

Communication about side effects: Reducing the occurrence of cognitive side effects in  
breast cancer patients by means of empathic communication

Eline Pilaet (s4196465)

Radboud University Nijmegen

Coordinator: Wendy Jacobs

# COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

## Abstract

In this experiment, 60 healthy women were asked to act as analogue breast cancer patients, to either watch an empathic or non-empathic videotaped consultation, to report whether they had any cognitive or general complaints, and to evaluate several characteristics of the video, physician, videopatient and themselves. The findings showed that both videos increased cognitive problem reporting, and memory and concentration problems. It was found that reported cognitive problems were not lessened in any way by a physician's empathic communication style. Health anxiety did not appear to function as a moderator in this experiment. The findings of this study could be of use to physicians in a sense that they should keep in mind that their patients might feel more comfortable and less anxious when being treated in an empathic way. By using real breast cancer patients and a laboratory, future studies might find more interesting results on the relationship between a physician's communication style and the occurrence of cognitive side effects.

*Keywords:* cognitive complaint reporting, breast cancer, chemotherapy, empathic communication, health anxiety

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

Communication about side effects: Reducing the occurrence of cognitive side effects in breast cancer patients by means of empathic communication

At this moment in time, breast cancer is seen as the most common cancer in women worldwide. Nearly 1.7 million women received the diagnosis of breast cancer in 2012 (WCRF, 2013). It is estimated that one in eight women will be diagnosed with the disease in their lifetime. “Breast cancer is a disease in which malignant cells form in the tissues of the breast. The damaged cells can invade surrounding tissue, but with early detection and treatment, most people continue a normal life” (NBCF, 2012).

Over the years, chemotherapy has been the main form of treatment for breast cancer patients. Unfortunately, even though cancer has often been cured with the use of chemotherapy, it still comes with life-changing acute and long-term side effects. A significant number of patients receiving chemotherapy face cognitive problems. Usually forty to fifty percent of patients notice changes in verbal and visual memory, and their ability to focus and concentrate (Ahles & Saykin, 2002). These side effects can dramatically change and worsen a patient’s quality of life. However, to date, there has been no clear understanding of the way chemotherapy impacts a patient’s brain. A diverse set of factors has been suggested as possible causes of cognitive problems, including emotional distress caused by cancer diagnosis and treatment, individual factors such as age and estrogen level (Ahles & Saykin, 2002), psychological concepts like stereotype threat and health anxiety (Schagen, Das & Vermeulen, 2012; Hadjistavropoulos, Craig & Hadjistavropoulos, 1998), and the nocebo phenomenon (Schagen, Das & Dam, 2009).

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

### *Possible causes of cognitive problems following chemotherapy*

Although the exact causes of cognitive problems following chemotherapy remain unknown, according to Schagen et al. (2009; 2012) information might play a role. Breast cancer patients who were informed about cognitive side effects following chemotherapy indicated more cognitive problems and remembered fewer words during a memory test than patients who were not informed about these side effects. These findings could be explained by the nocebo (negative placebo) phenomenon. Several other studies suggest, in accordance with the study of Schagen et al. (2009; 2012), that the side effects that present themselves during and after a patient's treatment, can be associated with this particular phenomenon (Wells & Kaptchuk, 2012; Verheul, Sanders & Bensing, 2010). Theories on the placebo (nocebo) effect assume that side effects of medical treatment could not only occur because of the central characteristics of the treatment, but also because of the psychological and social context surrounding the treatment (Verheul et al., 2010). According to the study of Barsky, Saintfort, Rogers, and Borus (2002) several factors might cause patients to report side effects of medication or treatment: a patient's expectations of possible side effects, prior experiences with or knowledge of possible side effects, and contextual factors.

Patients have to be made aware to a certain extent of the possible consequences and side effects of taking a specific type of medicine or of undergoing a specific treatment. This process is called the informed consent procedure. In the process of describing the possible side effects of a treatment, physicians may actually bring forth nocebo responses. The information provided to a patient about side effects can influence a patient's performance expectations and outcome expectations of the treatment (Verheul et al., 2010).

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

Moreover, besides the information given by physicians, patients might already be aware of the existence of chemotherapy-associated cognitive problems because of prior experience with the side effects of the disease. Patients, who chronically have access to this type of knowledge, often report more cognitive complaints than patients who do not have access to this type of information. Schagen et al. (2009) state that the increase of cognitive complaints might be due to priming or stereotype threat caused by the information that is available to patients. Studies have shown that being confronted with negative stereotypes based on a person's group status can lead to poorer performance on tests of cognitive ability, reduced performance expectations and working memory capacity, and anxiety (Burgess, Warren, Phelan, Dovidio & Van Rijn, 2010; Schagen, Das & Vermeulen, 2012).

Nowadays, contextual factors, such as the relationship and interaction between a physician and patient during a consultation have also been acknowledged as having a major influence on patients' outcomes, expectations and satisfaction (DiBlasi, Harkness, Ernst, Georgiou & Kleijnen, 2001; Mast, Kindlimann & Langewitz, 2005). In the study of Sep, Van Osch, Van Vliet, Smets, and Bensing (2014) participants who acted as analogue patients watched one of two different videotaped consultations. These analogue patients are healthy human beings, not real breast cancer patients, who are asked to try to identify themselves with the patient in the video. Sep et al. (2014) stated that the emotional arousal that is set off by the bad news provided by a physician is expected to influence memory of provided information during the consultation. Patients seem to better remember information about the diagnosis itself than information about the treatment options and side effects.

Previous investigations tell us that the well-being of many patients might be negatively

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

influenced by the nocebo effect. However, very little research has focused on the relationship between provided information about cognitive side effects of chemotherapy and the actual occurrence of cognitive problems in breast cancer patients. This brings us to the first hypothesis of this research.

*H1: The information about cognitive side effects of chemotherapy given by a physician during a videotaped consultation leads to increased cognitive complaint reporting and diminished cognitive performance in analogue patients.*

### *Physician-patient communication*

Good and effective physician-patient communication during a bad news consultation is very important, as it can influence the health and well-being of a patient. As research showed that communication can increase the occurrence of cognitive side effects following chemotherapy, it is important to investigate how these adverse information effects can be diminished.

Several studies have shown that a patient-centered communication style of breaking bad news to a patient produces the most positive outcomes (Street, Makoul, Arora & Epstein, 2009; Mast, Kindlimann & Langewitz, 2005; Sep et al., 2014). The patient-centered communication style involves the physician providing information according to the patient's needs, checking if the patient understands all that has been said about diagnosis and treatment, and showing empathy. This style was linked to better information recall (Mast et al., 2005), greater patient trust, less patient anxiety and a higher quality of life among breast cancer patients (Street et al.,

2009).

In the studies of DiBlasi et al. (2001) and Verheul et al. (2010), physicians providing emotional and cognitive care, were found to be more effective than physicians who used an impersonal and formal communication style. The use of cognitive care involves giving a positive prognosis which can influence patients' beliefs about the effects of treatment or about the illness. As said before, emotional care consists of providing reassurance, warmth, support and empathy. A physician's nonverbal language, such as touch or tone of voice, could also lessen anxiety and provide a feeling of comfort and safety (Street et al., 2009).

Another important part of patient-centered communication is giving the patient some time to absorb the diagnosis before giving further information about the treatment. The patient most likely is emotionally overwhelmed and will have to first digest the bad news before being able to register further information (Roberts, Cox, Reintgen, Baile & Gibertini, 1993).

In sum, earlier research clearly shows a preference for the use of patient-centered communication in physician-patient communication. Quite a few research practices have focused on a patient's emotional and subjective response to a physician's communication style. Yet, it has never been investigated whether the use of empathic communication can lower the adverse effects of the information given about chemotherapy. The use of empathic communication by physicians might decrease the occurrence of cognitive problems in cancer patients. This brings us to the second hypothesis.

*H2: A physician's empathic communication style lowers the adverse effects of the information given about cognitive problems after chemotherapy.*

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

*Risk factors: who is affected most by adverse information effects*

Some patients may develop the nocebo response more easily than others. The knowledge of the possible side effects of a treatment could influence patients in a way that they perceive certain normal sensations or symptoms to be side effects of the specific treatment. Patients who were already facing anxiety or depression before receiving the diagnosis of breast cancer are more likely to develop this sort of response (Wells & Kaptchuk, 2012). Patients with an anxiety disorder such as health anxiety often show atypical responses when provided with information related to their health. Hadjistavropoulos et al. (1998: p. 149) state that “health anxious individuals regard themselves to be at greater risk for disease overall, and attach greater accuracy to health related information”. People with health anxiety often misunderstand information in a disastrous and personally threatening way. For this reason, they might be more likely to develop a nocebo response.

It has not yet been investigated whether patients with health anxiety are more likely to develop cognitive problems due to the information given about the side effects of chemotherapy treatment. Therefore, in this research health anxiety will be examined as a risk factor for the possible increase of cognitive side effects due to information about the link between cognition and chemotherapy.

*SH: Especially people with a high level of health anxiety will report more cognitive problems after being informed about them. This increase in cognitive complaints after being informed about them will be lower for people with a low level of health anxiety.*

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

The process of providing information about the cancer and treatment options should be an interactive process (Roberts et al., 1993). This means that a physician should identify high-risk patients such as patients with health anxiety and tailor the information provided and the communication style used to the patient. According to Wells and Kaptchuk (2012) this could help prevent the occurrence of the nocebo response, and cognitive problems in the case of breast cancer patients.

The main purpose of this study is to investigate the effects of physicians' information giving and communication style on patient's well-being and cognitive side effects. This might give us a better understanding of the development process of cognitive problems in cancer patients. Furthermore, this research could also create more knowledge on the effects of physician-patient communication.

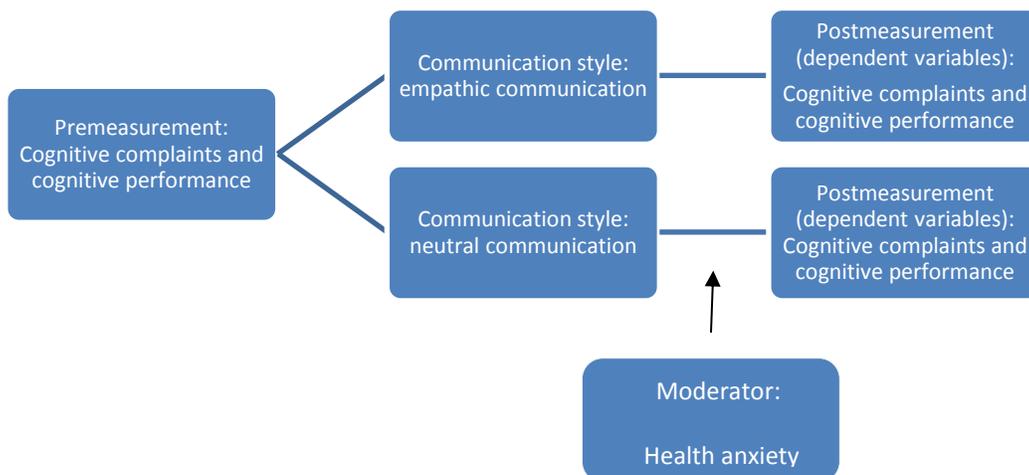
**Method**

*Research design*

The experiment had a 2 (communication style: empathic/neutral) x 2 (health anxiety: low/high) between-subjects factorial design with the physician’s communication style as the independent variable (communication style: empathic, neutral). Each participant was randomly assigned to one of two videotaped consultations with a specific communication style: empathic or neutral communication. The dependent variables in this study are the reported cognitive complaints and cognitive performance of the participants after watching the videotaped consultation. The moderator is the level of health anxiety (low/high).

For ethical reasons, this experiment included healthy human beings instead of real breast cancer patients. Participants watched a scripted and role-played video consultation. They acted as analogue patients and were asked to try to identify with the patient in the video. Previous studies have proven that the analogue-patient approach is a valid methodology (Van Vliet, Van der Wall, Albada, Spreeuwenberg, Verheul & Bensing, 2012; Sep et al., 2014). It was shown that people have similar emotional and physiological responses when participating in a real clinical consultation, as while watching the same consultation as a video.

Figure 1: schematic overview of the research design



## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

The model included above gives a short overview of the research design. Next to a between-subjects design, the experiment also had a within-subjects design (pre- and post-measurement). As part of the pre-measurement, all participants filled in the same questions regarding cognitive complaints. Then, each participant was randomly assigned to one of two experimental conditions. They watched one of two of the videotaped consultations. This was either the version with the empathic communication style or neutral communications style. After watching the video, both participant groups again filled in a questionnaire, as part of the post-measurement.

To address the possible effects of empathic communication in consultations, a comparison was made of the post-measurement data of both participant groups. Furthermore, the pre-measurement and post-measurement data of both groups was compared to investigate the effect of the manipulation on the level of cognitive side effects for every participant.

### *Materials*

The two different videotaped consultations that were used in this experiment were scripted and role-played. Two female actors, one student from the medical faculty and one employee from the department of Business Communication at Radboud University Nijmegen, performed the roles of physician and patient. This study used adapted versions of the scripts of the study of Sep et al. (2014) and Verheul et al. (2010). These scripts have been pre-tested and proven valid. The scripts are included in Appendix A. The videos consisted of two parts: in the first part the patient introduced herself; the second part was a conversation between physician and patient about the cognitive side effects of chemotherapy. In the empathic video the physician

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

made eye contact with the patient and had a warm and welcoming attitude. The physician in the non-empathic video made less eye contact and had a less warm attitude.

### *Subjects*

In this experiment, a total of 60 healthy participants took part. They acted as analogue patients and were asked to try to identify with the patient in the video (Van Vliet et al., 2012). Since we were investigating the occurrence of cognitive problems in breast cancer patients, only women were asked to participate. A number of participants that did not complete the questionnaire ( $n = 8$ ) have been removed, which resulted in a sample of 60 participants in total. The average age of the participants was 36.9 ( $SD = 14.98$ , range: 19-64). An independent samples t-test showed that there were no significant differences in age distribution among the two conditions ( $t(58) = 1.14, p = .260$ ). The participants either completed a study on university level (48.3%), the level called HBO (31.7%), MBO (10.0%), MAVO (5.0%), HAVO (3.3%) or LBO (1.7%). A Chi-square test showed there were no significant differences in education level distribution among the two conditions either ( $\chi^2(5) = 2.34, p = .801$ ). Fifty-five percent of the participants was employed, 36.7 percent unemployed and 8.3 percent temporarily unemployed. A Chi-square test showed there were no significant differences in distribution of employed and unemployed people among the two conditions ( $\chi^2(2) = 3.14, p = .208$ ). Participants' marital status was either married (51.7%), single (28.3%), widow and single (3.3%), divorced and single (1.7%) or in a relationship, but not living together (15.0%). Only one participant reported having had a type of cancer in the past. All except for two participants reported knowing someone who has had or has a type of cancer. Sixty percent of the participants never uses the internet to look

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

for information about their health. Forty percent looks for information a couple of times a month. A Chi-square test showed there were no significant difference in distribution of this characteristic among the two conditions either ( $\chi^2(1) = .40, p = .525$ ).

### *Instruments*

Participants had to fill in a questionnaire before and after watching the videotaped consultation. The main dependent variables were: cognitive complaints and cognitive performance. Furthermore, they were asked to rate their state of mind (mood and anxiety) before and after watching the video, health (general and cognitive) complaints before and after watching the video, health anxiety, identification with the videopatient, the relationship between physician and patient, the authenticity of the video, the physician's empathy and their own empathy as a personality characteristic. Demographics were also measured: sex, age, marital status, educational level. Additional measures were: the frequency of searching for health information, whether participants know people who have got/have had cancer, whether participants have got/have had cancer themselves and whether participants are employed or not.

### *Main dependent variables: cognitive complaint reporting and cognitive performance*

Cognitive complaint reporting was measured by two 5-point Likert items (not at all – at all) derived from the Physical Complaints Questionnaire (Van Hemert, 2003): 'cognitive problems before watching the video' and 'cognitive problems after watching the video': *memory problems* and *concentration problems*. Cronbach's alpha was too low for all of these items. The items were all treated separately in further analysis. Higher scores indicate higher levels of

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

cognitive complaints Cognitive performance was measured with a word learning task (three learning trials) after watching the video, and both a recall and a recognition task after watching the video (Van den Burg, Saan & Deelman, 1985). The amount of right and wrong answers in all tasks was measured and summed to a 1) recall score, 2) delayed recall score, 3) recognition score. Higher scores denote higher memory performance.

### *Moderator: health anxiety*

Health anxiety was measured with a set of fourteen questions (Pilowsky, 1967) and the 5-point Likert scales were anchored by ‘not at all – at all’. For example, ‘do you often worry about the possibility of you having a serious disease?’. The reliability of ‘health anxiety’ was good ( $\alpha = .79$ ). Higher scores indicate higher levels of health anxiety.

### *State of mind: mood and anxiety*

All 5-point Likert scales for ‘mood before watching the video’, ‘mood after watching the video’, ‘anxiety before watching the video’ and ‘anxiety after watching the video’ were introduced by the statement ‘I am feeling’ and anchored by ‘not at all – at all’. Five items were used to measure ‘mood before watching the video’ and ‘mood after watching the video’: *well, strong, excited, miserable and annoyed* (Watson, Clark & Tellegen, 1988). The reliability of ‘mood before watching the video’ was good ( $\alpha = .85$ ). The reliability of ‘mood after watching the video’ was good ( $\alpha = .80$ ).

Three items were used to measure ‘anxiety before watching the video’: *tense, worried and upset*. The reliability of ‘anxiety before watching the video’ was acceptable ( $\alpha = .69$ ). Six

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

items were used to measure ‘anxiety after watching the video’: *tense, worried, upset, content, calm and relaxed* (Marteau & Bekker, 1992). The reliability of ‘anxiety after watching the video’ was good ( $\alpha = .81$ ). All Cronbach’s alphas were at least acceptable. For all scales composite means were calculated. Higher scores indicate a more positive mood and lower levels of anxiety.

### *Manipulation check: physician’s empathy*

The physician’s empathy was evaluated by using a set of 7 statements and the Likert scales were anchored by ‘totally disagree – totally agree’ (Van der Eijk, Sixma, Smeets, Tavarella Veloso, Odes, Montague, Fornaciari, Moum, Stockbrugger & Russel, 1998). For example, ‘the physician gave enough attention to the patient’. The reliability of ‘physician’s empathy’ was excellent ( $\alpha = .93$ ). Higher scores indicate a higher score on empathy.

### *Additional variables*

General complaint reporting was measured by eight 5-point Likert scales which were introduced by the statement ‘Report to what extent you have been suffering this past week, including today, from’ and anchored by ‘not at all – a lot’. Eight items were used to measure ‘general complaints before watching the video’ and ‘general complaints after watching the video’: *fatigue, dizziness, insomnia, soreness of muscles, nausea, stomach ache, head ache and pain in the arms or legs* (Van Hemert, 2003). Cronbach’s alpha was too low for all of these items. The items were all treated separately in further analysis. Higher scores indicate higher levels of general complaints.

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

Identification with the videopatient was measured with a set of four statements and the Likert scales were anchored by ‘totally disagree – totally agree’. For example, ‘the patient in the video looks like me’. The reliability of ‘identification with the videopatient’ was good ( $\alpha = .70$ ). Higher scores indicate higher levels of identification.

The relationship between physician and patient was evaluated by using a set of three statements and the Likert scales were anchored by ‘totally disagree – totally agree’. For example, ‘physician and patient handle each other well’. The reliability of ‘relationship between physician and patient’ was excellent ( $\alpha = .94$ ). Higher scores indicate a more positively evaluated relationship.

The authenticity of the video was evaluated by using a set of three statements and the Likert scales were anchored by ‘totally disagree – totally agree’. For example, ‘it felt like I was watching a real conversation between a physician and her patient’. The reliability of ‘authenticity of the video’ was good ( $\alpha = .87$ ). Higher scores indicate higher levels of authenticity.

The participant’s trait empathy was measured with the use of eight statements and the Likert scales were anchored by ‘never – always’ (Spreng, McKinnon, Mar & Levine, 2009). For example, ‘if someone else is happy, I tend to start feeling happy too’. The reliability of ‘participant’s trait empathy’ was good ( $\alpha = .75$ ). Higher scores indicate higher levels of empathy.

Composite means were calculated for all these variables. See Appendix B for all statements of the questionnaire.

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

### *Procedure*

The questionnaire was administered with the online program Qualtrics. Most participants received the link to the questionnaire via email. Some of them were personally asked to fill in the questionnaire. The participants were given some general background information about the experiment, after which they filled in the first questionnaire. Then, they were asked to attentively watch the videotaped consultation. Afterwards, they again had to fill in a questionnaire. The participants were debriefed and thanked. The procedure took approximately 20 minutes. All data was retrieved within two weeks in April 2015.

### *Statistical analysis*

An independent samples t-test, a paired samples t-test and a two-way anova were performed.

## Results

### *Main dependent variables*

#### *Cognitive complaint reporting: differences between the two conditions*

An independent samples t-test was conducted to test for differences in cognitive complaint reporting between the two conditions. The test showed no significant differences for memory problems between the conditions before ( $t(58) = .79, p = .432$ ) and after ( $t(58) = 1.38, p = .173$ ) watching the video. No significant differences were found for concentration problems between the two conditions before ( $t(58) = .32, p = .754$ ) and after ( $t(58) = .21, p = .833$ ) watching the video either.

#### *Cognitive complaint reporting before and after watching the video (all participants)*

To test for differences between participants' cognitive complaint reporting before and after watching the video a paired samples t-test was conducted. The test showed a significant difference for memory problems ( $t(59) = 2.52, p = .014$ ). Participants reported having more memory problems after watching ( $M = 1.62, SD = .69$ ) than before watching the video ( $M = 1.40, SD = .59$ ). A significant difference was also found for concentration problems ( $t(59) = 3.43, p = .001$ ). Participants reported having more concentration problems after watching ( $M = 1.95, SD = .79$ ) than before watching the video ( $M = 1.67, SD = .82$ ).

### *Cognitive performance*

An independent t-test was conducted to test whether there were any differences in participants' cognitive performance between the conditions. The test showed no significant

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

difference in the word learning task for the amount of right ( $t(58) = .78, p = .438$ ) and wrong answers ( $t(58) = .12, p = .907$ ) between the two conditions. No significant difference was found in the delayed recall task for the amount of right ( $t(58) = .28, p = .782$ ) and wrong answers ( $t(58) = .27, p = .790$ ) between the two conditions either. Lastly, no significant difference was found in the recognition task for the amount of right ( $t(58) = .01, p = .991$ ) and wrong ( $t(58) = .02, p = .988$ ) answers between the two conditions.

### *Moderator: Health anxiety*

To test whether health anxiety functioned as a moderator of the videos' effects on participants' cognitive complaint reporting a two-way analysis of variance was used. A two-way analysis of variance with video and health anxiety as factors showed no significant main effect of the videos on participants' reporting of memory problems ( $F(1, 56) = 2.47, p = .122$ ). Health anxiety did not have a significant main effect on participants' reporting of memory problems either ( $F(1, 56) < 1$ ). The interaction effect between video and health anxiety was not statistically significant ( $F(1, 56) = 1.07, p = .305$ ).

A two-way analysis of variance with video and health anxiety as factors showed no significant main effect of the videos on participants' reporting of concentration problems ( $F(1, 56) < 1$ ). Health anxiety was not found to have a significant main effect on participants' reporting of concentration problems either ( $F(1, 56) < 1$ ). The interaction effect between video and health anxiety was not statistically significant ( $F(1, 56) < 1$ ).

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

### *State of mind: mood and anxiety*

An independent samples t-test was conducted to test for differences in mood before watching the video. The test showed no significant difference ( $t(58) = .82, p = .417$ ). There was no significant difference found for mood after watching the video ( $t(58) = 1.12, p = .268$ ), anxiety before watching the video ( $t(58) = .17, p = .869$ ) and anxiety after watching the video ( $t(58) = .07, p = .947$ ) either.

### *Manipulation check: physician's empathy*

To check whether the manipulation of the physician's empathy succeeded, an independent samples t-test was conducted. The test showed a significant difference, which means the manipulation succeeded ( $t(58) = 8.40, p < .001$ ). The physician in the empathic video ( $M = 3.52, SD = .48$ ) was perceived as being more empathic than the physician in the non-empathic video ( $M = 2.14, SD = .73$ ).

### *Additional variable: general complaint reporting before and after watching the video (all participants)*

To test for differences between participants' general complaint reporting before and after watching the video a paired samples t-test was conducted. The test showed no significant difference for fatigue ( $t(59) = .90, p = .374$ ), dizziness ( $t(59) = 1.07, p = .289$ ), insomnia ( $t(59) = .00, p = 1.00$ ), soreness of muscles ( $t(59) = .89, p = .376$ ), nausea ( $t(59) = 1.47, p = .146$ ), stomach ache ( $t(59) = .00, p = 1.00$ ), headache ( $t(59) = .97, p = .335$ ) and pain in the arms or legs ( $t(59) = .24, p = .811$ ).

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

### *Additional variable: Identification with the patient*

To test whether there were any differences between the two conditions in participants' identification with the patient in the video an independent samples t-test was conducted. The test showed a significant difference ( $t(58) = 2.48, p = .016$ ). Participants identified themselves more with the patient in the non-empathic video ( $M = 3.17, SD = .66$ ) than with the patient in the empathic video ( $M = 2.77, SD = .56$ ).

### *Additional variable: relationship between physician and patient*

To test whether there were any differences between the two conditions in participants' evaluation of the relationship between physician and patient an independent samples t-test was conducted. The test showed a significant difference between the two conditions ( $t(58) = 8.23, p < .001$ ). The relationship between physician and patient in the empathic video ( $M = 3.30, SD = .53$ ) was perceived as more positive than the relationship between physician and patient in the non-empathic video ( $M = 1.83, SD = .80$ ).

### *Additional variable: Authenticity of the video*

The videos were perceived as being neither realistic nor unrealistic ( $M = 2.63, SD = .91$ ). An independent samples t-test was conducted to see whether the two videos were believed to be equally authentic. The test showed a significant difference between the two conditions ( $t(58) = 4.27, p < .001$ ). The empathic video ( $M = 3.12, SD = .74$ ) was perceived to be more authentic than the non-empathic video ( $M = 2.23, SD = .85$ ).

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

*Additional variable: Participant's trait empathy*

An independent samples t-test was used to check for differences in participants' empathy (trait) between the two conditions. No significant difference was found ( $t(58) = 1.03, p = .306$ ).

### **Conclusion and discussion**

The purpose of this study was to investigate the effects of physicians' information-giving and communication style on patient's well-being and cognitive side effects. The first hypothesis was that cognitive side effects of chemotherapy given by a physician during a videotaped consultation lead to increased cognitive complaint reporting and diminished cognitive performance in analogue patients. The second hypothesis was that a physician's empathic communication style lowers the adverse effects of the information given about cognitive problems after chemotherapy. The sub hypothesis in this study was that especially people with a high level of health anxiety will report more cognitive problems after being informed about them, and that this increase in cognitive complaints after being informed about them will be lower for people with a low level of health anxiety.

Findings of the present study indicated that the videos had an influence on participants' cognitive complaint reporting, which is in line with previous studies (Schagen et al., 2009; Schagen et al., 2012; Wells & Kaptchuk, 2012; Verheul et al., 2010). Participants reported more memory problems, as well as concentration problems, after watching the video than before doing this. This indicated that the first hypothesis was supported by the data of this research.

It was not yet investigated whether empathic communication could lower the adverse effects of information given about cognitive problems after chemotherapy. Several studies suggested that the use of empathic communication by a physician could produce more positive outcomes (Street et al., 2009; Mast et al., 2005; Sep et al., 2014). However, findings of this study showed no differences in cognitive complaint reporting and cognitive performance between

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

participants who had either watched the empathic video or the non-empathic video. The results showed that the nocebo effect was not lessened in any way by the use of empathic communication. For this reason, the second hypothesis was not supported by the data of this research. The difference in results between the present study and that of Mast et al. (2005) and Sep et al. (2014) could be explained by the fact that what you say matters more than how you say it. Sep et al. (2014) reported in their study that, due to emotional arousal, patients often pay more attention to the central information than to the peripheral information (physician's communication style) provided in a consultation. This should be further examined in future research.

Furthermore, it was shown that participants with high health anxiety did not report more cognitive complaints than participants with low health anxiety. Wells and Kaptchuk (2012) stated that patients who were already facing anxiety or depression are more likely to develop the nocebo response. Contrary to this research, it appeared that health anxiety did not have an influence on participants' cognitive complaint reporting. For this reason, health anxiety did not function as a moderator, and the sub hypothesis was not supported by the data of this research. This might be due to one of the limitations of this study. Participants' health anxiety was measured after watching the video. The video may have influenced participants' answers and anxiety at that moment. Future research should thus measure participants' health anxiety before watching the video instead of after doing this.

The manipulation check on physician's empathy of this research was successful. The physician in the empathic video was considered to be more empathic than the physician in the

non-empathic video. This is in line with earlier literature (Street et al., 2009; Mast et al., 2005; Sep et al., 2014).

Surprisingly, it was found that participants identified themselves more with the patient in the non-empathic video than with the patient in the empathic video. This might be caused by the fact that, because the patient in the non-empathic video was treated less well by the physician, participants felt bad for her.

### *Limitations and suggestions for further research*

A few limitations have come up during this research. First of all, the questions regarding participants' identification with the videopatient should have been provided in between the two parts of the video, after the introduction of the videopatient. This way, since they can still clearly remember the patient's characteristics, participants may give more truthful answers. Future research should thus place the questions regarding participants' identification with the videopatient directly after the introduction of the videopatient.

Since the evaluation of the authenticity was quite low for both videos, this could have influenced the results of this study. Participants may have had the feeling that the video they were watching was not realistic. Besides this, the volume of the videos was quite low. In future studies, the videos should be more realistic and participants should be able to clearly hear the conversation in the video.

Furthermore, since all participants most likely completed the questionnaire at home, they might have been distracted by their surroundings and might not have been fully focused on the task of completing the questionnaire. Future studies should make use of a laboratory where

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

participants can fully focus on the task of watching the video and completing the questionnaire. In future research, one should also form of a sample of subjects that are or have been breast cancer patients themselves. This might lead to new and useful findings.

This study showed that the information about cognitive side effects that is provided by a physician really does increase cognitive complaints in analogue patients. The findings of this study could be of use to physicians in a sense that they should keep in mind that their patients might feel more comfortable and less anxious when being treated in an empathic way. By using real breast cancer patients and a laboratory, future studies might find more interesting results on the relationship between a physician's communication style and the occurrence of cognitive side effects.

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

### References

- Ahles, T. A., & Saykin, A. J. (2002). Breast cancer chemotherapy-related cognitive dysfunction. *Clinical Breast Cancer*, 3(3), 84-90.
- Barsky, A. J., Saintfort, R., Rogers, M. P., & Borus, J. F. (2002). Nonspecific medication side effects and the nocebo phenomenon. *American Medical Association*, 287, 622-627.
- Blasi, Z. D., Harkness, E., Ernst, E., Georgiou, A., & Kleijnen, J. (2001). Influence of context effects on health outcomes: a systematic review. *The Lancet*, 357, 757-762.
- Burgess, D. J., Warren, J., Phelan, S., Dovidio, J., & Van Rijn, M. (2010). Stereotype threat and health disparities: what medical educators and future physicians need to know. *Journal of General Internal Medicine*, 25(2), 169-177.
- Hadjistavropoulos, H. D., Craig, K. D., & Hadjistavropoulos, T. (1997). Cognitive and behavioral responses to illness information: the role of health anxiety. *Behaviour Research and Therapy*, 36, 149-164.
- Marteau, T. M., & Bekker, H. (1992). The development of a six-item short-form of the state scale of the Spielberger State-Trait Anxiety Inventory (STAI). *British Journal of Clinical Psychology*, 31, 301-306.
- Mast, M. S., Kindlimann, A., & Langewitz, W. (2005). Recipients' perspective on breaking bad news: How you put it really makes a difference. *Patient education and counseling*, 58, 244-251.
- NBCF. (2012). Breast cancer facts. Retrieved February 26, 2015, from <http://www.nationalbreastcancer.org/breast-cancer-facts>.
- Pilowsky, I. (1967). Whitely Index. *British Journal of Psychiatry*, 113, 89-93.

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

- Roberts, C. S., Cox, C. E., Reintgen, D. S., Baile, W. F., & Gibertini, M. (1993). Influence of physician communication on newly diagnosed breast patients' psychologic adjustment and decision-making. *Cancer Supplement*, 74(1), 336-341.
- Schagen, S. B., Das, E., & Dam, F. S. A. M. (2009). The influence of priming and pre-existing knowledge of chemotherapy-associated cognitive complaints on the reporting of such complaints in breast cancer patients. *Psycho-Oncology*, 18, 674-678.
- Schagen, S.B., Das, E., & Vermeulen, I. (2012). Information about chemotherapy- associated cognitive problems contributes to cognitive problems in cancer patients. *Psycho-Oncology*, 21(10), 1132-1135.
- Sep, M. S., Van Osch, M., Van Vliet, L. M., Smets, E., & Bensing, J. M. (2014). The power of clinicians' affective communication: How reassurance about non-abandonment can reduce patients' physiological arousal and increase information recall in bad news consultations. An experimental study using analogue patients. *Patient education and counseling*, 95(1), 45-52.
- Spreng, R. N., McKinnon, M. C., Mar, R. A., & Levine, B. (2009). The Toronto Empathy Questionnaire: Scale development and initial validation of a factor-analytic solution to multiple empathy measures. *Journal of Personality Assessment*, 91(1), 62-71.
- Street, R. L., Makoul, G., Arora, N. K., & Epstein, R. M. (2009). How does communication heal? Pathways linking clinician-patient communication to health outcomes. *Patient Education and Counseling*, 74, 296-301.
- Van den Burg, W., Saan, R. J., & Deelman, B. G. (1985). Vijftien woordentest. *Provisional manual*. Groningen: University Hospital.

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

- Van Der Eijk, I., Sixma, H., Smeets, T., Taveira Veloso, F., Odes, S., Montague, S., Fornaciari, G., Moum, B. Stockbrugger, R., & Russel, M. (2001). Quality of health care in inflammatory bowel disease: development of a reliable questionnaire (QUOTE-IBD) and first results. *The American Journal of Gastroenterology*, 12, 3329-3336.
- Van Hemert, A. M. (2003). Lichamelijke klachten vragenlijst. Leiden: Leids Universitair Medisch Centrum.
- Van Vliet, L. M., Van der Wall, E., Albada, A., Spreeuwenberg, P. M. M., Verheul, W., & Bensing, J. M. (2012). The validity of using analogue patients in practitioner-patient communication research: Systematic review and meta-analysis. *Journal of General Internal Medicine*, 27(11), 1528-1543.
- Verheul, W., Sanders, A., & Bensing, J. (2010). The effects of physicians' affect-oriented communication style and raising expectations on analogue patients' anxiety, affect and expectancies. *Patient Education and Counseling*, 80(3), 300-306.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063-1070.
- WCRF. (2013). Breast cancer statistics. Retrieved February 26, 2015, from <http://www.wcrf.org/int/cancer-facts-figures/data-specific-cancers/breast-cancer-statistics>.
- Wells, R. E., & Kaptchuk, T. J. (2012). To tell the truth, the whole truth, may do patients harm: The problem of the nocebo effect for informed consent. *The American Journal of Bioethics*, 12(3), 22-29.

**Appendix A**

*Introduction of videopatient:*

**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.

*/ 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. /*

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

### *Script of the empathic video:*

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?

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.

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

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.

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.

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

*Script of the non-empathic video:*

A: Goedemiddag

P: Hallo

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.

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

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

### *Questionnaire*

Relationship between physician and patient:

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 conversation:

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...

Physician's empathy:

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.

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

### Identification with the videopatient:

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.

### 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?

## COGNITIVE SIDE EFFECTS IN BREAST CANCER PATIENTS

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.
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.