How oncologists’ communication impacts patients’ information recall and emotional stress
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This chapter is partially based on:
This publication is added to this thesis as Appendix A.
Patients’ recall of information provided by their physician

Receiving medical information from their physician is important for patients for several reasons. It can reduce their uncertainty by helping them to foresee procedures, symptoms and side effects of disease and treatment, thereby improving psychological functioning and adaptation to illness [1, 2]. Information also supports patients’ coping as it enables them to take action when possible and adapt when intervention is impossible, thereby enhancing control [3]. Moreover, information about available treatment options and their implications allows patients to be involved in decision making [3, 4]. Medical information also supports adherence to treatment regimens [5, 6] and beneficial health behaviors [7, 8]. In addition, patients generally want to receive detailed medical information [9-11], especially about the prognosis, the disease itself, the treatment and side-effects [12].

Unfortunately, patients’ recall of, i.e., their ability to remember, medical information provided by their physicians is generally poor. Percentages of forgotten information vary from 40 to 80% [4, 7]. Most research is done within the cancer care domain, and shows that approximately half of the provided information is not remembered by patients [13, 14]. Especially information about treatment options, goals, side effects and procedures is not well remembered, when compared to information about the cancer diagnosis [14, 15]. For example, among patients newly diagnosed with lung cancer, 92% accurately recalled the information about their diagnosis, compared to 49% who correctly recalled the goal of proposed treatment [15]. In view of the loss of considerable amounts of information, it is not surprising that cancer patients report unfulfilled information needs [9, 12]. Uncovering the mechanisms that lead to limited recall of medical information may provide insights that help to improve recall and inform physicians about communication behaviors that can optimize information transfer to patients.

Reducing emotional stress as a potential mechanism

This thesis focuses on one of the possible mechanisms that may underlie limited information recall in patients, i.e., the relationship between emotional stress and memory performance. Emotional stress is defined as the increase in self-reported negative feelings and/or physiological arousal caused by an emotional stimulus (definition by authors). Although the relationship between emotional stress and memory performance is complex [16, 17], evidence from mostly animal studies suggests an inverted U-shaped relationship, in which memory performance increases
with increasing stress levels to an optimal point, and beyond this point memory performance decreases with higher stress levels [18]. Highly stressful situations hence induce poor memory formation [19]. This fits with the finding that, in patients, receiving a bad diagnosis and/or poor prognosis - which likely leads to high levels of emotional stress - leads to a worse overall recall of information [14]. The fact that the bad news itself is relatively well-remembered in these situations as compared to other, additional information, can be explained by the attention-narrowing hypothesis. This hypothesis states that individuals in stressful situations will focus on the most threatening or so-called ‘central’ information, at the cost of additional or so-called ‘peripheral’ information, to which they will pay relatively less attention [20]. Consequently, if physicians would be able to reduce patients’ emotional stress during consultations, they might improve patients’ information recall. This will particularly concern additional, yet very relevant, information about for example treatment procedures and side effects. Such an effect might be accomplished by means of affect-oriented communication, i.e., communication behaviors expressing care for, and affective engagement with the patient.

Results from prior experimental research

A number of experimental studies have tested the effects of physicians’ affect-oriented communication on information recall. These were all video-vignette studies investigating physician-patient communication within the oncology context [21-24]. A video vignette is a video recording of a situation in which actors mimic a scripted doctor-patient consultation [25, 26]. In such video-vignette design, participants are called analogue patients. They can be either disease-naïve participants (i.e., individuals without a disease history) or (former) patients, instructed to watch the video vignette while imagining themselves in the video patients’ situation [27]. The analogue patients are usually randomly allocated to watch one (or more) of multiple versions of a video vignette. The medical content, the environment, and the (interaction between) characters are exactly identical across the video-vignette versions, except for specific communication elements of interest. These elements, e.g., the physician’s response to the patient’s emotions, are manipulated to vary between video-vignette conditions, which allows systematic testing of the effects of these specific communication behaviors on (analogue) patient outcomes.

The publications of Sep et al. [22] and van Osch et al. [23] were based on data from one video-vignettes study, in which they examined the effects of additional verbal empathic remarks made by the physician, specifically providing reassurance and ongoing support. Results showed that such affect-oriented communication improved recall of information. The impact of non-verbal behaviors on recognition and free recall of information was tested by Hillen et al. [24], by means of respectively multiple-choice and open-ended questions. Analogue patients’ recognition, yet not free recall, was found to be higher if the oncologist had more consistent eye contact with the video patient. Body posture and smiling did not influence free recall or recognition. Fogarty et al. [21], manipulated physicians’ communication to include more compassionate behaviors. Contrary to expectations,
they showed a significant albeit small negative influence of enhanced compassion on analogue patients’ recall. The aim of this thesis was therefore to replicate this work, investigating the impact of affect-oriented communication on free recall and recognition of information. Furthermore, this thesis focused on the mediating role of emotional stress in this relation, examining if affect-oriented communication reduces (analogue) patients’ emotional stress during consultations, and if this emotional stress reduction consequently improves their information recall.

The emotional stress elicited by medical consultations is commonly assessed using self-report questionnaires completed after (watching video-vignette) consultations. Clearly such a retrospective and subjective assessment is susceptible to biases. To increase our understanding of how physicians’ communication may contribute to patients’ information recall, insight is needed in the immediate impact of physicians’ communication on patients’ emotional responses. To this end, registration of physiological arousal responses during the watching of video-vignette consultations can additionally be used to provide a more objective and direct measure of emotions, since physiological activity is assumed to vary as a function of psychological change [28]. Physiological arousal measures that are used to make inferences about emotions, are therefore called psychophysiological measures [29].

Most of the video-vignette studies described above investigated the impact of affect-oriented communication on analogue patients’ emotional stress in addition to information recall, and were able to demonstrate an effect. Sep et al. reported an effect on analogue patients’ psychophysiological arousal: skin conductance levels decreased more in the affect-oriented communication condition, than in the standard communication condition [22]. Fogarty et al. [21] and van Osch et al. [23] showed an effect on self-reported emotions: affect-oriented communication resulted in less anxiety and uncertainty, than standard communication. Thus, they were able to demonstrate a positive, tempering effect of affect-oriented communication on analogue patients emotional stress.

In addition, emotional stress levels should be related to analogue patients’ information recall for emotional stress to be a mediator. Sep et al. did find such a relationship [22]. They found that, in the affect-oriented condition, higher skin conductance levels predicted worse recall of information, whereby the variance in skin conductance level explained 21.1% of the variance in recall scores. However, they did not test the mediation effect, i.e., whether the impact of affect-oriented communication on information recall was indeed (partially) explained by a reduction in emotional stress.

AIMS

How oncologists’ communication impacts patients’ information recall and emotional stress

The foregoing has led to a model explaining the influence of physicians’ affect-oriented communication on patients’ recall of information provided in emotionally stressful consultations,
as depicted in Figure 1. Testing this model was the main objective of this thesis. As displayed in the model, we aimed to investigate the mediating role of emotional stress in the relationship between physicians’ communication and (analogue) patients’ information recall. Affect-oriented communication was assumed to reduce emotional stress levels, which in turn was expected to improve information recall, i.e., free recall and/or recognition of information provided by the physician in the consultation. We planned to assess emotional stress by means of both self-reported and psychophysiological arousal measures to increase our sensitivity to detect any relations and to examine replicability across measures. As this thesis was part of a research line addressing understanding and improving physician-patient information transfer within the field of oncology, and emotions are an inherent part of most oncological consultation, we focused on the impact of communication by oncologists. The testing of this model was established by the research described in Part II of this thesis.

The video-vignette approach
The experimental video-vignettes methodology is highly suitable to investigate these hypothesized effects, as it allows conclusions about causality. Moreover, because the key to such an approach is standardization, it allows for an objectively scored test of information recall. Furthermore, video vignettes provide an ethical alternative to investigating potentially harmful effects of the manipulation of communication in actual medical consultations [30]. In addition, the video-vignette approach was found to be a valid method to evaluate medical communication [26, 31].

Nevertheless, several methodological considerations warrant investigation [25]. To ensure ecological validity of the design, i.e., the extent to which the act of watching a video vignette as an analogue patient resembles being a patient in an actual medical consultation, it is important that analogue patients are engaged with the video vignette. Engagement is a multi-dimensional construct borrowed from the field of persuasive communication [32, 33], which can be defined as the degree to which analogue patients view the video attentively, submerge in the video vignette’s story, identify with the video patient, and experience empathy and emotions accordingly. (Emotional) engagement is particularly important when testing the hypothesized relationships described above, as analogue patients’ emotions are subject of investigation. Therefore, we aimed to optimize the video-vignette approach by investigating several of the unresolved methodological issues in relation to analogue patients’ engagement. This is established by the research presented in Part I of this thesis.
Figure 1. A model of hypothesized relationships

Notes. Without accounting for emotional stress, affect-oriented communication was expected to positively impact information recall, which is called the total effect. When accounting for emotional stress as a potential mediator of this relation, the total effect can be broken down into two effects. First, the indirect effect, or in other words the mediation effect, whereby communication exerts its influence through (analogue) patients’ emotional stress. Specifically, affect-oriented communication was assumed to reduce emotional stress (path a), and these lower levels of emotional stress were assumed to result in higher levels of information recall (path b). Second, the direct effect, which can be calculated by predicting information recall based on communication while controlling for emotional stress, thus taking into account a possible mediation effect.

Since emotional stress was expected to be a (partial) mediator of the impact of affect-oriented communication on information recall, we hypothesized that an indirect effect could be demonstrated, and -as a consequence- the direct effect was expected to be smaller than the total effect [34].

THESIS OUTLINE

PART I - The video-vignette approach

In the first part of this thesis we sought to gain more insight in, and find ways to optimize, analogue patients’ engagement when using the video-vignette methodology. To this end, we first developed and validated the Video Engagement Scale (VES), a multi-dimensional questionnaire to retrospectively assess analogue patients’ video-vignette engagement. Chapter 1 describes the development and validation of the VES. Next, in the study described in Chapter 2, we examined whether disease-naive individuals (N = 24) or (former) cancer patients (N = 22) showed better engagement as analogue patients in the video-vignette design, operationalized by using the VES and various psychophysiological measures. The sample of disease-naive analogue patients consisted of disease free individuals who were never diagnosed with cancer. In the research described in Chapter 3,
Chapter 1 | General introduction

we then tested how variations in video-vignette introduction format and camera focus influence analogue patients’ engagement with a video vignette showing a bad news consultation. Disease-naive individuals (N = 181) acted as analogue patients in a randomized video-vignettes study with a 2 x 3 between-subjects design. The engagement-inducing effects of two introduction formats (an audiovisual and a written introduction) and three variations in camera focus (a focus on 1: the physician only; 2: the physician and the patient at neutral moments alternately; 3: the physician and the patient at emotional moments alternately) were tested, as well as their interaction.

We used the findings collected in Part I of this thesis to inform methodological decisions in the research described in Part II, in particular with regard to the sample of analogue patients in Chapter 5, 6 and 7, and the development of video-vignettes in Chapter 7. Moreover, we used the VES to check the successfulness of analogue patient randomization in Chapter 6 and 7.

PART II - How oncologists’ communication impacts patients’ information recall and emotional stress

In Part II of this thesis we conducted a series of experimental video-vignettes studies to test the hypothesized relationships as displayed in Figure 1. First, in the research described in Chapter 5, we examined whether the emotional stress often experienced by patients during oncological consultations could be a mechanism that leads to limited information recall. We tested the associations between disease-naive analogue patients’ psychophysiological arousal, self-reported emotional stress, and their free recall and recognition of information provided by the oncologist in the video vignette. These data were collected by means of the video-vignettes study described in Chapter 3. Next, in the video-vignettes study presented in Chapter 6, we investigated the impact of a specific form of affect-oriented communication, i.e., trust-conveying communication. To this end, we used video-vignettes previously developed by Hillen and colleagues [35], on disease-naive analogue patients’ (N = 97) information recall, i.e., free recall and recognition, and psychophysiological arousal. Moreover, we tested whether the impact of trust-conveying communication on information recall was mediated by a reduction in psychophysiological arousal. In the video-vignettes study described in Chapter 7, another form of affect-oriented communication was tested. In that study, we investigated the impact of two types of emotion-oriented communication, i.e., behaviors enacted in response to patients’ negative emotional expressions with the intention to alleviate those emotions, on disease-naive analogue patients’ (N = 217) information recall and emotional stress. The oncologist’s communication comprised of either attentive silence, labeled as emotion-oriented silence, or acknowledging, explorative, empathic and supportive statements, labeled as emotion-oriented speech. Emotion-oriented silence and speech were compared to each other and to a standard communication condition. Moreover, the assumed mediation by psychophysiological arousal and self-reported emotional stress was tested, as well as the moderation by analogue patient characteristics, such as their health literacy. In the qualitative study presented in Chapter 8, we collected data from semi-structured in-depth interviews which we conducted with a heterogeneous
sample of 16 (former) cancer patients and 13 medical oncologists, radiotherapists and oncological surgeons. We examined their views on the effects of emotion-oriented silence and speech by oncologists, as well as their opinions on factors hindering oncologists’ response to patients’ emotional expressions. Moreover, we asked oncologists to evaluate their own communication in response to patients’ emotions and investigated their perspectives on potentially successful ways to improve such communication in current oncological practice.

The research described in Part I and II of this thesis are summarized in Chapter 9. Furthermore, in that last chapter we discuss our findings in relation to the known literature, as well as our ideas on the implications thereof and about future research directions.
REFERENCES


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