Communication Training for the Provision of Psychological Assessment Feedback: An Exploratory Randomized Controlled Study

Abstract

In psychology, few studies have focused on the programs used to train the skills needed to communicate the psychological assessment feedback. This exploratory study assesses two types of analogue online training in this context. Sixty-nine graduate psychology students were randomly assigned to one of three conditions: Simulation-based learning (SBL) with either a standardized patient (SP) or 360° immersive videos (360IV), or a waiting list. Both types of training targeted skills related to empathic communication, improvement of patient understanding and participation in decision-making. Pre-, post- and follow-up assessments were based on recorded role-play with patient-actors. First, the skills trained were assessed by blind raters. Then, patient-actors assessed students' empathy and their confidence in the students in their role as clinicians. Finally, students assessed their own empathy, self-efficacy and stress. The study aims to explore whether skills are improved in both experimental conditions (SBL-SP and SBL-360IV), as compared with the control condition. Results showed that SBL-SP resulted in improvements on all assessments. No significant changes were observed in the 360IV condition for blind rater assessments, whereas significant improvements were observed when the patient-actors assessed empathy. In conclusion, SBL-SP appears to be effective in improving clinical communication during psychological assessment feedback, while SBL-360IV appears promising but requires further finetuning.

Keywords: Feedback, health communication, patient-centered care, psychologist, simulation training.

Public significance statement

Simulation-based learning with standardized patients is effective in increasing both communication skills and relational components in psychology students. Simulation-based learning with 360° immersive video also increases relational components but does not increase communication skills as

assessed by an external evaluator. As the first training is the most expensive, the two trainings offer complementary solutions.

Communication Training for the Provision of Psychological Assessment Feedback: An Exploratory Randomized Controlled Study

At the final stage of psychological assessment, psychologists frequently share with the patient the results and their interpretations of the patient's psychological functioning, strengths and weaknesses, and resulting recommendations (Gruters et al., 2022; Jacobson et al., 2015; Longley et al., 2022). Some surveys indicate that 70% of neuropsychological assessment situations involve the delivery of feedback at the conclusion of testing (Bennett-Levy et al., 1994; Smith et al., 2007b), a step most authors call "feedback" (e.g., Longley et al., 2022). Furthermore, when providing feedback, psychologists must often share bad news (e.g., confirmation of a disability or discussion of a change in an established lifestyle) (Longley et al., 2022).

The feedback given to patients after a psychological assessment is now considered a central component of the assessment process (e.g., Ward, 2008). Despite its importance, however, feedback has long been described as the most neglected part of evaluation (e.g., Pope, 1992). These conversations are still poorly covered in the psychology curriculum. For example, in a study of a sample of 329 psychologists, 62% of them declared that they had not received any training on how to provide feedback to patients (Merker et al., 2010). In addition, the main learning method clinicians use is trial and error (Curry & Hanson, 2010), which is not in accordance with the scientist-practitioner model of training (Merker et al., 2010).

This is a major problem, given that the recommendations for clinical evaluation training require the practicing of basic skills, including feedback communication (e.g., Krishnamurthy et al., 2004; Wright et al., 2021), and that psychological evaluators are generally less comfortable with this part of the evaluation process (e.g., Butcher, 1992). In addition, the need for training is supported by studies indicating that quality feedback can have a psychoeducational and even therapeutic role as it is associated with beneficial psychological effects for the patient (e.g., on quality of life and self-

efficacy) with low to medium effect sizes (e.g., Longley et al., 2022; see also Meyer et al., 2001; Poston & Hanson, 2010).

Although there is now a fairly strong consensus on the beneficial effects of feedback, little work has been done to clarify what effective communication means in providing feedback. However, several authors emphasize the importance of training patient-centered communication skills (e.g., Epstein & Street, 2007; Kennedy et al., 2017). First, clinicians must demonstrate empathic communication skills, which have been found to improve patient satisfaction, adherence, and outcomes (Elliott et al., 2018; Howick et al., 2018) and reduce burnout among clinical health care staff (Wilkinson et al., 2017).

Empathic communication skills should be used to achieve several goals. A first objective is to improve a patient's understanding of their own situation. To do this, clinicians first have to obtain a clear view of the patient's perspective and explore the patient's understanding of their psychological functioning (Street et al., 2009). This will allow the clinician to use the patient's knowledge as a basis and to complement it as accurately as possible, as many authors suggest (Berg, 1985).

Feedback is considered as a means of increasing patients' explicit knowledge of their own functioning and thereby increasing patient autonomy (Ward, 2008). A second function of communication skills is to seek to involve patients in shared decision-making regarding the outcome of a psychological assessment. Shared decision-making is defined as a "patient's rights and opportunities to influence and engage in the decision-making about his care through a dialogue attuned to his preferences, potential and a combination of his experiential and the professional's expert knowledge" (Clavel et al., 2021, p. 1926). The importance of shared decision-making has been extensively documented and identified as essential to evidence-based practice in psychology (APA, 2006). Indeed, regardless how strongly a treatment is empirically supported, if it goes against the patient's values or preferences, it may be associated with poor results, as the patient may not adhere to it (Dimatteo et al., 2002; Tompkins et al., 2013).

A well-known model to help clinicians implement key communication steps during feedback is the SPIKES model, which allows the building of a shared understanding, shared decision-making and management of the patient's emotions. This model has been widely used in different disciplines (medicine: Marschollek et al., 2019; speech-language pathology: Gold & Gold, 2018; psychiatry: Seeman, 2010) and its value has been highlighted in several situations in psychology, such as providing the conclusions of a neuropsychological assessment (Longley et al., 2022) or communicating about dementia (The British Psychological Society, 2018). The Setting-Perception-Invitation-Knowledge-Emotion-Summary (SPIKES) model has also been widely used as a framework for teaching students to break difficult news (Johnson & Panagioti, 2018) and has been associated with a substantial improvement in objective communication skills among health students (Johnson & Panagioti, 2018). This model includes six steps, one corresponding to each letter of the SPIKES acronym. First, the "Setting" corresponds to the preparation and the environment for the encounter. "Perception" includes the assessment of the patient's current knowledge and needs regarding the situation. In "Invitation," the clinician adds a sentence that indicates the potential difficulty of the forthcoming discussion. The "Knowledge" stage concerns how the information is given, with appropriate structure and words. "Emotion" implies an empathetic response to the recipient's feelings. Finally, the "Summary" closes the discussion with a review of the encounter and plans for the next steps (Baile et al., 2000).

Since we found no studies regarding psychologists' training with the SPIKES model, we explored the medical literature. In this area, simulation-based learning is widely used (Bauchat et al., 2016). Simulation-based learning is defined as "a technique […] to replace or amplify real experiences with guided experiences, often immersive in nature, that evoke or replicate substantial aspects of the real world in a fully interactive fashion" (Gaba, 2004, p. 2). Simulation-based learning includes the three components required for effective learning: First, the *setting* is a safe environment to learn in; second, in *simulation* the experience can take place and be observed by a facilitator; and

third, direct *debriefing* is done on the experience (Smith et al., 2007a). Debriefing is defined as facilitated or guided reflection in the experiential learning cycle that helps the learner to develop and integrate insights into later action (Rudolph et al., 2008, p. 1010). It has been widely recognized as playing a central role in the learning experience by providing the opportunity for discussion and reflection on the experience (Mayville, 2011), which is central to the principles of adult learning and experiential learning theory (Kolb & Kolb, 2009). Furthermore, in the simulation-based learning literature, a simulation is often considered as "an excuse to debrief" (Sawyer et al., 2016).

A popular tool used in the simulation step to teach communication skills to health care professionals is standardized patients (SP) (Maclaine et al., 2021; Rønning & Bjørkly, 2019). A standardized patient is a person specifically trained to portray a patient situation (clinical signs, personality, emotional reactions, body language, etc.) following a precisely described scenario (Savoldelli & Boet, 2013). The patient-actor replicates similar situations with different learners to allow reproducibility. Simulation with SPs has been recognized as having many advantages in communication skills training (Lane & Rollnick, 2007). This is also true in the context of relaying assessment feedback, where positive results have been shown with different assessment methods (e.g., external assessors, course staff, peers, and standardized patients) (Maclaine et al., 2021). Unfortunately, although its value has been emphasized for psychological training (e.g., Melluish et al., 2007), it has not been extensively studied. Another problem with the use of SPs is that it involves significant costs related to their recruitment, training, and work (Lane & Rollnick, 2007).

Several authors have suggested that the advent of new technologies allows for possible new pedagogic tools to use in the simulation step (Goosse et al., 2024; Hauze et al., 2019). One of these, 360° immersive videos (360IV), could potentially overcome the logistical limits of simulation with SPs. A 360IV is a recording that uses a special camera that captures the full view of an environment, not merely in two dimensions, like a classic video recording (Sultan et al., 2019). Although, to our

knowledge, this method has never been tested to train communication skills, several factors support the relevance of pursuing this option.

First, 360IV is known to increase self-reported empathy toward stigmatized populations by allowing users to take other people's perspective (e.g., Della Libera et al., 2023; Schutte & Stilinović, 2017; Sundar et al., 2017). Moreover, taking on the character of a patient (e.g., in role-plays with peers) has been shown to increase empathy (Lane & Rollnick, 2007). Being immersed in the patient's situation in a 360IV might therefore have similar positive impacts. In addition, the novelty of the approach and the possibility of literally "walking in the patient's shoes" might favor intrinsic motivation and a high level of activation, both of which are required for adequate adult learning (Fowler, 2008). Finally, the fact that immersion is implemented in a traditional simulation-based learning session, and thus followed by a debriefing, could provide similar results to simulation-based learning with SPs.

The aim of this online study was therefore to obtain preliminary data on the effectiveness of two analogue programs to train psychology students in appropriate communicative behaviors for providing feedback. Effectiveness was evaluated at different levels (i.e., blind raters; patient-actor and self-reported by participants), as recommended in training literature (e.g., Hill & Lent, 2006; Miller, 1990). The communication skills taught were based on the SPIKES model. In one condition (360IV), the students were immersed, via two scenarios displayed with 360IV, in the role of a patient facing a psychologist whose feedback either did or did not respect the SPIKES recommendations. In another condition (SP), the student played the role of the psychologist, who had to provide the feedback to the SP. In both situations, the exercise was followed by a debriefing session in which the SPIKES ingredients were discussed with a trainer. A waiting-list design was used to compare these students' outcomes to those of a control group.

The primary research question examines whether empathic communication would (1) increase after the training sessions (SP and 360IV) and remain stable in the control condition and if so, (2)

whether the changes in experimental conditions would be maintained one month later. Empathic communication was assessed through an observation grid that includes three subscales: Empathic communication (e.g., *"the clinician communicated his/her understanding of the patient's emotions or situation"*); construction of shared understanding (e.g., "*the clinician summarized what the patient said in order to validate his/her understanding, proposed that the patient correct the understanding, or provided additional information if needed"*); and shared decision-making (e.*g., "the clinician proposed a collaborative relationship, sharing ideas and reflections without imposing them on the patient").*

The secondary research questions examine whether:

(1) The patient-actors would perceive the participants' empathy and confidence to increase after the training (SP and 360IV) as compared to the control condition, and if so, whether these changes would be maintained one month later. This measure of empathy perceived by patient-actor will be assessed through the Consultation and Relational Empathy scale (CARE) (Mercer et al., 2004).

(2) The participants' self-reported perceived importance of empathy in care (i.e., self-reported clinical empathy as measured by the Jefferson Scale of Empathy (JSE); Hojat et al., 2001), stress and self-efficacy would increase after the training (SP and 360IV) as compared to a control condition, and if so, whether these changes would be maintained one month later.

For all research questions, we expected to see a positive effect of training in both experimental conditions and no changes in the control condition.

Method

Participants

In total, 69 psychology students (Age: M = 23.93; *SD* = 3.06) were recruited for the study including 84% (N = 58) of women. In addition, 10% were in their third year (N = 7); 49% in their

fourth year (N = 34) and 40% in their fifth year (N = 28). Nineteen participants (27%) were randomly assigned to the 360IV condition; 17 (25%) to the SP condition; and 33 (48%) to the waiting-list condition that received one of the two trainings, randomly assigned after the completion of the study. The groups were equivalent in terms of age, gender distribution, program year, and experience with transmitting assessment feedback (see also the description of ages, year of study, and gender in Table 1). Five participants (7%) (360IV: 1 ; SP: 1; CG: 3) did not complete the one-month follow-up assessment (T_4), three due to unexpected events and two because of WIFI problems.

Insert Table 1 about here

Measures

Primary Measures: Objective Communication Skills

Interprofessional Empathic Communication Grid. This grid was constructed using a four-round Delphi procedure (Boulkedid et al. 2011; Dakley & Helmer, 1962) involving six clinicians, four communication researchers, and eight patients (Goosse et al., Submitted; see supplementary materials). The final grid contains 40 items that assess three dimensions related to conveying feedback, scores are given for each of the three following subscales.

Empathic Communication. Twelve items assess this subscale. An example is: *The clinician communicated his/her understanding of the patient's emotions or situation*.

Building of a Shared Understanding. Sixteen items assess this subscale. An example is: *The clinician summarized what the patient said in order to validate his/her understanding, proposed that the patient correct the understanding, or provided additional information if needed.*

Shared Decision-Making. Twelve items assess this subscale (e.g., *the clinician proposed a collaborative relationship, sharing ideas and reflections without imposing them on the patien*t).

Each item was rated on a 5-point Likert scale ranging from absent (0 points) to excellent (4 points). Results were reported in means, with a score of 4 indicating excellent skills for the specific factor. The grid was completed by psychology students who were specifically trained to use it and

were blind to the participants' conditions and the assessment time point. The internal reliability of each subscale was very good (McDonald's omega ranged from .94 to .97).

Secondary Measures

Empathy Perceived by Patient-Actor. The Consultation and Relational Empathy scale (CARE) (Mercer et al., 2004) was used to measure perceived relational empathy. It includes 10 items rated on a 5-point Likert scale (1 = weak; 5 = excellent) with the addition of a "not applicable" option. Total scores ranged from 10 to 50, with higher scores indicating higher perceived empathy. To be congruent with this study, the scale was slightly adapted for psychologists. For example, the term "doctor" was replaced by "clinician." The scale's internal reliability was high (Cronbach's alpha = 0.93; see Mercer et al., 2004, for more details).

Confidence Perceived by Patient-Actor. The patient-actors were also asked how confident they were about following a treatment proposed by the clinician. They responded to this single item on a visual analogue scale ranging from 0 to 10. A score of 0 identified a complete lack of confidence; 10 represented a clinician who inspired confidence.

Self-Reported Clinical Empathy. The Jefferson Scale of Empathy (Hojat et al., 2001; JSE) for health care professionals and students was used to assess self-reported empathy. A French translation of the scale (Fields et al., 2011) was adapted for the purposes of this study (i.e., "healthcare provider" was changed to "psychologist"). It includes 20 items related to three dimensions: Perspective taking, standing in the patient's shoes and compassionate care. Scores range from 20 to 140, with lower scores indicating a lower level of clinical empathy. The scale's internal consistency was acceptable (Cronbach's coefficient $\alpha = .78$; see Fields et al., 2011, for more details).

Self-Efficacy and Stress Related to Assessment Feedback. Two scales were added to assess participants' self-perception related to their stress (one item) and self-efficacy (one item) regarding the communication of assessment feedback. Scores ranged from 0 (low self-efficacy or low stress) to 10 (high self-efficacy or high stress) and were used to assess these components.

Procedures

Recruitment

The study design applied here was a stratified randomized trial with follow-up (Figure 1). Recruitment (T_{-1}) was organized by the main investigator M.G. Participants were recruited from October 2020 to May 2021, and the final follow-up assessments were completed in mid-June 2021. Recruitment was carried out by means of email, social networking sites, presentations of the study at courses and wall posters. The study was approved by the ethics committee of the Faculty of Psychology at the University of Liège.

Inclusion criteria included speaking French fluently and being currently registered in one of the last three years of studies to become a clinical psychologist. In addition, to be included, participants had to have completed a course on basic empathic listening skills (for more information on the course see Goosse et al. 2023). It is important to note that in Belgium, this educational program is organized as follows. Students must first complete a three-year non-professional course, after which they receive a first non-professional diploma. They must then complete a two-year vocational program. In order to participate in the studies, students had to (1) be enrolled in one of the last two years of the vocational program; or (2) be in the third year of the non-professional program, but only after completing specific training in communication skills, which all students receive in their third year.

Insert Figure 1 about here

After providing informed consent, participants were randomly assigned (T_0) to one of the groups. The randomization process was stratified according to the participant's program year. Once eight students registered in the same program year were recruited, they were gathered into groups of two students according to their availability and then randomly assigned to one of the following groups: (1) SP, trained immediately; (2) 360IV, trained immediately; (3) SP, on waiting list; and (4)

360IV, on waiting list. The randomization was done by the first author (M.G.) before T_1 using the randomization function (RAND) in Excel.

Assessments

Before the intervention, a 30-minute videoconference session was organized. This was reproduced at each measurement time (T_1, T_3, T_4). Specifically, each participant received the contents of the psychological assessment, expressed in simple terms, one week before a role-play conducted with a fictitious patient that we will call a patient-actor. The role-plays took place the first day of the study. Scenarios for the role-plays were randomly assigned to each participant at each assessment time.

More precisely, four scenarios were created for these role-plays (because four measurement times were planned in the initial methodology to provide for additional follow-up for the control group). They all involved assessment feedback to provide to a patient: (1) depression or (2) obsessive-compulsive disorder, both to be announced to an irritated adult; and (3) multiple complex developmental disorder or (4) intellectual disability to be announced to a worried parent. These topics were selected with the intention of being sufficiently different from those worked on during the training. The objective was to verify the transfer of acquired skills to a clinical situation not worked on during the training. These scenarios were designed following the structure recommended by Erasmus+ and SimucarePro (2015) to match the learning objectives developed in the training (i.e., SPIKES). The actors performing the patients' roles were trained (for 10 hours) to react in a standardized way (e.g., by expressing an emotion and by closing up if the emotion was not explicitly mentioned).

The patient-actor and the participants were invited to meet during a Zoom meeting. The examiner reminded them of the objectives of the study and then left the session. The patient-actor started recording in Zoom and the role-playing began. The patient-actors were three psychology students, who were specifically hired for the study. They were blinded as to the assignment of the

student groups. They were also made aware of the importance of concealing the objectives of their roles from the participants. Furthermore, the recorded role-plays were assessed by blind external observers (with the Interprofessional Empathic Communication Grid).

The recordings were randomly checked by the main author to ensure standardization and fidelity to the scenarios. After the role-playing, the patient-actors and participants were asked to complete digitalized questionnaires on a secure platform at Liège university.

The intervention (T_2) lasted from two to three hours depending on the condition and included two thematic scenarios (i.e., a pattern of results compatible with autism spectrum disorder to announce to a worried parent and a psychotic episode to explain to an irritated adult). For both interventions (SP and 360IV), the structure was similar to a classic simulation-based learning session (Savoldelli & Boet, 2013): (1) briefing, (2) simulation, and (3) debriefing. The same steps were repeated for each scenario (see Figure 2 for more details).

Interventions were organized by pairs of students. Both training types were preceded by identical briefings during which psychological safety was ensured, and the scenarios and learning objectives were explained to participants (see Figure 2). Then the simulation took place. In the 360IV condition, both participants took the role of the patient, using an immersive device. In the SP condition, participants took turns being observers or clinicians during a role-play with a standardized patient. The SP was a psychology student with theater experience who was specifically trained for the roles. After each simulation, a debriefing took place based on recommendations in the literature (Rudolph et al., 2008).

The main difference between the debriefings for the two conditions was that, in the 360IV condition, the emotions were debriefed based on what the participant felt as a patient. In comparison, in the SP condition, emotions were debriefed based on the SP's emotions (see Figure 2 for more details). Participants on the waiting list had 2 hours to do as they pleased before entering the second

assessment phase (T_3). Training in both conditions was provided by M.G., a psychologist who had been trained specifically on debriefing techniques.

Insert Figure 2 about here

The writing of this paper was guided by the Consolidated Standards of Reporting Trials (CONSORT) statement (Chan et al., 2013; Moher et al., 2010) and the trial received ethical approval from the Ethics Committee of the Faculty of Psychology, Speech Therapy, and Educational Sciences at University of Liège (reference 1920-56). The study took place online.

Statistical Analyses

Analyses were carried out using JASP 0.14.1. For analyses of the results, the two waiting list groups were combined into a single group, the control group. Thus, three groups were compared: (1) standardized patient (SP) training group; (2) 360° immersive video (360IV) training group; and (3) control group (CG).

In the preliminary analysis, group differences in demographic data (i.e., age, academic level, gender) (Table 1) were tested using the Kruskall-Wallis test to determine normal conditions or the chi-squared test. Baseline level equivalence (Objective Communication Skills, CARE, JSE) was also tested using one-way ANOVAs and the chi-squared test. All were equivalent except the CARE ($t = 6.64$, $p = 0.04$).

For the primary and secondary outcomes analysis, mixed ANOVAs (Group x Time) were performed to test the interaction of condition and exposure between T_1 and T_3 on: (1) the three subscales of objective communication skills while providing feedback; (2) score for empathy perceived by the patient-actor (CARE); (3) score for confidence perceived by the patient-actor (VAS); (4) three subscores for self-reported empathy (JSE); and (5) VAS assessing self-efficacy and stress regarding the provision of psychological assessment feedback. Given our a priori assumptions, contrasts were performed to assess differences between T_1 and T_3 for both experimental groups.

When significant improvements were found, their sustainability one month later (T_4) was tested with mixed ANOVAs and further contrast analyses. A correction for multiple testing was then applied with the Benjamini–Hochberg procedure (Benjamini & Hochberg, 1995).

Results

Sample Size and Power Calculation

The sample size was defined based on an a priori power analysis performed with G*Power 3.1 (Faul et al., 2009) to reach a predicted power of .80 ($\alpha = .05$, $\rho = .5$, no sphericity correction = 1) to determine the effectiveness of the intervention by detecting within–between differences (using ANOVAs) of medium effect size (f = .15). The researcher chose this effect size due to the lack of similar studies in the literature and to allow the identification of relevant changes. A minimum sample size of 62 participants was required.

Group Equivalence

The equivalence of the groups regarding the variables related to empathy (JSE, CARE) and to assessing communication skills (Objective Communication Skills, each subscale) was examined (Table 2). All but one variable were found to be equivalent between groups. The difference concerned the CARE (i.e., empathy perceived by patient-actors): Participants in the 360IV condition scored higher at T_1 (Means: 360IV: 28.81; SP: 22.35; CG: 23.83).

Insert Table 2 around here.

Primary Research Question

Regarding empathic communication as rated by an external observer the three subscales of the Interprofessional Empathic Communication Grid give mixed results. First, regarding the *empathic communication subscale* analyses revealed quite a large significant increase only in the SP condition. However, contrary to our expectations, there was no effect for the 360IV condition. No effect was observed in the control condition either. Increase in the SP condition was maintained one month later ($t = –0.3$; $p = .77$).

Regarding the *building a shared understanding subscale*, a quite large significant increase was observed in the SP condition whereas no change was reported in both 360IV and control conditions. The effect in SP condition was maintained one month after the intervention (t = –1.36; *p* = .18).

Finally, regarding the *shared decision-making subscale*, there was a large significant increase in the SP condition, and again, no change was observed in either 360IV or control condition. The effect in SP condition was maintained one month after the intervention (t = –0.45; *p* = .66). For detailed description of results, see Table 3.

Insert Table 3 about here

Secondary Research Questions

Assessed by Patient-Actor

Regarding empathy perceived by the patient-actor, as expected, the results showed large significant increases in both experimental conditions and no effect for the control group. These improvements were maintained one month later in both experimental conditions (360IV: t = 1.12; *p* = .27; SP: t = 1.47, *p* = 0.147).

For confidence perceived by the patient-actor, the results revealed medium to large significant increases in both experimental conditions, as expected, as well as maintenance of these improvements one month later (*p*s > .05). In the control condition, no changes were observed. For a detailed description of results, see Table 3.

Self-Reported by Participants

For self-reported clinical empathy (JSE), the results revealed significant increases in all conditions for Perspective Taking and Compassionate Care – unexpectedly, even in the control group – whereas for the Patient Shoes subscale only the 360IV group showed an increase. One month later, the analyses revealed that the initial increase in the 360IV condition for the Patient Shoes subscale was maintained (t = -0.18; *p* = .86), while a significant increase appeared in the SP

condition (t = 3.23; p = 0.002). For the Perspective Taking subscale, all increases were maintained (all ps > .05), whereas for Compassionate Care, a significant decrease was observed in all three conditions, indicating that the results were not maintained a month later (all ps < .001).

Regarding self-efficacy in providing feedback, the results revealed significant increases in all three conditions. Additional analyses revealed that both experimental conditions showed larger increases than the control condition (360IV: t = -2.07; p = .041; SP: t = -3.81; p < .001). These results were maintained one month later (F = 0.39; p = .676). As for stress, significant decreases were observed in all groups and were maintained in both experimental groups (all p > .05). For a detailed description of results, see Table 3.

Discussion

This study tested the impact of two pedagogical tools (i.e., standardized patient (SP) vs. 360° immersive video (360IV)) implemented in a simulation session to train clinical communication skills during the provision of psychological feedback to a patient. To do so, a randomized controlled study was conducted assessing the impact of the training at three levels: Empathic communication while providing feedback rated by an external rater; the empathy and trust perceived by the patient-actor; and stress, empathy and self-efficacy reported by participants themselves.

In general, our main results showed that students in the SP condition displayed medium to large increases in empathic communication, building of a shared understanding, and shared decision-making skills, whereas in both the 360IV and control conditions, no significant results were observed in this regard. Concerning the subjective evaluation of the relationship by the patient-actors, they observed an increase in empathy and perceived confidence in both experimental conditions, whereas there were no changes in the controls. Increases in confidence were medium in the 360IV condition and large in the SP condition. In addition, all improvements remained observable one month later, supporting the possibility that long-term maintenance occurs. These results are discussed below. Overall, this study supports the positive impact on communication of simulation-based learning with

an SP (Johnson & Panagioti, 2018; Maclaine et al., 2021). Many previous studies had found this result, but they were in the field of medicine (Bauchat et al., 2016; Johnson & Panagioti, 2018; Maclaine et al., 2021) and nursing education (Goosse et al., 2024), not psychology.

For the experimentation phase of the simulation, replacing the active role-playing with a more passive activity via 360IV does not seem to be sufficient to bring about a significant improvement in communication behavior. Surprisingly, however, the quality of the relationship as perceived by the patient-actors still increased significantly. Three conclusions emerged from these results. First, debriefing alone seems inadequate to increase observable communication behaviors as assessed by an external observer. Therefore, the hypothesis that debriefing is the most important phase of a simulation (Sawyer et al., 2016) does not seem entirely valid.

The second conclusion concerns the discrepancy between the objective and subjective measures. We expected an improvement in communication skills themselves, which should affect the quality of the perceived relationship. Nevertheless, although communication behaviors did not improve significantly in the 360IV condition, we should point out that moderate effect sizes were observed for the subscales related to the building of a shared understanding (d = 0.44) and shared decision-making (d = 0.54). A power problem resulting from the small size of our sample is therefore likely. Moreover, a posteriori, we looked at the relationship between objective behaviors (all objective communication skills subscales) and subjective judgments (CARE) in an exploratory way and observed positive correlations of medium size (r = .37). This relationship should therefore be explored prospectively in future studies.

In any case, the observation of improved subjective judgments is promising given the centrality of perceived empathy to therapeutic efficacy (Barnicot et al., 2014; Lambert & Barley, 2001). Part of the patient-actor training was dedicated to learning how to take the patient's point of view into account, in accordance with the recommendations (Teherani et al., 2008). Nevertheless, this conclusion should be viewed with caution considering that, to our knowledge, no evidence exists

regarding how similar the assessments of patient-actors are to those of real patients with real conditions. The transferability of the results for the patient-actors to real patients should therefore be tested in future studies.

Finally, when we examine the control group's results, it seems that engaging in role-play alone (assessment phases) already benefits students, as shown in their heightened perception of the importance of empathy in health care in the short term and their improved stress and self-efficacy scores related to feedback transmission, which were maintained one month later. However, we cannot rule out a simple time effect (students are more comfortable at the end of their studies than at the beginning) or a desirability effect. Still, feelings of self-efficacy and stress related to feedback provision improved in all three conditions. This suggests that only role-playing reduces anxiety-related discomfort, and unfortunately only in the short term. These contrasting results prevent any final conclusions, and further studies should address this issue.

In addition, this study has a number of implications for trainers. First, it appears that adopting a passive role such as in the 360IV training followed by debriefing may be sufficient to improve attitudes to the relationship and perceptions of the importance of empathy. This is interesting because it could enable trainers to reduce the required resources. This type of more passive training could be a prerequisite for access to training with a standardized patient, as it led to better results in terms of communication skills specific to feedback on psychological assessments. In addition, students often mentioned that having a basic framework for constructing the debriefing, such as the SPIKES in this study, was a strength during their interventions.

The limitations of this study include, first, the size of our sample. In view of the effect sizes observed, it would be interesting to replicate this study with a larger sample, among other things to confirm our preliminary results. It should also be noted that it would be important to further evaluate the quality of the relationship perceived by the patient-actors during the pre- and post-training evaluations, in order to assess their perceptions of their own understanding but also of their

involvement in the decision-making process. A third limitation relates to the training, which was provided by one trainer only, preventing any conclusion regarding the transferability of the results to other trainers. This limitation should be addressed in further studies. Future studies should also assess the impact of this kind of training on the psychologist-patient relationship, during real feedback sessions, to assess the transfer of learning skills in actual practice. Another limitation concerns the applicability of these results to face-to-face consultations. The current literature suggests that there are no significant differences between online and face-to-face consultations (Reese et al., 2016). However, it is important to remember that in online consultations psychologists have access to patients' verbal and nonverbal responses as well as their own. This may help them adapt their own reactions to those of the patients and thus influence the demonstration of skills (Sperandeo et al., 2021). This transferability would be an interesting perspective to explore in further studies. Finally, another limitation concerns the differences in academic levels between participants in the study, which could have impacted the results. However, we ensured a stratification of the levels between conditions. In addition, we conducted further statistical analyses (i.e., repeated measured ANOVAs with level of study as a covariate) and found no effect on the main results of this study.

Conclusions

In conclusion, SP training seems to induce improvements in both empathy, as assessed by a patient-actor, and empathic communication, building of a shared understanding and shared decision-making, as assessed by external raters. All these relationship components are related to the prevailing person-centered paradigm of care and lead to the creation of a partnership with the patient. The study also provides evidence that psychology students can be trained in empathic communication skills while providing assessment feedback, which is poorly addressed in the current literature. Finally, it suggests that 360IV implemented in a simulation-based learning session could provide a first-line pedagogical tool. However, further studies are needed to identify whether it is possible to increase the effects of this immersive training by prolonging the intervention or adjusting its content, or whether

this training should only be an early learning phase for students, to be combined with another training method.

References

American Psychological Association (APA). (2006). Evidence-based practice in psychology. *American Psychologist, 61*, 271–285. https://doi.org/10.1037/0003-066X.61.4.271

Baile, W. F., Buckman, R., Lenzi, R., Glober, G., Beale, E. A., & Kudelka, A. P. (2000). SPIKES –A six-step protocol for delivering bad news: Application to the patient with cancer. *Oncologist, 5*, 302–311. https://doi.org/10.1634/theoncologist.5-4-302

Barnicot, K., Wampold, B., & Priebe, S. (2014). The effect of core clinician interpersonal behaviours on depression. *Journal of Affective Disorders, 167*, 112–117. https://doi.org/10.1016/j.jad.2014.05.064

Bauchat, J. R., Seropian, M., & Jeffries, P. R. (2016). Communication and empathy in the patient-centered care model – Why simulation-based training is not optional. *Clinical Simulation in Nursing, 12*, 356–359. https://doi.org/10.1016/j.ecns.2016.04.003

Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society. Series B (Methodological), 57*(1), 289–300.

Bennett-Levy, J., Klein-Boonschate, M. A., Batchelor, J., McCarter, R., & Walton, N. (1994). Encounters with Anna Thompson: The consumer's experience of neuropsychological assessment. *The Clinical Neuropsychologist, 8*, 219–238. https://doi.org/10.1080/13854049408401559

Berg, M. (1985).The feedback process in diagnostic psychological testing. *Bulletin of the Menninger Clinic, 49,* 52–69.

Boulkedid, R., Abdoul, H., Loustau, L., Sibony, C., & Alberti, C. (2011). Using and reporting the Delphi method for selecting healthcare quality indicators: A systematic review. *PLoS One, 6*(6), Article e20476. https://doi.org/10.1371/journal.pone.0020476

Butcher, J. N. (1992). Providing psychological test feedback to clients. *Psychological Assessment, 4,*

267–287. https://doi.org/10.1037/h0092775.

Chan, A. W., Tetzlaff, J. M., Gøtzsche, P. C., Altman, D. G., Mann, H., Berlin, J. A., Dickersin, K., Hróbjartsson, A., Schulz, K. F., Parulekar, W. R., Krleža-Jerić, K., Laupacis, A., & Moher, D. (2013). SPIRIT 2013 explanation and elaboration: Guidance for protocols of clinical trials. *BMJ, 346,* Article e7586. https://doi.org/10.1136/bmj.e7586

Clavel, N., Paquette, J., Dumez, V., Del Grande, C., Ghadiri, D. P. S., Pomey, M. P., & Normandin, L. (2021). Patient engagement in care: A scoping review of recently validated tools assessing patients' and healthcare professionals' preferences and experience. *Health Expectations, 24,* 1924–1935. https://doi.org/10.1111/hex.13344

Curry, K. T., & Hanson, W. E. (2010). National survey of psychologists' test feedback training, supervision, and practice: A mixed methods study. *Journal of Personality Assessment, 92,* 327–336. https://doi.org/10.1080/00223891.2010.482006

Dalkey, N., & Helmer, O. (1962). An experimental application of the Delphi method to the use of experts. *Management Sciences, 9,* 4458–4467.

Della Libera, C., Goosse, M., Larøi, F., & Willems, S. (2023). Examining the impact of experiencing auditory verbal hallucinations from a first-person perspective on the degree of empathy and stigmatization in a group of psychology students: A study using 360° immersive videos. *Comprehensive Psychiatry, 123,* Article 152379. https://doi.org/10.1016/j.comppsych.2023.152379

Dimatteo, R. M., Giordani, P. J., Lepper, H. S., & Croghan, T. W. (2002). Patient adherence and medical treatment outcomes: A meta-analysis. *Medical Care, 40,* 794–811. https://doi.org/10.1097/00005650-200209000-00009

Elliott, R., Bohart, A. C., Watson, J. C., & Murphy, D. (2018). Therapist empathy and client outcome: An updated meta-analysis. *Psychotherapy, 55,* 399–410. https://doi.org/10.1037/pst0000175

Epstein, R. M., & Street, R. L. (2007). *Patient-centered communication in cancer care: Promoting healing and reducing suffering* (NIH Publication No. 07-6225). National Cancer Institute.

Erasmus+ & SimucarePro. (2015). Scénarios de simulation basés sur des données probantes EBN-EBM et validés. Available at https://simucarepro.eu/pages/page.php?id = 1

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41,* 1149–1160. https://doi.org/10.3758/BRM.41.4.1149

Fields, S. K., Mahan, P., Tillman, P., Harris, J., Maxwell, K., & Hojat, M. (2011). Measuring empathy in healthcare profession students using the Jefferson Scale of Physician Empathy: Health Provider – Student version. *Journal of Interprofessional Care, 25,* 287–293. https://doi.org/10.3109/13561820.2011.566648

Fowler, J. (2008). Experiential learning and its facilitation. *Nurse Education Today, 28,* 427–433. https://doi.org/10.1016/j.nedt.2007.07.007

Gaba, D. M. (2004). The future vision of simulation in health care. *Quality & Safety in Health Care, 13,* 2–10. https://doi.org/10.1136/qshc.2004.009878

Gold, R., & Gold, A. (2018). Delivering bad news: Attitudes, feelings, and practice characteristics among speech-language pathologists. *American Journal of Speech-Language Pathology, 27,* 108–122. https://doi.org/10.1044/2017_AJSLP-17-0045

Goosse, M., Kreusch, F., Van der Molen, H., & Willems, S. (2023). Impact of e-learning and role play-based training on psychology students' communication skills: A feasibility study. *Journal of Communication in Healthcare.* 1-11. doi: 10.1080/17538068.2023.2193493

Goosse, M., Bragard, I., Peeters, L., & Willems, S (2024). Comparison of two simulation tools to develop empathic communication skills in nursing students breaking bad news: A randomized controlled study. *Clinical Simulation in Nursing, 87,* Article 101493. https://doi.org/10.1016/j.ecns.2023.101493

Gruters, A. A., Ramakers, I. H., Verhey, F. R., Kessels, R. P., & de Vugt, M. E. (2022). A scoping review of communicating neuropsychological test results to patients and family members. *Neuropsychology Review, 32,* 294–315. https://doi.org/10.1007/s11065-021-09507-2

Hauze, S. W., Hoyt, H. H., Frazee, J. P., Greiner, P. A., & Marshall, J. M. (2019). Enhancing nursing education through affordable and realistic holographic mixed reality: The virtual standardized patient for clinical simulation. *Advances in Experimental Medicine and Biology, 1120,* 1–13. https://doi.org/10.1007/978-3-030-06070-1_1

Hill, C. E., & Lent, R. W. (2006). A narrative and meta-analytic review of helping skills training: Time to revive a dormant area of inquiry. *Psychotherapy: Theory, Research, Practice, Training, 43,* 154- 172. doi:10.1037/0033-3204.43.2.154

Hojat, M., Mangione, S., Nasca, T. J., Cohen, M. J. M., Gonnella, J. S., Erdmann, J. B., Veloski, J., & Magee, M. (2001). The Jefferson Scale of Physician Empathy: Development and preliminary psychometric data. *Educational and Psychological Measurement, 61,* 349–365. https://doi.org/10.1177/00131640121971158

Howick, J., Moscrop, A., Mebius, A., Fanshawe, T. R., Lewith, G., Bishop, F. L., Mistiaen, P., Roberts, N. W., Dieninytė, E., Hu, X.-Y., Aveyard, P., & Onakpoya, I. J. (2018). Effects of empathic and positive communication in healthcare consultations: A systematic review and meta-analysis. *Journal of the Royal Society of Medicine, 111,* 240–252. https://doi.org/10.1177/0141076818769477

Jacobson, R. M., Hanson, W. E., & Zhou, H. (2015). Canadian psychologists' test feedback training and practice: A national survey. *Canadian Psychology, 56,* 394–404. https://doi.org/10.1037/cap0000037

Johnson, J., & Panagioti, M. (2018). Interventions to improve the breaking of bad or difficult news by physicians, medical students, and interns/residents: A systematic review and meta-analysis. *Academic Medicine, 93,* 1400–1412.

https://doi.org/10.1097/ACM.0000000000002308

Kennedy, B. M., Rehman, M., Johnson, W. D., Magee, M. B., Leonard, R., & Katzmarzyk, P. T. (2017). Healthcare providers versus patients' understanding of health beliefs and values. *Patient Expectations Journal, 4*, 29–37. https://doi.org/10.35680/2372-0247.1237

Kolb, A. Y., & Kolb, D. A. (2009). The learning way. *Simulation Gaming, 40,* 297–327. https://doi.org/10.1177/1046878108325713

Krishnamurthy, R., VandeCreek, L., Kaslow, N. J., Tazeau, Y. N., Miville, M. L., Kerns, R., Stegman, R., Suzuki, L., & Benton, S. A. (2004). Achieving competency in psychological assessment: Directions for education and training. *Journal of Clinical Psychology, 60,* 725–739. https://doi.org/10.1002/jclp.20010

Lambert, M. J., & Barley, D. E. (2001). Research summary on the therapeutic relationship and psychotherapy outcome. *Psychotherapy, 38,* 357–361. https://doi.org/10.1037/0033-3204.38.4.357

Lane, C., & Rollnick, S. (2007). The use of simulated patients and role-play in communication skills training: A review of the literature to August 2005. *Patient Education and Counselling, 67,* 13–20. https://doi.org/10.1016/j.pec.2007.02.011

Longley, W. A., Tate, R. L., & Brown, R. F. (2022). The psychological benefits of neuropsychological assessment feedback as a psycho-educational therapeutic intervention: A randomized-controlled trial with cross-over in multiple sclerosis. *Neuropsychological Rehabilitation, 33*(5), 764–793. https://doi.org/10.1080/09602011.2022.2047734

Maclaine, T. D., Lowe, N., & Dale, J. (2021). The use of simulation in medical student education on the topic of breaking bad news: A systematic review. *Patient Education and Counselling, 104,* 2670–2681. https://doi.org/10.1016/j.pec.2021.04.004

Marschollek, P., Bąkowska, K., Bąkowski, W., Marschollek, K., & Tarkowski, R. (2019). Oncologists and breaking bad news – From the informed patients' point of view. The

evaluation of the SPIKES protocol implementation. *Journal of Cancer Education, 34,* 375–380. https://doi.org/10.1007/s13187-017-1315-3

Mayville, M. L. (2011). Debriefing: The essential step in simulation. *Newborn and Infant Nursing Reviews, 11,* 35–39. https://doi.org/10.1053/j.nainr.2010.12.012

Melluish, S., Crossley, J., & Tweed, A. (2007). An evaluation of the use of simulated patient role-plays in the teaching and assessment of clinical consultation skills in clinical psychologists' training. *Psychology Learning & Teaching, 6,* 104–113. https://doi.org/10.2304/plat.2007.6.2.104

Mercer, S. W., Maxwell, M., Heaney, D., & Watt, G. C. M. (2004). The consultation and relational empathy (CARE) measure: Development and preliminary validation and reliability of an empathy-based consultation process measure. *Family Practice, 21,* 699–705. https://doi.org/10.1093/fampra/cmh621

Merker, B. M., Hanson, W. E., & Poston, J. M. (2010). National survey of psychologists' training and practice in breaking bad news: A mixed methods study of the mum effect. *Journal of Clinical Psychology in Medical Settings, 17,* 211–219. https://doi.org/10.1007/s10880-010-9197-0

Meyer, G. J., Finn, S. E., Eyde, L. D., Kay, G. G., Moreland, K. L., Dies, R. R., Eisman, E. J., Kubiszyn, T. W., & Reed, G. M. (2001). Psychological testing and psychological assessment: A review of evidence and issues. *American Psychologist, 56,* 128–165. https://doi.org/10.1037/0003-066X.56.2.128

Miller, G. (1990). The assessment of clinical skills/competence/performance. *Academic Medicine, 65,* 63–67. https://doi.org/10.1097/00001888-199009000-00045

Moher, D., Hopewell, S., Schulz, K. F., Montori, V., Gøtzsche, P. C., Devereaux, P. J., Elbourne, D., Egger, M., & Altman, D. G. (2010). CONSORT 2010 explanation and elaboration: Updated guidelines for reporting parallel group randomised trials. *British Medical Journal, 340,*

Article c869. https://doi.org/10.1136/bmj.c869

Watts, S., McCabe, R., & Guss, R. (201). Communicating a diagnosis of dementia. In R. Guss (ed.), *Clinical psychology in the early stage dementia care pathway.* British Psychological Society.

Pope, K. S. (1992). Responsibilities in providing psychological test feedback to clients. *Psychological Assessment, 4,* 268–271. https://doi.org/10.1037/1040-3590.4.3.268.

Poston, J. M., & Hanson, W. E. (2010). Meta-analysis of psychological assessment as a therapeutic intervention. *Psychological Assessment, 22,* 203–212. https://doi.org/10.1037/a0018679

Reese, R. J., Mecham, M. R., Vasilj, I., Lengerich, A. J., Brown, H. M., Simpson, N. B., & Newsome, B. D. (2016). The effect of telepsychology format on empathic accuracy and the therapeutic alliance: An analogue counselling session. *Counselling and Psychotherapy Research, 16,* 256–265. https://doi.org/10.1002/capr.12092

Rønning, S. B., & Bjørkly, S. (2019). The use of clinical role-play and reflection in learning therapeutic communication skills in mental health education: An integrative review. *Advances in Medical Education and Practice, 10,* 415–425. https://doi.org/10.2147/AMEP.S202115

Rudolph, J. W., Simon, R., Raemer, D. B., & Eppich, W. J. (2008). Debriefing as formative assessment: Closing performance gaps in medical education. *Academic Emergency Medicine, 15,* 1010–1016. https://doi.org/10.1111/j.1553-2712.2008.00248.x

Savoldelli, G., & Boet, S. (2013). Séance de simulation: Du briefing au débriefing. In S. Boet, J. C. Granry, & G. Savoldelli (Eds.), *La simulation en santé de la théorie à la pratique* (pp. 313–328). Springer.

Sawyer, T., Fleeger, M. B., & Eppich, W. (2016). Essentials of debriefing and feedback. In V. J. Grant & A. Cheng (Eds.), *Comprehensive healthcare simulation: Pediatrics* (pp. 31–42). Springer. https://doi.org/10.1007/978-3-319-24187-6_3

Schutte, N. S., & Stilinović, E. J. (2017). Facilitating empathy through virtual reality. *Motivation and Emotion, 41,* 708–712. https://doi.org/10.1007/s11031-017-9641-7

Seeman, M. V. (2010). Breaking bad news: Schizophrenia. *Journal of Psychiatric Practice, 16,* 269–276. https://doi.org/10.1097/01.pra.0000386915.62311.4d

Smith, S., Hanson, J. L., Tewksbury, L. R., Christy, C., Talib, N. J., Harris, M. A., Beck, G. L., & Wolf, F. M. (2007a). Teaching patient communication skills to medical students: A review of randomized controlled trials. *Evaluation & the Health Professions, 30,* 3–21. https://doi.org/10.1177/0163278706297333

Smith, S., Wiggins, C., & Gorske, T. (2007b). A survey of psychological assessment feedback practices. *Assessment, 14*, 310–319. https://doi.org/10.1177/1073191107302842

Sperandeo, R., Cioffi, V., Mosca, L. L., Longobardi, T., Moretto, E., Alfano, Y. M., Scandurra, C., Muzii, B., Cantone, D., Guerriera, C., Architravo, M., & Maldonato, N. M. (2021). Exploring the question: "Does empathy work in the same way in online and in person therapeutic settings?" *Frontiers in Psychology, 12,* Article 671790. https://doi.org/10.3389/fpsyg.2021.671790

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 Counselling, 74*, 295–301. https://doi.org/10.1016/j.pec.2008.11.015

Sultan, L., Abuznadah, W., Al-Jifree, H., Anwar Khan, M., Alsaywid, B., & Ashour, F. (2019). An experimental study on usefulness of virtual reality 360° in undergraduate medical education. *Advances in Medical Education and Practice, 10,* 907–916. https://doi.org/10.2147/AMEP.S240292

Sundar, S. S., Kang, J., & Oprean, D. (2017). Being there in the midst of the story: How immersive journalism affects our perceptions and cognitions. *Cyberpsychology, Behavior, and Social Networking, 20,* 672–682. https://doi.org/10.1089/cyber.2017.0271

Teherani, A., Hauer, K. E., & O'Sullivan, P. (2008). Can simulations measure empathy? Considerations on how to assess behavioral empathy via simulations. *Patient Education and*

Counseling, 71, 148–152. https://doi.org/10.1016/j.pec.2008.01.003

The British Psychological Society. (2018).*Communicating a diagnosis of dementia.* https://cms.bps.org.uk/sites/default/files/2022-10/Communicating%20a%20diagnosis%20of%20dementia.pdf

Tompkins, K. A., Swift, J. K., & Callahan, J. L. (2013). Working with clients by incorporating their preferences. *Psychotherapy, 50,* 279–283. https://doi.org/10.1037/a0032031

Ward, R. M. (2008). Assessee and assessor experiences of significant events in psychological assessment feedback. *Journal of Personality Assessment, 90,* 307–322. https://doi.org/10.1080/00223890802107818

Wilkinson, H., Whittington, R., Perry, L., & Eames, C. (2017). Examining the relationship between burnout and empathy in healthcare professionals: A systematic review. *Journal of Burn Care & Research, 6,* 18–29. https://doi.org/10.1016/j.burn.2017.06.003

Wright, A. J., Chávez, L., Edelstein, B. A., Grus, C. L., Krishnamurthy, R., Lieb, R., Mihura, J. L., Pincus, A. L., & Wilson, M. (2021). Education and training guidelines for psychological assessment in health service psychology. *American Psychologist, 76,* 794–801. https://doi.org/10.1037/amp0000742

Figure 1

Schematic Diagram of the Timeline

	STUDY PERIOD					
	Enrolment	**Allocation**	**Post-allocation**			**Close-out**
TIMEPOINT			**1 day (timely after allocation)**			**1 month follow-up post-allocation**
	T_{-1}	**T_0**	**T_1**	**T_2**	**T_3**	**T_4**
			40 minutes	**2-3 hours**	**30 minutes**	
Enrolment	x					
Eligibility screen	x					
Informed consent	x					
Classification of year study	x					
Randomly allocation		x				
Interventions						
Standardized patient (N = 17)				x		
360IV (N = 19)				x		
Waiting-list group (N = 33)						
Assessments						
Role-plays			x		x	x
Objective empathic communication skills (IEC-BBN)			x		x	x
CARE			x		x	x
Confidence			x		x	x
JSE			x		x	x
Self-Efficacy			x		x	x
Stress			x		x	x

Figure 2

Descriptions of the Training Sessions

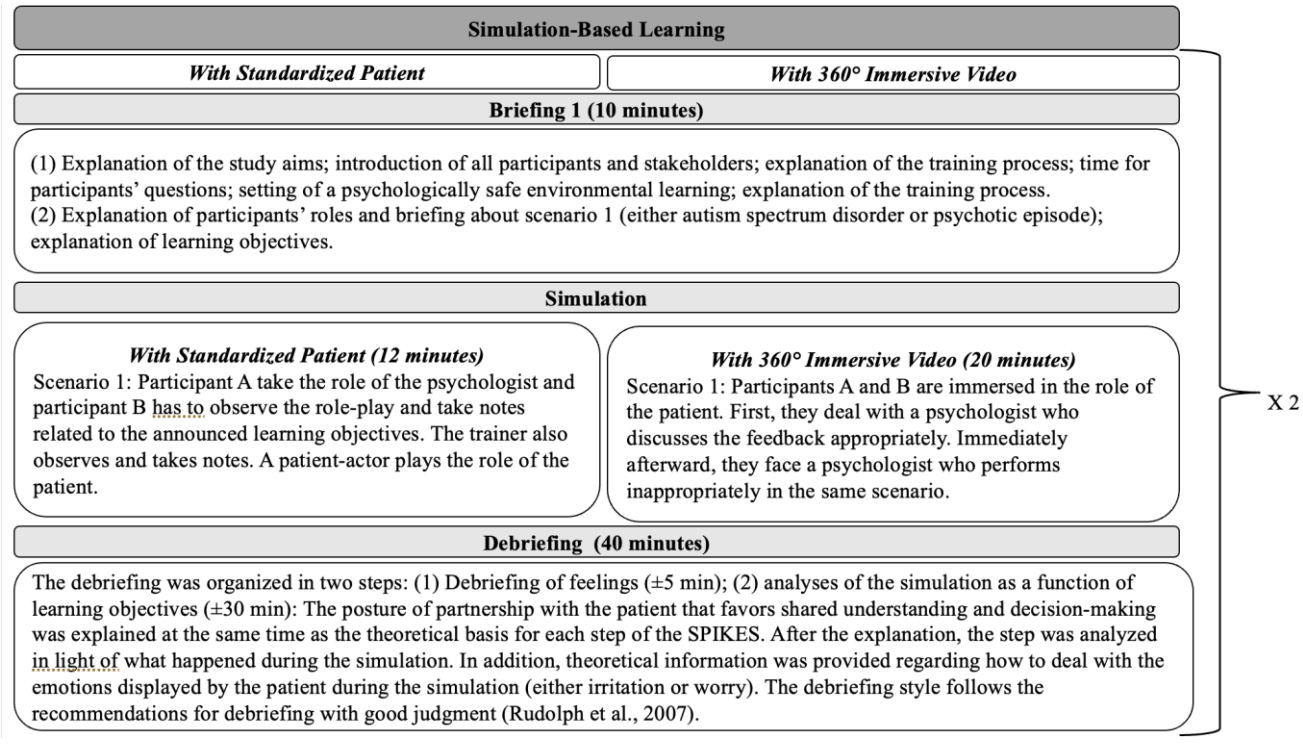

Table 1

Sociodemographic Data on Participants

	360IV (N = 19)		**SP (N = 17)**		**CG (N = 33)**			
	mean	*sd*	mean	*sd*	mean	*sd*	Kruskall-Wallis	*p*
Age	24.21	2.15	23.24	1.6	24.12	3.96	2.41	0.3
	%	n	%	n	%	n	chi²	*p*
Gender								
Women	78.95	15	88.24	15	84.84	28	0.61	0.74
Men	21.05	4	11.77	2	15.15	5		
Year of study								
Third year	10.53	2	11.77	2	9.09	3	0.3	0.99
Fourth year	47.37	9	52.94	9	48.49	16		
Fifth year	42.11	8	35.29	6	42.42	14		
Experience with breaking bad news								
Yes	15.79	3	29.41	5	30.3	10	1.45	0.49
No	84.21	16	70.59	12	69.7	23		
Experience with therapy								
Yes	57.9	11	70.59	12	42.42	14	3.77	0.15
No	42.11	8	29.41	5	57.58	19		

Table 2

Descriptive Results and Baseline Comparisons

	360IV (N = 17)			**SP (N = 19)**			**CG (N = 33)**		
	T_1 (N = 19)	T_3 (N = 19)	T_4 (N = 17)	T_1 (N = 17)	T_3 (N = 17)	T_4 (N = 16)	T_1 (N = 33)	T_2 (N = 33)	T_3 (N = 31)
Primary outcomes									
Communicative skills									
EC	2.70 (1.13)	2.84 (0.87)	3.11 (0.8)	2.62 (0.80)	3.09 (0.85)	3.08 (0.71)	2.37 (0.76)	2.51 (0.8)	2.83 (0.71)
BSU	2.25 (1.001)	2.41 (0.87)	2.54 (0.81)	2.26 (0.76)	2.80 (0.72)	2.62 (0.79)	2.08 (0.86)	2.08 (0.81)	2.30 (0.79)
SDM	1.54 (0.97)	1.97 (0.81)	2.30 (0.72)	1.64 (0.70)	2.3 (0.68)	2.26 (0.75)	1.78 (0.76)	1.90 (0.72)	1.9 (0.72)
Secondary outcomes									
Empathy (CARE)	28.81 (8.98)	34.04 (9.34)	28.4 (9.99)	22.35 (6.75)	30.46 (9.18)	35.27 (6.48)	23.83 (8.41)	23.7 (8.22)	31.27 (7.81)
Confidence	5.21 (2.2)	6.45 (1.82)	6.58 (1.79)	5.29 (1.31)	7.21 (1.29)	6.75 (1.43)	5.62 (1.73)	5.68 (1.62)	6.05 (1.71)
JSE									
PT	38.84 (3.58)	46.42 (2.22)	45.83 (2.77)	37.53 (3.54)	43.12 (3.28)	44.63 (2.94)	37.61 (4.1)	43.49 (3.8)	43.39 (3.39)
CC	32.37 (1.95)	36.68 (4.31)	33.22 (1.59)	32.41 (1.95)	37.35 (2.32)	33.88 (2.03)	32.82 (1.9)	36.46 (2.31)	33.16 (1.68)
PS	6.68 (1.7)	7.53 (1.47)	7.33 (1.41)	6.24 (1.75)	3.77 (2.39)	7.75 (1.48)	6.39 (1.87)	6.27 (1.93)	6.77 (1.59)
Self-efficacy	29.84 (20.17)	57.05 (19.77)	56.72 (15.59)	32.06 (15.75)	68.18 (16.89)	73.31 (16.64)	34.88 (20.86)	44.79 (24.38)	43.68 (21.89)
Stress	70.26 (20.64)	38.58 (19.29)	52.94 (17.82)	63.35 (27.02)	39 (20.63)	52.06 (30.41)	62.76 (25.41)	48.27 (26.34)	60.38 (20.3)

Note. 360IV = 360° Immersive Video; SP = Standardized Patient; CG = Control Group; EC = Empathic communication; BSU = Building of a Shared Understanding; SDM = Shared Decision-Making; JSE = Jefferson Scale of Empathy; PT = Perspective Taking; CC = Compassionate Care; PS = Patient Shoes.

Table 3.

Results of Repeated Measures ANOVA and Contrasts

	Repeated Measures ANOVA			**Contrasts**							
	T_1-T_3			360IV			SP			CG	
	F	p	n^2	t	p	*d*	t	p	*d*	t	*p*
Primary outcomes											
Objective Communication Skills (IEC)											
EC											
Time	4.59	**.036**	.02	0.58	.56	0.15	2.33	**.023**	0.77	0.72	.475
*Time*Condition*	1.15	.323	.01								
BSU											
Time	4.66	**.035**	.02	1.91	.78	0.44	2.86	**.006**	0.75	-0.22	.825
*Time*Condition*	2.93	.061	.02								
SDM											
Time	14.1	**<.001**	.06	1.97	.053	0.54	3.48	**<.001**	1.07	0.48	.636
*Time*Condition*	3.22	**.046**	.03								
Secondary outcomes											
Empathy (CARE)											
Time	30.81	**<.001**	.08	3.87	**<.001**	0.79	3.52	**<.001**	0.83	()0.48	0.63
*Time*Condition*	8.07	**<.001**	.04								
Covariate	156.3	**<.001**	0.42								
Confidence											
Time	21.73	**<.001**	.08	2.95	**.004**	0.59	4.31	**<.001**	1,3	0.19	0.85
*Time*Condition*	6.37	**.003**	.05								
JSE_PT											
Time	262.96	**<.001**	.41	10.59	**<.001**	3.07	7.39	**<.001**	1.47	10.83	**<.001**

Time*Condition	2.34	.104	.007								
JSE_CC											
Time	163.05	<.001	.40	7.02	**<.001**	1.60	7.6	**<.001**	1.88	7.79	<.001
Time*Condition	1.38	.258	.007								
JSE_PS											
Time	4.13	.046	.01	2.25	**.028**	0.63	1.34	.186	0.20	-.43	.671
*Time*Condition*	2.31	.107	.01								
Self-Efficacy											
Time	109.83	<.001	.23	6.39	**<.001**	1.53	8.02	**<.001**	2.57	3.07	**0.003**
Time*Condition	12.59	<.001	.053								
Stress											
Time	64.6	<.001	.18	-5.93	**<.001**	1.86	-4.31	**<.001**	0.98	-3.57	**<.001**
Time*Condition	3.44	.038	.02								

Legend: EC: Empathic Communication; BSU: Building of a Shared Understanding; SDM: Shared Decision-Making; PT: Perspective Taking; CC: Compassionate Care; PS: Patient Shoes