1 Title: Creating scripted video-vignettes in an experimental study on two

2 empathic processes in oncology: reflections on our experience

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Abstract:

Objective: The aims were to: (1) apply the guidelines to develop and test the validity of video-vignettes manipulating empathy and context in oncology; (2) compare lay people's and patients' assessments of validity; (3) reflecting on our experiment

Methods: Guidelines were followed: (1) deciding whether video-vignettes were appropriate; (2) developing a valid script; (3) designing valid manipulations; (4) converting the scripted consultations into videos. One hundred sixteen lay people and 46 cancer patients filled in the Video Engagement Scale, the CARE, and ad hoc questionnaires on realism and emotions.

Results: The video-vignettes are valid for experimental use. Differences appeared in the emotions participants reported. The empathic processes were successfully manipulated and perceived. Lay people's and patients' assessments were equivalent, except for video-vignettes in neutral consultations. Participants' comments on nonverbal behavior, camera perspective, scripts and empathy assessment were reported.

Conclusion: Patients' assessments are impacted by their personal experiences. Researchers should control for this in analogue patient studies.

Practice implications: Based on this experience, we reflect on: (1) adopting congruent nonverbal behavior throughout the video-vignettes; (2) alternating camera perspectives; (3) avoiding the sole use of written scripts; (4) using quantitative and qualitative analysis to validate scripts and video-vignettes.

Keywords: Analogue Patients, Video-vignette, Empathy, Cancer, Methodology.

1. Introduction

Although physician empathy (PE) is associated with beneficial patient outcomes [1], its nature remains unclear [2]. PE is generally considered as a whole, while subcomponents can be identified [3,4]. Based on a model by Neumann et al., (2009) [5], we postulate that PE impacts patient outcomes via two distinct processes: the emotional process of empathy (emo-emp) by which physicians understand, acknowledge patients in their difficulties, and the cognitive process (cog-emp) by which physicians provide more medical information and involve patients in their own care. While patient satisfaction is higher in cog-emp consultations [6], mixed results are found regarding emo-emp consultations [6,7]. Medical context should also be taken into account as the effect of PE differs between "follow-up" consultations (follow-cons) and "bad-news" consultations (bad-cons) [4,8,9]. Therefore, further research is needed to clarify the impact of these empathic processes on cancer patients' outcomes according to the type of consultation.

However, PE is difficult to manipulate. The use of experimental studies has developed, with analogue patient paradigm (APP) studies. Analogue patients (AP), who may be current/former patients or lay people, are asked to adopt a patient's perspective and to judge a video-vignette depicting mock patient-physician interactions. Although the use of AP studies is validated, it is unclear whether lay people can put themselves in the shoes of current patients. Lay people are able to adopt patient perspective [10–12]. However, slight differences appeared between analogue and current patients' preferences regarding information exchange in bad-cons [11]. Moreover, anxiety and negative affect after viewing video-vignettes were higher in lay people compared to current patients [13].

APP requires creating and validating video-vignettes, which is a long methodological process rarely detailed in studies [11,14]. The challenge is to ensure both external and internal validity: the realism and generalization of videos (external validity, i.e. the consultation is plausible) and the effectiveness of the manipulations (internal validity or manipulation check, i.e. the physician is empathetic when he/she is supposed to be). Guidelines have been developed to help researchers [14,15]. However, for certain issues such as whether to alternate camera perspectives or not, guidance is still lacking, hence the development of research to address this gap [16].

To conduct a future APP study aiming at assessing the effect of two empathic processes on patients' adjustment to cancer, we needed to develop video-vignettes with: (1) neutral empathy

consultations (neutral-emp) used as a control condition; (2) consultations with the emotional process of empathy (emo-emp); (3) consultations with the cognitive process of empathy (cog-emp). For each type of consultation, two different contexts were used: (a) "follow-up" consultations (follow-cons); (b) "bad-news" consultations (bad-cons). Abbreviations are provided in Table 1.

The present paper follows the example of Hillen et al. (2013) and Van Vliet et al. (2013) [14,15] and aims at:

1. Applying the existing guidelines to develop and test the internal and external validity of six video-vignettes manipulating surgeons' empathic processes and medical context [14,15]. **Validating the written scripts is a preliminary step to validate the video-vignettes. Therefore, written scripts' development and validation will be described.**

2. Comparing lay people's and patients' assessments of internal and external validity of the video-vignettes

3. Proposing some reflections about this experiment.

-Insert Table 1-

2. Methods

The phases suggested by the guidelines were respected with the exception of the "administering the videos" phase [14,15], because the objective was not to report the results of the experiment. Figure 1 presents the phases. **Developing and testing the validity of the scripts is a preliminary step to develop and test the video-vignettes.**

- *Insert Figure 1 –*

Procedure

The study was carried out online. Each participant was randomized to rate only one script/video in order to avoid any contagion effect as material was similar, except for manipulation statements. All participants provided written informed consent and the university ethics committee validated the study (Ref: 2018-296-S63).

2.1. Phase 1

The first phase consisted in justifying the use of video-vignettes as an appropriate methodology. This paradigm was used for several reasons. First, it is not possible to manipulate communication in real encounters for ethical considerations. Second, since two empathic processes were tested, the use of video-vignettes ensured the rigorous standardization of surgeons' communication, which is impossible in clinical care [17]. Thanks to this standardization, a causal effect of manipulations can be drawn [14]. Finally, as one of our hypotheses in the planned study was that the perception of PE depends on certain patient characteristics such as emotional abilities [4], the viewing of video-vignettes by several participants would allow us to test this hypothesis.

2.2. Phase 2

Before developing the video-vignettes, written scripts are developed. The second phase consisted in writing a standard script, the basis of all scripts. Scripts can be based on either experience/literature guidelines or on real interactions [14,15]. Experts are rarely involved at this stage [14]. Our scripts were inspired by real consultations in order to be closer to reality. Surgeons were involved in writing them so that the medical content was credible. It is recommended to start off with an introduction to the simulated consultation to help viewers understand the situation and identify with the mock patient [14,15]. Audiovisual introductions

allow greater engagement for viewers than written ones [16]. Before the simulated consultation, a short video sequence was created in which the patient introduced himself and the context of the consultation (i.e. the patient is waiting for surgery outcomes). Finally, the scripts can reflect a whole consultation or part of it. Shorter scripts have a major impact and allow greater video feasibility [14]. This is why the scripts only reflect the "surgical report" part of the consultations (successful in follow-cons vs. unsuccessful in bad-cons). Two standard scripts were written: one for follow-cons and one for bad-cons.

2.3. Phase 3

The third phase consisted in designing the manipulations. In general, studies do not sufficiently clarify what their manipulations comprise [14]. As PE is not clearly defined [2], we drew a search of the literature to create the manipulations. It mainly focused on the manipulation of PE in APP studies and on the tools used to assess PE. Our literature search was not restricted to the term "empathy", because "patient-physician communication" and "patient centeredness" also encompass this notion.

The emo-emp encompassed validating patients' emotions and difficulties; questioning and encouraging them to speak about it; ensuring medical presence throughout care; showing concern [e.g. 13,18,19].

The cog-emp encompassed involving patients in their own care; giving thorough information; verifying patients' understanding and encouraging questions; discussing the next steps and introducing a plan of action; giving control and being positive [e.g. 9,20,21].

The standard script was the neutral-emp version and fragments were added to design the emo-emp and cog-emp versions. For example, the emo-emp version was the neutral-emp with added emotional empathy fragments. The neutral-emp did not have non-empathetic statements as it was a neutral consultation. Surgeons were involved to ensure realism.

The follow-cons was a good news consultation as it described the success of an oncology surgery report. In the bad-cons, the surgeon explained that since the cancer had spread, he was not able to remove the tumor. Conditions are described in Table 2.

It is recommended to decide on the verbal and/or nonverbal nature of the manipulations. Manipulations mainly focused on the verbal content. Manipulating both verbal and non-verbal behaviors would not allow us to conclude which of these two aspects influenced the results. Non-verbal behavior was standardized between the films. However, non-verbal communication is inseparable from verbal communication [22,23]. Therefore, during the added manipulated

parts, nonverbal behavior was congruent with verbal content. The rest of the consultation was strictly identical across the different versions.

Researchers also need to decide whether they compensate for duration differences, which appeared between the follow-cons and bad-cons versions. We chose not to compensate for duration differences, which is common practice [13], as adding fillers could impact the perception of the consultation [14]. Duration differences also appeared between the neutral-emp, the emo-emp and the cog-emp versions. Similarly, we did not compensate for these differences, as long as the emo-emp and cog-emp versions lasted the same amount of time. Moreover, it was expected that neutral-emp consultations would be shorter as there were no manipulations. Scripts are available in Appendix C. Participants and measures are described after the following section.

- Insert Table 2 –

2.4. Phase 4

This phase consisted in turning the scripts into role-playing, and then into video-vignettes. To save time and because the scripts were thoroughly reviewed by surgeons and experts, we decided to skip the role-playing part. However, the scripts were rehearsed and adjusted several times with a stage director before shooting the final video-vignettes.

We had to decide whether to choose actors or real care providers. Since there were six versions to shoot and certain skills required to standardize nonverbal behavior, we chose actors. The actor patient was a man to best depict the digestive cancer patient who was our target. The actor surgeon was also a man in our case but could have been a woman.

We decided to alternate camera perspectives, as recommended [14–16]. Close-ups were made on the patient at key emotional moments, and on the surgeon during manipulations. Video durations are available in Appendix A. We filmed in the comprehensive cancer center in Lille (Centre Oscar Lambret). Once the vignettes were filmed, external and internal validity were assessed as described after the following section. If validity was not satisfying, it was planned to film again, which was unnecessary. Videos are available upon request.

Script validation

Participants

1) Twenty experts, comprising 10 physicians (8 oncologists, 1 medical student and 1 surgeon) and 10 researchers in health psychology, validated the written scripts providing written comments on realism and manipulations. Their feedback led to readjustments.

2) Forty-eight lay people rated the success of manipulations (i.e. internal validity), realism and the emotions felt during viewing (i.e. external validity).

Measures

For internal validity, we used the ten-item CARE measure, assessing PE and the emotional and cognitive empathic processes [24]. The emotional process subscore refers to items 4 – 5 – 6 (i.e. how was your doctor at showing care and compassion?); and the cognitive process subscore refers to items 7 – 8 – 9 – 10 (i.e. how was your doctor at helping you take control?) [3,25,26]. For external validity, realism was assessed with an ad-hoc item with a five-point Likert response scale ranging from 1 "Not realistic at all" to 5 "Very realistic". A free comment section was available. Finally, an ad-hoc scale of the emotional impact of the script was used. The scale assessed anxiety, interest for the script, fear, sadness, and relief on a five-point Likert response scale ranging from 1 "Not at all" to 5 "Strongly". Participants were invited to comment on the script.

Video-vignette validation

Participants

1) Fourteen experts were involved. Seven physicians (6 oncologists and 1 surgeon) and 7 researchers in health psychology provided written comments on the video-vignettes and rated the effectiveness of the manipulations (e.g. in an emo-emp, did the physician listen to the patient?).

2) One hundred sixteen lay people, different from those in validation step 1, and 46 cancer patients were involved, as recommended [11]. Patients were recruited via the patient committee of the French National League Against Cancer.

Measures

Internal and external validity were assessed in the same way as in the validation of the scripts.

The Video Engagement Scale, which has a 15-item seven-point Likert response scale [27], was used to assess participants' engagement in the video-vignettes. Higher scores indicate higher engagement in the video-vignette. Three questions about satisfaction with image and sound on a five-point Likert response scale were asked. Higher scores indicate higher satisfaction. For patients, medical information comprising tumor localization and stage, diagnostic date and current treatments were recorded (Table 3).

Hypotheses

To confirm the internal validity, we expected the following:

- compared to the neutral-emp, we expected a significantly higher level of the emotional process for the emo-emp versions (H1 for scripts and H1' for videos) and a significantly higher level of the cognitive process for the cog-emp versions (H2 and H2').
- Bad-cons were expected to be associated with more participant anxiety, fear and sadness compared to follow-cons (H3 and H3'), while the latter were expected to be associated with more participant relief compared to the former (H4 and H4').

To confirm the external validity:

- all versions were expected to be equal in realism and in interest for the script (H5 and H5').
- Emo-emp and cog-emp were expected to be equal in emotional arousal after viewing (H6).
- Engagement in video-vignettes was expected to be equal in all conditions (H7).

We expected that patients' and lay people's evaluations of internal and external validity would overlap (H8).

Data analysis

Non-parametric tests were used due to the small sample size and ANOVA assumptions were not met. We performed the Mann-Whitney test to compare follow-cons and bad-cons and the Kruskall-Wallis test to compare the neutral-emp, emo-emp and cog-emp conditions. Pairwise comparisons with adjusted p values were performed when possible. The analyses were conducted using IBM SPSS version 24.

3. Results

3.1.Script validation

Socio-demographic information is provided in Table 3 and descriptive statistics in Appendix B. The scripts were rated "fairly realistic" (follow-cons: $M = 4.03$, $SD = 0.55$; bad-cons: $M = 4$, $SD = 0.34$, possible range 0-5).

- Insert Table 3 –

Internal validity

For follow-cons, empathic processes significantly affected the emotional process subscore ($H(2) = 7.18$, $p = .028$), but not the cognitive process subscore ($H(2) = 3.03$, $p = .22$). Pairwise comparisons with adjusted p-values showed that the emo-emp had a higher emotional process subscore than the neutral-emp ($p = .035$, $r = -0.65$). For bad-cons, empathic processes showed a tendency to affect the emotional process subscore ($H(2) = 5.8$, $p = .055$), and significantly affected the cognitive process subscore ($H(2) = 7.06$, $p = .029$). Pairwise comparisons showed that the cog-emp had a higher cognitive process subscore than the neutral-emp ($p = .03$, $r = -0.71$). Since the effect was not significant for the emo-emp, pairwise comparisons could not be performed. Descriptive statistics indicated that the neutral-emp had a lower emotional process subscore than the emo-emp. H1 and H2 are partially validated.

External validity

Anxiety, fear and sadness were higher in bad-cons than in follow-cons. Furthermore, relief was higher in follow-cons than in bad-cons. H3 and H4 are validated. There were no differences between follow-cons and bad-cons on realism and interest for the script. H5 is validated. Results are presented in Table 4.

-   *Insert Table 4 –*

For the follow-cons, the emo-emp and cog-emp scripts were equivalent on realism ($H(2) = 2.36$, $p = .307$), anxiety ($H(2) = 4.272$, $p = .118$), interest for the script ($H(2) = 2.29$, $p = .32$), fear ($H(2) = 4.83$, $p = .09$) sadness ($H(2) = 0.49$, $p = .784$) and relief ($H(2) = 1.92$, $p = .382$).

For bad-cons, the neutral-emp, emo-emp and cog-emp scripts were equivalent on realism ($H(2) = 2.63$, $p = .268$), anxiety ($H(2) = 2.44$, $p = .295$), interest for the script ($H(2) = 3.54$, $p = .17$), fear ($H(2) = 3.68$, $p = .16$) sadness ($H(2) = 1.36$, $p = .51$) and relief ($H(2) = 2.6$, $p = .273$). There were no differences on realism and emotions felt during viewing between the three versions.

3.2. Video-vignettes validation

Socio-demographic and medical information is provided in Table 3 and descriptive statistics in Appendix B. The scripts were rated "fairly realistic" (FC: $M = 3.52$, $SD = 0.74$; BNC: $M = 3.62$, $SD = 1.09$, possible range 0-5).

Internal validity

For follow-cons, empathic processes significantly affected both the emotional ($H(2) = 23.8$, $p < .001$) and cognitive ($H(2) = 22.42$, $p < .001$) process subscores. The emo-emp had a higher emotional process subscore ($p < .001$, $r = -0.41$) than the neutral-emp version. The cog-emp had a higher cognitive process subscore ($p = .000$, $r = -0.67$) than the neutral-emp version. For bad-cons, empathic processes significantly affected both the emotional ($H(2) = 6.61$, $p = .037$) and cognitive ($H(2) = 8.85$, $p = .012$) process subscores. Pairwise comparisons with adjusted p-values showed that the emo-emp had a higher emotional process ($p = .07$, $r = -0.31$) than the neutral-emp. The cog-emp had a higher cognitive process subscore ($p = .009$, $r = -0.45$) than the neutral-emp version. H1' and H2' are validated.

External validity

There were no differences between follow-cons and bad-cons regarding realism, interest for the video and satisfaction with image. H5 is validated. Anxiety, fear, sadness and engagement in the video were higher in bad-cons than in follow-cons. H3' is validated while H7 is not. As expected, relief was higher in follow-cons than in bad-cons. H4' is validated. Results are provided in Table 4.

For follow-cons, the neutral-emp, emo-emp and cog-emp video-vignettes were equivalent regarding realism ($H(2) = 1.14$, $p = .567$), anxiety ($H(2) = .02$, $p = .99$), interest for the video ($H(2) = 1.53$, $p = .47$), fear ($H(2) = .434$, $p = .81$), engagement in the video ($H(2) = 2.28$, $p = .32$), satisfaction with image ($H(2) = 0.05$, $p = .97$) and sound ($H(2) = .667$, $p = .72$). Empathic processes affected relief ($H(2) = 11.912$, $p = .003$) and tended to affect sadness ($H(2)$

= 5.84, p = .054). The cog-emp video-vignette generated more relief than the neutral-emp version (p = .002, r = -0.51). Descriptive information indicated that the neutral-emp had the highest score on sadness.

For bad-cons, the neutral-emp, emo-emp and cog-emp video-vignettes were equivalent regarding realism ($H(2)$ = 2.42, p = .30), anxiety ($H(2)$ = 4.04, p = .13), interest for the video ($H(2)$ = 1.51, p = .47), fear ($H(2)$ = 1, p = .61) sadness ($H(2)$ = 1.91, p = .385), relief ($H(2)$ = 0.2, p = .991), engagement in the video ($H(2)$ = 2.37, p = .31), satisfaction with image ($H(2)$ = 0.74, p = .69) and sound ($H(2)$ = 1.44, p = .49).

To conclude, H6 is validated with the exception of relief and sadness issues in follow-cons.

Differences between lay people and patients

In follow-cons, for the neutral-emp version, the emotional and cognitive process subscores were higher for lay people than for patients.

In bad-cons, for the neutral-emp version, the emotional process subscore was higher for lay people than for patients. In the emo-emp video-vignette, sadness was higher for patients than for lay people. In the cog-emp video-vignette, realism was higher for lay people than for patients. Results are presented in Table 5.

There were no differences in any other measures (data not shown). H8 is not validated.

- *Insert Table 5 –*

3.3.Reflection on the experience

Participants' comments provided us with feedback on the choices we made.

1. *Comments on nonverbal behavior :*
Out of the 43 participants who provided comments, 8 reported that it seemed odd that the surgeon was first neutral and then leaned towards the patient when being empathetic. Two experts also provided this comment.

2. *Comments on camera perspective:*
Twelve participants reported that close-ups on the surgeon enabled them to pay attention to the medical discourse and to adopt the patient's perspective, while close-ups on the patient made them empathize with him at key emotional moments.

3. Comments on validation of written scripts:

Out of the 48 participants, 10 reported it was difficult for them to assess PE, because a written sentence could be interpreted in various ways, due to lacking important communication parameters such as intention or paralinguistic cues.

4. Comments on empathy assessment:

A single sentence (i.e. "I see that you are worried") was perceived as being empathetic (i.e. the physician is concerned) or non-empathetic (i.e. the physician insists on negative emotions without doing anything). Perception of PE remains a subjective process that is sensitive to various socio-demographic and personal variables, which created much heterogeneity in the participants' assessments.

4. Discussion and conclusion

4.1. Discussion

The first objective was to test the internal and external validity of six video-vignettes manipulating empathic processes and medical context. **Developing and testing the six written scripts was a preliminary step.**

As for internal validity, manipulations were successful in both scripts and video-vignettes (H1, H1', H2, H2'). However, in the script of follow-cons, the cog-emp did not differ from the neutral-emp version regarding the cognitive process subscore (H1, H2). Comments indicated that participants had difficulties assessing the surgeon's empathy, as only written verbal content was provided without any intentions or paralinguistic parameters.

Concerning external validity, both scripts and video-vignettes were perceived as realistic in all conditions (H5, H5'). Anxiety, fear and sadness were higher in bad-cons, while relief was higher in follow-cons (H3, H3', H4, H4'). This comes as no surprise given that in bad-cons, the surgeon reported that he was not able to operate because the disease had spread more than expected. In follow-cons, the surgeon gave a successful surgical report. It was easier to identify with the patient in bad-cons than in follow-cons, since this type of consultation caused more negative emotions in participants (H7). High correlations between engagement score and anxiety, sadness and fearfulness induced by video-vignettes have previously been observed [27]. However, other factors such as personal confrontation with bad news consultations could also increase participants' engagement in viewing.

Participants were asked to assess the emotions they felt after viewing but not to adopt patient perspective. The empathic processes did not affect the emotions that participants reported, expect for two conditions in the validation of video-vignettes (H6).

First, in follow-cons, sadness was higher in the neutral-emp condition than in other ones. In this context, a neutral physician could be perceived negatively and trigger more sadness in the participant, who identifies with the patient.

Second, still in follow-cons, relief was higher in the cog-emp version than in the neutral-emp version, which was not the case for the emo-emp condition. This finding might seem surprising but it is in line with an oncology study that demonstrated that compassion and listening could actually be frightening and hasten patients' death [28]. Cog-emp could indeed bring more relief, because physicians show that they have the situation under control as they provide advice and a plan of action.

To conclude, the analysis revealed that the video-vignettes were valid to be used in an experiment.

The second objective was to compare lay people's and patients' assessments of the video-vignettes (H8). Overall, their assessments matched, as previously reported [10–12]. However, slight differences appeared. In bad-cons, realism was higher for lay people in the cog-emp version, maybe suggesting that lay people expect cog-emp. Furthermore, sadness was higher for patients in the emo-emp version. This in line with studies demonstrating that empathy is not expected in some contexts and may be perceived as frightening [28,29].

For the neutral-emp versions, the emotional process subscores were higher for lay people than for patients in both types of consultations, and the cognitive process subscore was higher for lay people than for patients in follow-cons. In sum, in neutral encounters, the encounter was neutral, namely without empathic statements, patients perceived lower emotional and cognitive empathy than lay people. Patients' comments were very critical of the surgeon in the neutral-emp versions. They reported feeling angry because the surgeon did not empathize enough with the patient, which two patients described as a "very realistic" attitude. Several patients reported their personal experiences with oncologists in the comment section, suggesting it might have influenced their assessment of the video-vignettes, as previously described in a qualitative study [30]. It may even have affected their general perception of physicians negatively (e.g. *I have never met a doctor who was interested in my concerns, or gave me advice to take care of myself*) and positively with top-down social comparison processes (e.g. *I remember my surgeon patting my hand before anesthesia, saying everything would be all right*). Although one study could not find any influence of the self-reported experiences of lay people with their physicians [31], our results suggest an opposite statement for patients and even for lay people. The latter also reported that their personal experiences with relatives who had cancer could have an effect on their perception of the scripts or video-vignettes (e.g. *My father died of lung cancer and I was very moved, I think it impacted my answers)*. Therefore, it would be important to control for patient-physician relationship in patients and lay people and controlling for personal confrontation with cancer in lay people.

The third objective was to reflect on this experiment based on this validation and on participants' comments. **Based on these comments, we provide 4 reflections: (1) Though it could limit determining causal effects and cause more differences between the neutral and manipulated versions, if researchers do not want to focus on verbal or nonverbal content specifically, they could adopt congruent non-verbal behavior throughout the video-**

vignettes, in order not to separate standard parts from manipulations parts (2) Research indicates it is recommended to alternate camera perspective [16], which is supported by our sample (3) Using written scripts only would not be the best option to assess the effect of various communication types (4) Using both quantitative and qualitative analysis to validate scripts and video-vignettes could be relevant. As there are few evidence-based recommendations, guidelines are generally based on the pros and cons of each possible decision [14]. Although our reflections warrant further investigation to be confirmed, we think they already offer useful insights for researchers. This study has several strengths because it involved experts, lay people and patients. They reported both qualitative and quantitative data to validate the video-vignettes, which is rare [11]. It also has limitations: we did not validate the role-played scripts, although scripts were rehearsed with a stage director and commented by the research team. Moreover, sample sizes were small, especially for the patients, so that larger samples are needed to confirm the temporary results. Therefore, we cannot ascertain there is no difference in engagement and realism between the videos. The reflections we provided were based on our experience. Further research is needed to establish evidence-based choices. Finally, this type of paradigm does not ensure full ecological validity, as communication processes and their effect go way beyond verbal and non-verbal behaviors [32].

4.2. Conclusion

Six video-vignettes manipulating PE and medical context were created and validated for experimental use. Lay people's and patients' assessments of the video-vignettes were mainly similar, except in the neutral-emp condition, indicating a potential bias in patient perception owing to their medical history. Researchers should control for physician-patient relationship if AP are current patients.

4.3. Practice implications

Based on participants' feedback, we reflect on: (1) having a physician congruent nonverbal behavior throughout the video-vignettes; (2) using various camera perspectives; (3) avoiding the sole use of written scripts in experimental studies; (4) using both quantitative and qualitative analysis to validate scripts and video-vignettes; (5) controlling for participants' personal experiences with physicians. However, evidence-based research is needed to test these reflections. Finally, scripts are available in French and English. Video-vignettes are also available in French for the same purpose.

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1   **Tables**

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3   **Table 1**

4   *Legend Abbreviations*

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Abbreviation	Full expression
AP	Analogue Patients
APP	Analogue Patient Paradigm
Bad-cons	Bad-news consultation
Cog-emp	Cognitive process of physician empathy
Emo-emp	Emotional process of physician empathy
Follow-cons	Follow-up consultation
Neutral-emp	Neutral consultation
PE	Physician empathy

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Table 2

Conditions of the Various Video-Vignettes

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	Medical context	
	Follow-up consultations (follow-cons)	**Bad news consultations (bad-cons)**
Empathic processes	Neutral consultation (neutral-emp)	Neutral consultation (neutral-emp)
	Neutral consultation + Emotional process (emo-emp)	Neutral consultation + Emotional process (emo-emp)
	Neutral consultation + Cognitive process (cog-emp)	Neutral consultation + Cognitive process (cog-emp)

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Table 3: *Socio-Demographic and Medical Characteristics of Lay People and Patients*

Validating Scripts and Video-Vignettes

		Patients N (%)	Lay people N (%)
SCRIPT VALIDATION			*N = 48*
Age	Mean (*SD*)		35.06 (*14.25*)
	Median (min-max)		28.5 [21 – 71]
Gender	Man		16 *(33.3%)*
	Woman		32 *(66.6%)*
Socio-professional category	Farmer		0 *(0%)*
	Craftsman, company manager		1 *(2.1%)*
	Intellectual profession		21 *(43.75%)*
	Intermediate occupations (school teacher, technician, civil servant)		9 *(18.75%)*
	Employee		5 *(10.42%)*
	Worker		0 *(0%)*
	Retired		4 *(8.33%)*
	Student		6 *(12.5%)*
	Unemployed		2 *(4.16%)*
VIDEO-VIGNETTE VALIDATION		*N = 46*	*N = 116*
Age	Mean (*SD*)	48.54 (*14.37*)	41.78 (*15.33*)
	Median (min-max)	53 [18 – 72]	39.5 [19 – 70]
Gender	Man	6 *(13%)*	26 *(22.4%)*
	Woman	40 *(87%)*	90 *(77.6%)*
Socio-professional category	Farmer	1 *(2.2%)*	2 *(1.7%)*
	Craftsman, company manager	2 *(4.3%)*	6 *(5.2%)*
	Intellectual profession	22 *(47.8%)*	36 *(31%)*
	Intermediate occupations (school teacher, technician, civil servant)	3 *(6.5%)*	17 *(14.7%)*
	Employee	1 *(2.2%)*	7 *(6%)*
	Worker	0 *(0%)*	1 *(0.9%)*
	Retired	5 *(10.9%)*	10 *(8.6%)*
	Student	1 *(2.2%)*	8 *(6.9%)*
	Unemployed	3 *(6.5%)*	2 *(1.7%)*
	Other	8 *(17.4%)*	5 *(4.3%)*
	Missing	0 *(0%)*	22 *(19%)*
Time since diagnosis (in months)	Mean (*SD*)	70.84 *(63.81)*	
	Median (min-max)	57 (2 – 224)	
Tumor localization	Breast	13 *(28.26%)*	

	Prostate	2 *(4.35%)*	
	Colon	1 *(2.17%)*	24
	Lymphoma	2 *(4.35%)*	
	Pancreas	1 *(2.17%)*	
	Head and neck	2 *(4.35%)*	
	Gynecologic	3 *(6.52%)*	
	Lung	4 *(8.7%)*	
	Other	4 *(8.7%)*	
Cancer stage	Stage I	5 *(10.9%)*	
	Stage II	5 *(10.9%)*	
	Stage III	7 *(15.2%)*	
	Stage IV	6 *(13%)*	
	Missing	23 *(50%)*	
Current treatments	No treatment	29 *(63%)*	
	Chemotherapy	5 *(10.9%)*	
	Radiotherapy	1 *(2.2%)*	
	Immunotherapy	2 *(4.3%)*	
	Surgery	2 *(4.3%)*	
	Hormonotherapy	7 (15.2%)	

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Table 4

Differences between Follow-cons and Bad-cons in Scripts and Video-Vignettes

	Follow-up consultations	Bad news consultations	U	z	r (effect size)	P
	Mean rank	Mean rank				
SCRIPT VALIDATION						
Realism	24.78	24.03	261.5	-.25	-.04	.81
Anxiety	18.98	32.08	406	3.35	.49	.001
Interest	25	23.67	255	-.34	-.05	.73
Fear	20.95	30.42	376.5	2.52	.36	.012
Sadness	18.07	35.22	463	4.29	.62	.000
Relief	29.62	14.94	98	-3.98	-.58	.000
VIDEO-VIGNETTE VALIDATION						
Realism	47.83	53.17	1383.5	.99	.09	.322
Anxiety	38.96	62.04	1827	4.09	.41	.000
Interest	52.5	48.5	1150	-.73	-.07	.47
Fear	40.46	60.54	1752	3.66	.37	.000
Sadness	39.28	61.72	1811	3.97	.40	.000
Relief	59.58	41.42	796	-3.64	-.36	.000
Video Engagement Scale (VES)	43.9	56.22	1530	2.14	.21	.033
Satisfaction with image	47.83	53.17	1383.5	.99	.09	.322
Satisfaction with sound	44.96	54.23	1427	1.87	.02	.061

Table 5

Significant Differences between Lay People's and Patients' Assessments

	Mean rank lay people	Mean rank patients	U	z	r (effect size)	P
Follow-cons and neutral-emp						
Emotional process subscore	9.93	5.07	7.5	-2.24	-.60	.026
Cognitive process subscore	10.29	4.71	5	-2.51	-.67	.010
Bad-cons and neutral-emp						
Emotional process subscore	9.3	3	2	-2.65	-.70	.008
Bad-cons and emo-emp						
Sadness	8.87	15.4	77	2.21	.49	.033
Bad-cons and cog-emp						
Realism	10.33	3	2	-2.88	-.72	.004