M = 1.62, SD = .69$) and the reported concentration problems ($M = 1.95, SD = .79$) were higher.

An independent samples t-test was used to test for any differences in cognitive performance among the conditions. No significant differences were found for right answers ($t(58) = .78, p = .438$) or wrong answers ($t(58) = .12, p = .907$) on the learning task. There were also no significant differences for right ($t(58) = .28, p = .782$) and wrong answers ($t(58) = .27, p = .790$) during the recall. This was also true for the right ($t(58) = .01, p = .991$) and wrong answers ($t(58) = .02, p = .988$) on the recognition task.

THE INFLUENCE OF PHYSICIANS' COMMUNICATION STYLE

Moderator: Health anxiety

A two-way analysis of variance was performed to check for any effects of health anxiety as a moderator. No significant differences were found for memory problems when using the communication style (affective communication and non-affective communication) and health anxiety (high and low) as factors ($F(1, 56) = 2.47, p = .122$). There was also no significant effect for health anxiety and memory problems ($F(1, 56) < 1$). No significant interaction effect was found for the communication style and health anxiety ($F(1, 56) = 1.07, p = .305$).

When using the communication style and health anxiety as factors, no significant effect for the videos were found for the reported concentration problems ($F(1, 56) < 1$). No significant effect was found for the health anxiety and reported concentration problems ($F(1, 56) < 1$). There was no significant interaction effect between the videotaped consultation and health anxiety ($F(1, 56) < 1$).

Mood and anxiety

To test for differences in anxiety and mood among the conditions, an independent samples t-test was used. There was no significant difference between the groups for the anxiety before ($t(58) = .17, p = .869$) or the anxiety after ($t(58) = .07, p = .947$) the video. There was also no significant difference in mood before ($t(58) = .82, p = .417$) or mood after ($t(58) = 1.12, p = .268$) the videos.

Control variable: reported health problems

A paired-samples t-test showed the difference between the reported health problems before and after the video. No significant difference was found for fatigue ($t(59) = 0.90, p = .374$), dizziness ($t(59) = 1.07, p = .289$), insomnia ($t(59) = .00, p = 1.00$), muscle pain ($t(59) = 0.89, p = .376$), nausea ($t(59) = 1.47, p = .146$), stomach ache ($t(59) = .00, p = 1.00$), headache ($t(59) = 0.97, p = .335$) and pain in legs or arms ($t(59) = 0.24, p = .811$).

Control variable: identification with the patient

An independent samples t-test was used to check whether there were any differences for identification with the patient in the video among the conditions. A significant difference was found ($t(58) = 2.48, p = .016$). The participants in the non-affective communication

THE INFLUENCE OF PHYSICIANS' COMMUNICATION STYLE

condition ($M = 3.17, SD = .66$) identified themselves more with the patient in the video than those in the affective communication condition ($M = 2.77, SD = .56$).

Control variable: relationship between physician and patient

An independent samples t-test was used to test for differences in the perceived relationship between the physician and patient. A significant difference was found among the conditions ($t(58) = 8.23, p < .001$). The participants in the affective communication condition ($M = 3.30, SD = .53$) perceived the relationship to be better than the participants in the non-affective communication condition did ($M = 1.83, SD = .80$).

Control variable: authenticity of the video

Overall, the participants considered the videos neither close to reality nor far from reality ($M = 2.63, SD = .91$). An independent samples t-test was used to see whether the two videos were considered to be closer to reality in one of the conditions. A significant difference was found ($t(58) = 4.27, p < .001$). Participants in the affective communication condition ($M = 3.12, SD = .74$) considered the videos more realistic than participants in the non-affective communication condition ($M = 2.23, SD = .85$).

Conclusion and discussion

The purpose of this study was to provide more insight in the domain of given information about side effects, communication styles and health anxiety.

Earlier research indicated that patients informed about possible side effects reported to have experienced more side effects than those uninformed, the so-called nocebo response (Barsky et al., 2002; Verheul, et al., 2010; Schagen et al., 2012; Wells & Kaptchuk, 2012; Bingel, 2014). As chemotherapy can induce cognitive side effects in breast cancer patients (Falleti, et al., 2012), breast cancer patients are informed about these side effects. This has led to the hypothesis that informing patients about cognitive impairments caused by chemotherapy induces a nocebo response, thus more cognitive complaints. In this study, analogue patients were asked to watch a videotaped consultation about the cognitive side effects of chemotherapy. The results indicated that the hypothesis was supported. Informing analogue patients about side effects does indeed induce cognitive complaints in patients, as was found in earlier research.

These results can be connected to research considering physicians' communication styles. Showing empathy and affection as a physician has been linked to reduced anxiety and worries in patients, indirectly improving their health (Street et al., 2009; Sep et al., 2014). Using an affective communication style has also proved itself to be useful outside the medical domain, also showing better performance and less anxiety (Noels et al., 1999; Dasgupta et al., 2013). Therefore, it can be hypothesized that a physician's affective communication style reduces the nocebo response inflicted by the provided information. This hypothesis was rejected. In contrast with the literature, the study did not find a relationship between the communication style and cognitive impairments. No differences for reported cognitive complaints and cognitive performance were found among the conditions. However, the findings indicated the patient-physician's relationship was perceived to be better in the affective communication condition. This is in line with previous research indicating that patients prefer affective communication in their physician (Kim & Alvi, 1999). Consequently, it may be that the communication style cannot reverse the side effects induced by provided information about side effects, although other explanations can be offered. In the literature, the link between communication style and better performance

THE INFLUENCE OF PHYSICIANS' COMMUNICATION STYLE

was perceived to be indirect. An affective communication style leads to less anxiety and reduced worries (Street et al., 2009; Sep et al., 2014), which again leads to patients taking better care of themselves (Street et al., 2009). As this study only examined a videotaped consultation, there may have been too little time to let this indirect link between communication style and enhanced performance take place. The physician-patient relationship was not yet well-established and the anxiety of the participants was found to be quite stable before and after the videotaped consultation. There were no increased feelings of anxiety that could be reduced by the physician's affective communication. Additionally, it was found that the participants' mood was also steady before and after the videos. As the analogue patients indicated that their identification with the patient was neither high nor low and the videos were neither close nor far from reality, using analogue patients may have influenced the results. The video may have been too unconvincing to truly regard the participants as analogue patients.

As patients high on health anxiety are more worried about their health and more focused on side effects (Hadjistavropoulos et al., 1997; Hadjistavropoulos et al., 2000; Wells & Kaptchuk, 2012), it was hypothesized that the provided information about cognitive side effects of chemotherapy induces a stronger nocebo response in patients high on health anxiety than in those low on health anxiety. The findings of this study did not indicate likewise and as a result, the hypothesis was rejected. Participants high on health anxiety did not report more memory or concentration problems than those low on health anxiety. Consequently, health anxiety did not function as a moderator. This finding could be explained by one of the limitations of the study. Health anxiety was measured after the participants had seen the videotaped consultations, thus after the manipulation. The communication style may have influenced the participants' scores on health anxiety.

Limitations and future research

The questionnaire could have been improved for two variables. Health anxiety should have been measured before the videotaped consultation. As stated before, the manipulation can now have affected the scores on health anxiety. It would also have been wise to measure cognitive performance before and after the video. The results showed that the cognitive complaints were influenced by the provided information about side effects. It can

be hypothesized that the same result could have been found for cognitive performance. If it had been measured before and after the video, this hypothesis could have been checked.

Earlier research showed that participants can act as analogue patients during an experiment (Sep et al., 2014; Verheul et al., 2010). However, the findings in this study indicated that the identification with the patient was neither high nor low. Unexpectedly, the participants in the non-affective communication condition identified themselves more with the patient in the video. An explanation could be that participants felt more sorry for the patient being treated without any affection. The quite average identification may have influenced the participants' answers. Their responses could have been closer to real patients' their responses when the identification would have been higher.

The neither high nor low identification with the patient may be due to the authenticity of the video. The participants considered the videos neither close nor far from reality. The volume of the video may have played its role as it was reported to be notably low. Participants may not have been able to clearly understand the conversation. In further research with analogue patients, the authenticity of the video should receive full attention. A suggestion for improvement would be either mimicking or videotaping a real consultation.

Moreover, as the questionnaire was distributed via the internet, the experimenters were unable to control the conditions in which the participants filled in the questionnaire. It was impossible to check for distractions or turn up the volume.

In the long run, however, it would be best to invite breast cancer patients to participant in the research. The effects can be tested in real life, instead of inside of our participants' empathic minds. It could also provide more insights in the long-term effects of physician's communication styles and health anxiety.

Practical implications

As provided information about cognitive complaints after chemotherapy did increase the reported cognitive complaints, physicians should be careful while discussing the cognitive side effects of chemotherapy. Furthermore, physicians may consider to adapt an empathic communication style as this is perceived to be related to a good patient and physician relationship.

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Appendix A

Patient's introduction

Patiënt: Mijn naam is Yvonne de Groot, ik ben 33 jaar en ik woon in Utrecht. Bij mij is een aantal maanden geleden borstkanker geconstateerd. Ik ben daar natuurlijk heel erg van geschrokken, ik heb normaal eigenlijk nooit iets dus het overkomt je gewoon. Ik heb inmiddels een borst besparende operatie gehad waarbij de tumor is verwijderd. Maar de arts heeft mij geadviseerd wel chemotherapie te ondergaan om er zeker van te zijn dat alle kankercellen weg zijn. Ik weet eigenlijk niet zo heel goed wat ik kan verwachten. Ik heb er wel al een gesprek over gehad een tijdje geleden maar ik heb nu weer een gesprek omdat ik graag iets meer wil weten over de bijwerkingen.

Request for being an analogue patient

/ U ziet hierna het gesprek wat Yvonne met haar arts had een week voor haar eerste chemokuur. Probeert u zich in te leven in Yvonne en zich in haar situatie te verplaatsten. U krijgt nu het filmpje te zien. Daarna krijgt u een aantal vragenlijsten en opdrachten. /

Affective communication condition

Het gehele gesprek: affectief = oogcontact, vriendelijke toon, houding

A: Goedemiddag

P: Hallo

A: Gaat u zitten; ik ben dr. Van de Pol. Ik heb gehoord van mijn collega dat u wat vragen had over de chemotherapie.

P: Klopt ja, ik heb gesproken met dokter Jaspers.

A: En u had vragen over de chemo komende week?

THE INFLUENCE OF PHYSICIANS' COMMUNICATION STYLE

P: Ja ik vind het allemaal heel erg spannend en ik weet eigenlijk niet zo heel goed wat ik kan verwachten.

A: Ja, maar hoe gaat het met u?

P: Ja opzich wel goed naar omstandigheden, ik sport nog steeds veel, op het werk gaat het ook wel goed. Ik heb ook wel goede afspraken gemaakt met de baas als het, naja als het niet zo goed gaat dan mag ik gewoon thuis blijven.

A: Oke, en wat voor werk doet u?

P: Ik ben secretaresse.

A: En u sport, wat voor sport?

P: Ik wandel veel en ik loop hard, één keer in de week.

A: Ja, nou ja dat kunt u gewoon blijven doen. Maar over de bijwerkingen, u had vragen hoorde ik?

P: Ja, ik heb de patiënten folder doorgenomen en ik zag daar van alles in staan over bijwerkingen en ik was eigenlijk wel heel erg benieuwd welke dat zijn.

A: En van welke bijwerking wilde u precies wat weten?

P: Ik las dat mensen na chemotherapie geheugenproblemen kunnen krijgen dus daar wilde ik nog wel iets meer over weten.

A: Ja nee, dat klopt het kan voorkomen dat mensen cognitieve problemen krijgen en dat wil dus zeggen in het geheugen, concentratie en snelheid van informatieverwerking.

P: Dus cognitief heeft te maken met het geheugen?

A: Ja dat klopt.

P: Dus ik kan last krijgen van geheugen problemen en concentratieproblemen?

A: Ja.

P: En waar moet ik dan precies aan denken, kunt u daar een voorbeeld van geven?

A: Ja, dat u niet meer weet wanneer u een verjaardag heeft, een afspraak heeft of niet meer weet waar u uw autosleutels heeft neergelegd, dat soort dingen moet u aan denken.

THE INFLUENCE OF PHYSICIANS' COMMUNICATION STYLE

P: En kan ik daar zelf iets aan doen?

A: Ja u kunt ordenen, dus alles een beetje overzicht van houden, dus wanneer er een verjaardag is en wanneer er een afspraak is en ook elke keer de autosleutels op dezelfde plek neerleggen. En daarnaast kunt u uw omgeving op de hoogte stellen van dit probleem. Want dan weten zij er ook vanaf.

P: Oke dank u wel.

A: Was dit het wat u betreft?

P: Ja ik weet wel genoeg denk ik, ik vind het wel heel erg spannend maar dat is denk ik maar gewoon afwachten.

A: Ja het is inderdaad gewoon afwachten, maar als het aan de orde komt kan ik u altijd nog doorverwijzen naar de neuropsycholoog.

P: Oke, dat is fijn om te weten.

A: Nou sterkte de komende tijd en tot ziens.

P: Dank u wel.

A: Dag.

P: Doeg.

Non-affective communication condition

Het gehele gesprek: weinig oogcontact, zakelijke toon en houding

A: Goedemiddag

P: Hallo

THE INFLUENCE OF PHYSICIANS' COMMUNICATION STYLE

A: Gaat u zitten; ik ben dr. Van de Pol en ik heb gehoord van mijn collega dat u wat vragen had over de chemotherapie.

P: Klopt ja ik heb gesproken met dokter Jaspers.

A: En u had vragen over de chemo voor komende week?

P: Ja ik vind het allemaal heel erg spannend en ik weet eigenlijk niet zo heel goed wat ik kan verwachten.

A: Ja, maar hoe gaat het met u?

P: Ja opzich wel goed naar omstandigheden, ik sport nog steeds veel, op het werk gaat het ook wel goed. Ik heb ook wel goede afspraken gemaakt met de baas als het, naja als het niet zo goed gaat dan mag ik gewoon thuis blijven.

A: Oke, en wat voor werk doet u?

P: Ik ben secretaresse.

A: En u sport, wat voor sport?

P: Ik wandel veel en ik loop hard, één keer in de week.

A: Ja, nou ja dat kunt u gewoon blijven doen. Maar over de bijwerkingen, u had vragen hoorde ik?

P: Ja, ik heb de patiënten folder doorgenomen en ik zag daar van alles in staan over bijwerkingen en ik was eigenlijk wel heel erg benieuwd welke dat zijn.

A: En over welke bijwerking wilt u precies informatie?

P: Nou ik las dat mensen na chemotherapie niet altijd een goed geheugen behouden dus ik wilde daar wel graag iets meer over weten.

A: Ja, dat klopt patiënten die chemotherapie krijgen die krijgen cognitieve veranderingen. Dat zijn veranderingen in geheugen, veranderingen in je concentratie, van dat soort dingen.

P: Dus cognitief heeft te maken met het denkvermogen?

A: Ja.

THE INFLUENCE OF PHYSICIANS' COMMUNICATION STYLE

P: Dus ik kan na de chemotherapie misschien dingen niet meer zo goed onthouden en met niet meer zo goed concentreren?

A: Ja, dat klopt.

P: En waar moet ik dan precies aan denken, kunt u misschien een voorbeeld geven?

A: Dat u niet goed kunt onthouden waar u uw autosleutels bijvoorbeeld hebt neergelegd, of dat u niet goed meer weet wanneer een verjaardag of afspraak was. Dat soort dingen.

P: Ja, kan ik daar zelf nog iets aan doen?

A: Rust nemen, ordenen dus de sleutels gewoon elke keer op dezelfde plek neerleggen en uw omgeving op de hoogte stellen van het feit dat dit gaat gebeuren.

P: Oke, dank u wel.

A: Was dit het wat u betreft?

P: Ja ik weet wel genoeg denk ik, ik vind het wel heel erg spannend maar dat is denk ik maar gewoon afwachten.

A: Ja het is inderdaad gewoon afwachten, maar als het aan de orde komt kan ik u altijd nog doorverwijzen naar de neuropsycholoog.

P: Oke dat is fijn om te weten.

A: Nou sterkte de komende tijd en tot ziens.

P: Oke, dank u wel.

A: Dag.

P: Doeg.

Appendix B

Physician-patient relationship

1. De arts en patiënt gaan goed met elkaar om.
2. De arts en patiënt hebben een goede relatie.
3. De arts en patiënt kunnen goed met elkaar opschieten.

Authenticity of the video

1. Het leek alsof ik naar een echt gesprek tussen...
2. Het gesprek in de video zou in het echt ook...
3. Het gesprek in de video leek op een echt gesprek tussen...

Manipulation check

1. De dokter gaf de patiënt voldoende aandacht.
2. De dokter luisterde goed naar de patiënt.
3. De dokter nam voldoende tijd voor de patiënt.
4. De dokter was vriendelijk.
5. De dokter was eerlijk tegen de patiënt.
6. De dokter nam de klachten van de patiënt serieus.
7. De dokter was empatisch.

Identification with the patient

1. De patiënt in de video lijkt op mij.
2. Ik vind het moeilijk om mij te verplaatsen in de patiënt in de video.
3. De patiënt in de video is een zelfde persoon als ik ben.
4. Ik kan mij identificeren met de patiënt in de video.

THE INFLUENCE OF PHYSICIANS' COMMUNICATION STYLE

Health anxiety

1. Maak u zich vaak zorgen over de mogelijkheid dat u een ernstige ziekte heeft?
2. Heeft u last van veel pijntjes?
3. Vindt u dat u zich vaak bewust bent van dingen die zich in uw lichaam afspelen?
4. Maakt u zich vaak zorgen om uw gezondheid?
5. Heeft u vaak verschijnselen van zeer ernstige ziektes?
6. Als een ziekte onder uw aandacht wordt gebracht (door de radio, televisie, kranten, of iemand die u kent) maakt dat u het zelf krijgt?
7. Als u zich ziek voelt en iemand vertelt dat u er beter uitziet, raakt u dan geïrriteerd?
8. Vindt u dat u last heeft van veel verschillende klachten?
9. Is het gemakkelijk voor u om uzelf te vergeten en aan allerlei andere dingen te denken?
10. Is het moeilijk voor u om de dokter te geloven wanneer hij of zij u vertelt dat er voor u niets is om u zorgen over te maken?
11. Krijgt u het gevoel dat mensen uw ziekte niet serieus genoeg nemen?
12. Denkt u dat u zich meer zorgen maakt over uw gezondheid dan de meeste mensen?
13. Denkt u dat er iets ernstig mis is met uw lichaam?
14. Bent u bang voor ziekte?

Participant's trait empathy

1. Als iemand anders blij is, dan heb ik de neiging om ook blij te worden.
2. De tegenslagen van andere mensen trek ik mij niet zo aan.
3. Het maakt me verdrietig als ik ziet dat iemand anders respectloos wordt behandeld.
4. Ik houd ervan om ervoor te zorgen dat anderen zich beter voelen.

THE INFLUENCE OF PHYSICIANS' COMMUNICATION STYLE

5. Ik kan het aan iemand zien als hij/zij verdrietig is, ook al zegt hij/zij niks.
6. Ik merk dat ik mijn eigen stemming vaak afstem op die van anderen.
7. Het interesseert mij niet echt hoe anderen zich voelen.
8. Ik krijg een sterke drang om iemand te helpen als ik zie dat hij/zij overstuur is.