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Characteristics of Effective Interviewing: Exploratory Factor Analysis

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Research emphasizes the importance of competency in clinicians, but little information is available regarding how to determine competency in interviewing skills. Role-playing therapy sessions can help students to develop empathy and enhance insight into client experiences (Beidas et al. 2013, Meier and Davis 2011), but an instrument which validly assesses basic interviewing skills is needed. The objective of this study is to evaluate the factor structure of the Skills in Psychological Interviewing: Clinical Evaluation Scales (SPICES) and to help determine characteristics of basic interviewing skills before and after formal training. Using SPICES, clinical psychology interns and residents evaluated 197 first year clinical psychology students' 15-minute interviews with simulated patients (SPs) before and after a four-month interviewing course. Data were collected from two cohorts of first-year students. Exploratory factor analyses revealed SPICES had two factors at pre-test and three factors at post-test. The interviewing course enhanced student competency in interviewing, and after training, the professional presentation factor split into professional presentation and interview structure. To assess and to teach basic interviewing skills, graduate educators should consider the degree to which students possess empathic communication skills prior to training and focus training on further development of interview structure and professional presentation.

Keywords: *psychological interviewing, exploratory factor analysis, interview evaluation, simulated patient, student training*

Introduction

Psychology graduate programs have often used role-playing within cohorts to teach basic interviewing skills, and research has shown that role-playing therapy sessions can help students to develop empathy and enhance insight into client experiences (Beidas et al. 2013, Meier and Davis 2011). However, students attempting to roleplay clients often do not take the practice scenarios seriously, their presentations of the cases may not be realistic, they are prone to creating problems inconsistent with the diagnosis to be portrayed, and they may not accurately convey real-world situations (Kaslow et al. 2009, Meier and Davis 2011). There is research suggesting that peer role play is ineffective, at least in

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training future psychologists in responding effectively to statements of suicidal clients (Mackelprang et al. 2014).

The American Psychological Association (APA) created the Assessment of Competency Benchmarks Work Group in 2005 in order to identify competencies for psychology graduate students at various training levels (Fouad et al. 2009). This work group established expectations for individuals to demonstrate readiness for practicum, internship, and practice. Fifteen core areas of competency were defined: 1) professional values and attitudes, 2) self-care, 3) scientific knowledge and methods, 4) relationships, 5) diversity awareness, 6) legal and ethical standards, 7) interdisciplinary knowledge, 8) assessment, 9) intervention, 10) consultation, 11) research, 12) supervision, 13) disseminating knowledge, 14) management-administration, and 15) advocacy (Fouad et al. 2009). The Association of State and Provincial Psychology Boards (ASPPB) surveyed practicing psychologists in order to create a more applied, practical competency model for professional psychology (Rodolfa et al. 2013). This ASPPB paradigm was developed assuming that competency levels would differ among individuals in practicum or internship compared with those recently licensed or licensed for over four years. This ASPPB devised framework was similar to that of the APA but included only six competency domains: 1) scientific knowledge; 2) evidence-based decision-making; 3) interpersonal and cultural awareness; 4) professionalism and ethics; 5) assessment; and 6) intervention, supervision, and consultation.

The primary purposes of competency models are to determine that psychologists are equipped to provide appropriate services to those whom they serve and to ensure accountability for doing so. A key feature of the competency benchmarks is that students must be monitored by faculty and supervisors to ensure that the competencies are attained at appropriate levels in each student's training. Faculty members and supervisors are expected to discuss progress toward attaining these competencies with students on a regular basis and to provide remedial experiences and resources to students who are struggling (Fouad et al. 2009). Thus, training programs must have reliable and valid ways to measure the competencies and must determine minimal levels of attainment (MLAs) of each competency as well as tracking student progress toward attaining all the MLAs.

Literature Review

Training in Clinical Interviewing

Attention to emotional concerns and worries that patients express or signal during an initial interview is important for developing and strengthening a therapeutic alliance and can lead to improved adherence to treatment (Rimondini et al. 2010). The "basic listening sequence" defined by Ivey and Daniels (2016) refers to microskills such as attending, paraphrasing, and questioning. Attending and questioning allow a client more room to discuss their experiences further, while paraphrasing clarifies and shortens client statements in a way that allows a clinician to understand their issues more fully. The basic listening sequence

involves skills of active listening which encompass important microskills of allowing clients to feel heard, understood, and comfortable with their clinician (Ivey and Daniels 2016). Researchers have also identified the microskill of reflection of feelings as an important avenue to bring emotional tone into the clinical interview (Ivey and Daniels 2016). Together, these microskills help to ensure that interviewers grasp the key points of the interview while remaining sensitive to the emotion and concerns expressed by the client.

The importance of effective communication in clinical contexts has long been established and shown to enhance patient satisfaction and compliance with treatment, adjustment to illness, and outcomes such as emotional health (Rimondini et al. 2010). Results from studies of programs which teach communication skills are promising, showing improvement in practitioners' interpersonal and interviewing skills overall, as well as in their confidence levels, although levels of efficacy can vary, depending on the teaching method of programs (Carvalho et al. 2011). Clinical interview training assumes that the skills needed to conduct effective interviews can be taught and are not always inherent in clinicians. For example, a pre-test/post-test, quasi-experimental study of 203 medical students and residents showed a slight increase in empathy levels following a short training period (Fernandez-Olano et al. 2008). Empathy levels were assessed using the Jefferson Scale of Physician Empathy (JSPE), and the experimental group's training consisted of participation in a five-day workshop discussing general communication principles and skills. The pre-test average of the JSPE was similar in both groups. Post-test workshop scores in the experimental group increased by 5.24 point and, improved in 68.9% of participants. This suggests that clinical interviewing characteristics such as empathy, while they may be inherent in some people, can be taught and improved upon. Other research has supported this finding and expanded on it, suggesting that longer exposure to course materials and more practice (e.g., seven months compared to three months) increases clinical communication competency, even if basic communication skills are practiced within the context of more advanced skill development (Carvalho et al. 2011).

Five factors identified by Tiuraniemi et al. (2011) as determining the efficacy of training of psychology and medical students were communication skills, special communication skills, motivational interviewing, empathy and reflection, and change orientation. These researchers concluded that self-assessment can be used to help practicing professionals identify what kinds of knowledge, skills, and experiences are necessary for their continued professional development. In their study, students completed self-assessments and then attended lectures; read a book introducing the topic of communication; participated in role-plays; and discussed therapy techniques, interventions, and different mental disorders. The students' skills in communication, motivational interviewing, empathy and reflection, and change orientation were all estimated to have improved, based on their self-assessments at the end of the course. The greatest improvement was shown by the fourth-year psychology students (Tiuraniemi et al. 2011).

In a study conducted by Amini et al. (2016) in Iran, simulated patients were used to compare the performance of general practitioners in a collaborative care (CC) program to a control group of general practitioners in usual care. The results

indicated a significant difference between the collaborative care (experimental group) and the control group physicians. The CC physicians built up a better relationship with their patients and more accurately evaluated a simulated psychotic patient, although their medical management did not improve (Amini et al. 2016). And while this group was better at communication, they did not refer the simulated psychotic patients in a more timely fashion. Due to their ignoring signs of necessary emergent intervention, it was concluded that they needed more training. Nevertheless, this study seems to provide support for the use of collaborative care techniques and the use of simulated patients for mental health practitioners who rely on building rapport and making accurate evaluations rather than medical management.

Role Play as a Training Technique

In order to improve the efficacy and safety of the training of mental health professionals, research has evaluated the use of role playing to provide practice of skills prior to working with actual patients. Reading case studies and watching videos regarding working with individuals with psychological disorders can be beneficial, but interaction with people who exhibit symptoms of mental disorders are likely to provide additional learning opportunities for students (Balsis et al. 2006).

Role-playing has an advantage over other types of teaching, as it provides direct observation, offers flexibility to the supervisors in selecting situations for training purposes, and is similar to training in other disciplines (Shea and Barney 2015). Role play can also be used as a training tool between a supervisor and a trainee, and trainees may also benefit from role playing the client. Individual role playing with a supervisor facilitates assessment of student skill, builds confidence, consolidates techniques, broadens case material, helps students learn to deal with awkward moments, strengthens clinical reasoning, provides modeling, improves comfort with interviewing, and enhances videotape supervision (Shea and Barney 2015).

Virtual role playing has also been used to assess skills in clinical interviewing and to compare novice and expert clinicians (Kenny et al. 2009). Virtual standardized patients use advanced technologies that allow them to listen, to act, and to generate the appropriate verbal and non-verbal behaviors for a particular presentation of a clinical issue. Moreover, interaction with simulated patients can help to differentiate levels of competency in interviewing. For example, via interacting with virtual standardized patients programmed to portray post-traumatic stress disorder (PTSD), novice clinicians were not able to elicit the same amount of relevant information in a 15-minute interview as experts (Kenny et al. 2009). These role play scenarios demonstrated that there were many times when novice clinicians would leave long pauses during which they searched their minds for what they should be asking. There were also more questions in the rapport category for the novices than for the experts, which meant they were asking questions about general topics and not specific criteria to help make a differential diagnosis or to focus on the client's specific difficulties. When working with

simulated patients, trainees tend to use patient-centered skills compared to doctor-centered skills in exploring patient concerns (Rimondini et al. 2010), which suggests empathy but less effective use of interview structure. Expressions of passive listening encourage patients to go on, but they also increase the risk of a lack of control, allowing patients to talk about irrelevant things without bringing them back to the point. Overall, young clinicians tend to be good passive listeners but need to improve active listening skills which, together with emotion focusing skills, should be major learning targets in the development of effective interviewing (Rimondini et al. 2010).

Research illustrates that interview structure can be taught. For example, over the course of a four-week communication training course, second-year psychiatry residents' interviewing skills significantly improved. Controlling for practice effects, Rimondini et al. (2010) demonstrated the efficacy of using feedback on videotaped interviews as well as role play with feedback in increasing empathic patient-centered interviewing skills and decreasing doctor-centered expressions.

The literature reviewed points to three conclusions. First, effective interviewing skills can be trained. Second, the use of simulated or standardized patients/clients can facilitate the training. Third empathy for the client and effective structure of an interview, although related, are different things.

Aspects of a 'Good' Interview

To ensure effectiveness of therapy and to establish a beneficial relationship, clinicians must continually build their competence in conducting sensitive intake interviews. Solomon et al. (2017) described three characteristics of culturally competent mental health professionals: 1) they are aware of their own assumptions, values, and biases; 2) they are aware of their active attempts to understand their clients' worldviews; and 3) they diligently develop the skills and techniques necessary for working with clients of various cultural groups. The interviewer should also remain sensitive to the purpose of the interview throughout the encounter and potential differences in levels of disclosure (Davies 2019). Taking a client-centered approach encourages the clinician to follow the lead of the client and has been associated with good clinical outcomes in different situations and across different problems and diagnoses (Heaven et al. 2003). This empathic approach results in higher ratings of client satisfaction as well as increased levels of recall of what was discussed in the session compared to a more structured strategy (O'Keefe et al. 2001), although, as previously mentioned, it may result in some inefficiencies in data collection (Rimondini et al. 2010).

A clinical interview utilizes qualitative observations based on verbal and non-verbal communication. Open-ended questions are typically more beneficial because they do not suggest a particular answer, and they encourage clients to use their own words (Bredart et al. 2014). Clinicians can then reflect the same or paraphrased wording of the issues back to the clients, helping them to feel more understood and validated in their experiences. A good interviewer will use open ended questions to elicit cues and a combination of open and closed questions to clarify, to probe, and to explore empathically verbal or non-verbal cues given

(Heaven et al. 2003). Engaging in active listening, attentive silence, reflection, synthesis, and recognition of resistance demonstrate to clients that they are being heard and also aid the clinician in understanding the presenting problem from the client's perspective (Bredart et al. 2014). Knowing how the client views and experiences the problem can inform treatment and make the intervention more effective. Uncovering the client's worldview will also help to improve the clinician-client alliance, to elucidate possible beliefs related to treatment, and to increase the accuracy of critical issues such as a suicide assessment. Empathizing with clients and their spirituality can also be a key for interviewing and treatment planning (Josephson and Peteet 2007). Techniques used to elicit information should vary depending on the population being interviewed. For example, when working with children, activities such as playing and drawing may be more effective, while when interviewing elderly individuals, having a quieter environment may be more beneficial (Bredart et al., 2014).

Ethical considerations such as obtaining informed consent from the client and ensuring confidentiality are important factors to which many clinicians do not give much thought (Bredart et al. 2014). Other considerations, such as providing a choice of pronouns to the client instead of assuming gender identification, are also frequently overlooked. By including these options as a standard part of the interview, clients have the space to focus on the presenting problem or other topics being discussed, rather than being concerned about how to correct their therapist or how the therapist may react.

Therapists' comfort levels with a topic can determine how the topic is discussed in the interview, so it is important that clinicians have open minds during sessions and always present unbiased and nonjudgmental views (Josephson and Peteet 2007). Knowing de-escalation strategies for extreme situations is also important for interviewing, and clinicians should use strategies such as redirection and rational maneuvering when necessary. Being aware of potential transference that can cause negative reactions toward the therapist will also aid in limiting dangerous situations in sessions (Twemlow 2001).

Many clinicians learned to interview using a style that is laser-focused on gathering and assessing information and history about the client. They are prone to asking questions about client wellness or hobbies at the end of the session, if time allows for it. Some research has indicated that the use of positive emotions, existing strengths, and goal-directed thinking at the outset of the interview may be more beneficial (O'Brian and Schlechter 2016). Beginning the interview with what works, instead of the presenting problem, can increase rapport as well as the clinician's ability to understand the presenting problem. Directly after the positive assessment of the patient, the clinician should ask what challenges are getting in the way of the patient's ability to exercise his or her strengths, which, hopefully, have already been uncovered. By asking about the strengths and activities that elicit positive emotions, the clinician is gathering needed information while also creating a supportive and positive environment that leads to a successful interview (O'Brian and Schlechter 2016).

Purpose

The purpose of this study is to present a new instrument which was developed for evaluating and monitoring interviewing competency and to explore the factor structure of that instrument, the Skills in Psychological Interviewing: Clinical Evaluation Scales (SPICES). SPICES was based on the principles of interviewing described in the literature review and was reviewed for content validity by several experts in the field of psychological interviewing. Initial piloting of the data on the instrument as a whole yielded an internal consistency coefficient of 0.778. Inter-rater reliability was also strong, r = 0.608 $p<0.01$ (Ketterer 2014). The goal of the exploratory factor analysis conducted in this study is to clarify how SPICES should be interpreted and used in clinical training. Following a review of clinical interviewing research regarding training and competency, the methodology and results of the study is discussed.

Research Questions

1. Is there a significant change in SPICES scores for participants from pre- to post-test?
2. Does the factor structure for SPICES vary between pre- and post-test?

Hypotheses

1. There will be a significant increase in SPICES scores from pre- to post-test, reflecting the results of their training in clinical interviewing and practice with simulated patients.
2. The factor structure for SPICES at pre-test will vary from the factor structure at post-test, primarily reflecting their training in the structure of clinical interviewing and a difference in constructs.

Methodology

Participants

Data were collected from first year doctoral clinical psychology students at a large university in the southeastern United States over a two-year period. One hundred ninety-seven doctoral psychology trainees participated in a four-month (one semester) interviewing course, during which they received instruction in general interviewing skills with specific modules detailing how to probe for and to respond to expressed concerns about possible suicide, violence, and abuse. In addition, they role-played 15-minute diagnostic interviews with simulated patients, observed classmates doing similar role-plays, and, along with intern and post-doctoral resident facilitators, provided feedback to classmates on their role-plays. Participants identified their gender as female (n = 159), male (n = 31), or not specified (n = 7). Ages of participants ranged as follows: 20-24 (n = 129), 25-29 (n

= 50), 30-34 (n = 11), 35-39 (n = 4), and 40-44 (n = 3), Participants reported identifying as Caucasian (n = 123), Hispanic/Latinx (n = 36), African American (n = 16), Asian (n = 10), other (n = 10), and not specified (n = 2). Among these participants, 173 identified English as their first language, 16 reported Spanish as their first language, one noted Creole as the first language, and seven specified 'other'. Twenty participants indicated being trainees in the Ph.D. clinical psychology program and 177 participants were trainees in the Psy.D. clinical psychology program. One hundred forty-seven participants reported that they began their clinical psychology program with a graduate degree and 50 began with a bachelor's degree.

Measure

The Skills in Psychological Interviewing: Clinical Evaluation Scales (SPICES, Ketterer 2014). SPICES is a 26-item measure developed by previous researchers on this project to evaluate skills in clinical interviewing. Each item includes behavioral anchors to aid the evaluator in accurately rating the student. Each item on SPICES was rated using a four-point scale, except for items seven and eight. These two items evaluated personal hygiene and attire, respectively, and were rated on a two-point scale. On the four-point scale, one corresponded with the behavior or skill not occurring and four corresponded with that behavior or skill being executed completely and well. On the two-point scale, one corresponded with poor hygiene and attire while two corresponded with being well kempt and in professional attire. Not only did this keep the measure's total score to 100 points, but it also kept personal appearance from playing too large of a role in evaluating clinical skills. Items were originally categorized into three domains based on a theoretical analysis: professionalism, relational issues, and application of training. At the time of development, SPICES was found to have good internal consistency ($\alpha = 0.778$) and inter-rater reliability ($r = 0.608$, Ketterer 2014).

Study Procedures

All first-year doctoral psychology trainees were enrolled in a required introductory pre-practicum interviewing course and received instruction in a broad variety of interviewing skills. As a part of this course, participants completed two 15-minute videotaped interviews with simulated patients. The first interview (the pre-test) took place prior to receiving any course instruction, and the second interview (the post-test) was conducted at the end of the course. Simulated patients portrayed a client with major depressive disorder (MDD) for both the pre-test and the post-test. Participants were assigned to a simulated patient at random for both the pre-test and the post-test. The videotaped interviews of the pre-test and the post-test were reviewed and evaluated by randomly assigned interns and/or post-doctoral residents using SPICES. SPICES scores for data collected in 2019 and 2020 were combined into one database to create a sample size sufficient for the analyses. This created a subject to item ratio of over 7:1, greater than the recommended minimum of 5:1 (Gorsuch 1983). All participants were present for

both pre- and post-test, and, therefore, no data were missing from the study. A more detailed description of the study procedures and measures used can be found in *Effects of Interview Training with Simulated Patients on Suicide, Threat, and Abuse Assessment*, by Osborn and Cash (2020). While interviews conducted during 2019 and the beginning of 2020 were in person, as a result of the Coronavirus pandemic, interviews for post-test in 2020 were conducted using the Zoom platform.

Statistical Analyses

The data analytic strategy consisted of several steps. All analyses were conducted using IBM SPSS 27.0 (IBM 2020). To address the first research question and to evaluate the hypothesized improvement in interview skills following the training course and use of simulated patient role plays, a paired samples t-test was conducted. Two exploratory factor analyses (EFAs) were conducted on the SPICES measure, one using pre-test data and one using post-test data. EFA's were utilized instead of CFA's due to the hypothesis that training would modify the factor structure. It was hypothesized that the impact of training and exposure to role-plays would alter the constructs exhibited within the interview, not just improve interview skills, supporting the use of exploratory rather than confirmatory factor analyses. The rating scale had previously categorized and interpreted scores based on a theoretical analysis, not an empirical analysis, of how the developers postulated that the items would logically group. Due to the non-orthogonal structure of the factors, to account for item overlap, the size of factor loadings was taken into account in naming the factors. The purpose of the EFA was to determine how the items actually cluster together as well as whether or not the factors change as a result of the training received.

Results

Pre- and post-test total SPICES scores were compared utilizing a paired samples t-test. Results indicated a significant increase in scores from pre- to post-test [$t(195) = -16.155$, $p < 0.001$]. The mean score increased from 77.18 at pre-test to 87.81 at post-test, by 10.63 points. Additionally, based on the 197 participants, only 2.5% of students would have failed to receive a passing score of 80% at post-test as compared to 45% at pre-test.

For the pre-test data, the EFA with 26 items resulted in two factors to retain as a result of examining the eigenvalues as well as the scree plot. Although there were eight eigenvalues greater than one, the scree plot revealed a steep drop following the two eigenvalues greater than two (6.744 and 3.442), with the next highest eigenvalue being 1.691. An oblique rotation (promax) was then utilized to clarify these two factors. An oblique rotation was selected because the authors expected correlations among the factors, and this expectation was borne out. The oblique factors were moderately correlated ($r = 0.296$), indicating that the constructs the factors represent contained a small amount (about nine percent) of

common variance. After rotation, the two factors explained approximately 35% of the total variance of the instrument.

For the post-test data, the EFA with 26 items identified three factors to retain. Examining the eigenvalues as well as the scree plot revealed that only these three factors had eigenvalues greater than two, consistent with the pre-test output (4.530, 2.380, and 2.070). The scree plot revealed a steep drop following the top three factors (next highest eigenvalue was 1.506). The same oblique rotation (promax) was then utilized to identify these three factors more clearly. The oblique factors had small to moderate correlations (factors one and two: r = 0.159; factors one and three: r = 0.446; factors two and three: r = 0.148) indicating that factors one and three were moderately related, while factors one and two and two and three had little shared variance. After rotation, the three factors explained approximately 27% of the total variance.

The factor loading matrix for the pre-test and the post-test can be seen in Table 1. After examining which items loaded significantly on each factor, names were assigned to each. Items were allowed to cross load within pre- and post-test. Pre-test factor one represents Empathic Communication. This factor demonstrates how effectively the clinicians take into account the clients' situations and use that information to guide responses and further questioning. Pre-test factor two is named Professional Presentation. The clinicians' physical appearances and ability to make themselves understood appropriately load on this factor. Factors for Empathic Communication and Professional Presentation demonstrated strong reliability with Cronbach's Alpha levels of .858 and .810 respectively. Cronbach's Alpha if Item Deleted suggested that removing the items evaluating suicide assessments as well as management of interpersonal conflict would increase the alpha of Empathic Communication to 0.859 and 0.860 respectively. Removing items for threat assessment, personal hygiene, and attire would also raise alpha for Professional Presentation to 0.817, 0.826, and 0.813 respectively. Due to the alpha levels for both factors already being sufficient and the increases being minimal, researchers decided not to remove those items from the factor structure.

Table 1. *Factor Loadings Based on Exploratory Factor Analyses with Oblique Rotations for 26 Items from the SPICES Measure (N = 197)*

	Pre-Test			Post-Test	
	Empathic Communication	Professional Presentation	Empathic Communication	Appearance	Interview Structure
Informed Consent		0.50		0.30	.38
Limits of Confidentiality		0.35			
Suicide Assessment	0.31		0.33		0.34
Threat Assessment		0.36			0.41
Abuse Assessment					0.48
Personal Boundaries					

Personal Hygiene		0.75		0.90	
Attire		0.70		0.83	
Non-Judgmental Attitude	0.67	0.35	0.58		
Appreciation for Client's Life Circumstances	0.72	0.32	0.66		0.32
Compassion for the Client	0.55	0.30	0.66		
Structure of the Interview	0.48				0.37
Time Management	0.41	0.48			0.40
Diversity		0.72			
Response to Client's Feelings	0.68		0.58		0.36
Response to Client's Expressions of Concerns	0.48	0.56	0.41		
Indirect Messages/Communications	0.60	0.57			0.44
Management of Interpersonal Conflict	0.50		0.36		
Management of Ambiguity and Uncertainty	0.43	0.63	0.53		
Language in Professional Communication	0.53				
Tone of Speech	0.59				
Communication of Ideas and Information	0.63		0.45		
Nonverbal Communication	0.64		0.50	0.44	0.51
Open-Ended Questioning	0.56	0.39	0.54		0.61
Paraphrasing or Summarizing	0.60	0.42	0.38		0.42
Closure of the Session	0.33	0.36			

Note. Factor loadings <0.30 are suppressed.

Post-test factor one is very similar to pre-test Empathic Communication and has, therefore, been given the same name. Professional Presentation from pre-test appears to have split into two more distinct factors at post-test. The first, Appearance, reflects clinicians' physical appearance in addition to their ability to appear knowledgeable. The final factor, Interview Structure, includes items that revolve around the clinicians' asking the SP relevant questions, such as those

regarding suicidality, abuse, and threat, while responding appropriately to client concerns and feelings. Cronbach's Alpha for post-test Empathic Communication also demonstrated good reliability ($\alpha = 0.777$). Examining the Cronbach's Alpha if Item Deleted revealed that removing the item for suicide assessment would increase Cronbach's Alpha to 0.782. Due to the alpha level already being sufficient and the increase being minimal, researchers decided not to remove the item from the Empathic Communication factor. The factor for Appearance had insufficient internal consistency reliability ($\alpha = 0.377$). This is likely due to the few number of items loading onto the factor as well as the fact that two of the four items were rated using a two point scale, rather than a four point scale. The Interview Structure factor revealed a Cronbach's Alpha that approached a respectable level ($\alpha = 0.677$) indicating that factor may benefit from increasing the number of items measuring the construct of interview structure. Further research should be done to investigate how to improve these dimensions. Communalities can be found in Table 2.

Table 2. *Communalities Based on Exploratory Factor Analyses with Oblique Rotations for 26 Items from the SPICES Measure (N = 197)*

	Pre-Test	Post-Test
Informed Consent	0.45	0.37
Limits of Confidentiality	0.37	0.21
Suicide Assessment	0.30	0.31
Threat Assessment	0.26	0.29
Abuse Assessment	0.17	0.32
Personal Boundaries	0.28	0.19
Personal Hygiene	0.69	0.75
Attire	0.60	0.72
Non-Judgmental Attitude	0.51	0.54
Appreciation for Client's Life Circumstances	0.59	0.54
Compassion for the Client	0.44	0.56
Structure of the Interview	0.58	0.32
Time Management	0.51	0.29
Diversity	0.58	0.22
Response to Client's Feelings	0.53	0.42
Response to Client's Expressions of Concerns	0.56	0.29
Indirect Messages/Communications	0.57	0.37
Management of Interpersonal Conflict	0.38	0.27
Management of Ambiguity and Uncertainty	0.57	0.42
Language in Professional Communication	0.43	0.27
Tone of Speech	0.47	0.42
Communication of Ideas and Information	0.47	0.23
Nonverbal Communication	0.56	0.31
Open-Ended Questioning	0.71	0.52
Paraphrasing or Summarizing	0.64	0.52
Closure of the Session	0.67	0.37

Evaluating which items loaded onto each factor showed that not all items loaded onto a factor in both pre- and post-test. The item evaluating student's

ability to maintain appropriate personal boundaries did not load onto any factors in pre- or post-test. The item for abuse assessment did not load onto either factor during the pre-test but it loaded onto the Interview Structure factor at post-test. An additional five items did not load onto any factors at post-test: limits of confidentiality, diversity, language in professional communication, tone of speech, and closure of the session. It is possible that the time constraints of the interviews resulted in difficulty for students to demonstrate these skills sufficiently or to address all of the topics required. It is also possible that each of these items represent relatively independent skills which might be represented as separate factors if each was assessed by multiple items. Correlation matrices for both pre- and post-test can be seen in Table 3 and Table 4, respectively.

Table 3. *Correlation Matrix for Pre-Test Factors One and Two*

	Empathic Communication	Professional Presentation
Empathic Communication	1.00	0.30
Professional Presentation	0.30	1.00

Table 4. *Correlation Matrix for Post-Test Factors One, Two, and Three*

	Empathic Communication	Appearance	Interview Structure
Empathic Communication	1.00	0.16	0.45
Appearance	0.16	1.00	0.15
Interview Structure	0.45	0.15	1.00

Discussion

This study aimed to use exploratory factor analyses to identify the factor structure of the SPICES scale and to use that information to understand what students learn and need to develop further when acquiring clinical interviewing skills. After analyzing the pre-test and post-test factor analyses, separate factors emerged for each assessment point. The pre-test factor analysis indicated that there are two factors, specifically Empathic Communication and Professional Presentation. Empathic Communication consisted of items that relate to the types of student responses and therapeutic micro-skills used, such as open-ended questions, paraphrasing, communication of compassion, and others. All skills that research has shown to be foundational to good interviewing (Bredart et al. 2014, Davies 2019, Heaven et al. 2003). The variables that loaded on the pre-test factor of Professional Presentation related to both physical appearance of the clinicians and how they executed difficult parts of the interview, such as performing a risk assessment or closing the session. This suggests that prior to training specifically in conducting clinical interviews, students' interview skills are grouped into

categories closely related to what the clinician says and how they say it, as well as how they present themselves in conducting the interview. As these skills are related to building a therapeutic relationship and credibility (Bredart et al. 2014), it appears that the students have learned to value these aspects of conducting an interview by their second semester in a doctoral program.

Analysis of the post-test, however, revealed three factors instead of two. The first factor was the same as in the pre-test, Empathic Communication. In comparing scores on this factor from pre-test to post-test, there was significant improvement. Based on the 197 participants, only 2.5% of students would have not received a passing score of 80% at post-test as compared to 45% at pre-test. Practice with the simulated patients appears to have benefited the acquisition of these empathic communication skills and interviewing micro-skills. This supports prior research suggesting that role-play with simulated patients helps clinicians improve interviewing skills and connect with their clients (Shea and Barney 2015). The next two factors on post-test suggested a split in the pre-test Professional Presentation factor into Appearance and Interview Structure. The Appearance factor entails both physical appearance and apparent credibility and knowledge, while the Interview Structure relates to the students' skills in effectively addressing the important aspects of a therapeutic interview. This split signifies specificity in the scores and standardization of the interview, as the students differentiated structure of the interview from physical appearance and apparent knowledge. They apparently gained an appreciation of how to ask questions separate from how they dress and present themselves non-verbally. This specificity, combined with improvement in empathic communication from pre- to post-test, demonstrates that students did not simply regurgitate the required information (i.e., consent and suicide assessment); rather, they learned to structure their interviews while still connecting appropriately with their clients.

Examining the correlations between the factors revealed expected findings. Empathic Communication and Professional Presentation from pre-test demonstrated a small to moderate positive correlation ($r = 0.30$). The correlation may be weak due to the fact that the students are still learning how to communicate empathically; yet, the existence of the small but statistically significant correlation supports that the constructs are related (i.e., related to interviewing skills) as studies among professionals suggest (Bredart et al. 2014, Davies 2019, Heavan et al. 2003). Post-test factor correlations also reflected the theoretical conceptualization. Appearance had a negligible correlation with both Empathic Communication ($r = 0.16$) and Interview Structure ($r = 0.15$). This demonstrates that appearance is a separate construct from both other interview skills and likely does not have much to do with a clinician's ability to communicate empathically or to structure an interview effectively. A moderate positive correlation was obtained between Empathic Communication and Interview Structure ($r = 0.45$). This confirms that clinicians' structuring of their interviews in order to include all relevant topics does relate to their ability to communicate empathically. Both empathic communication and interview structure improved together.

It is noteworthy that while the 2019 class was conducted completely in person and face-to-face with the simulated patients, the 2020 class was conducted

partially via Zoom due to the coronavirus pandemic. While 40% of students would have failed if only using the Appearance factor, it may be that the limitations of Zoom created an environment which interfered with the demonstration of these skills. Further research should examine this issue and how Zoom relates to perception of appearance in a therapeutic interview. While appearance is typically controlled by the student with or without interview-specific knowledge (e.g., dress, tone, how they convey confidence), the interview structure is new and largely learned through their classes and pre-practicum experiences. This is also an area where students can develop and grow. While there is specificity detailed by this split, many more students, (i.e., 21.3%, would have "failed" and required remediation if using only the factor of Interview Structure). Part of this could be due to the structure of the class, where students are required to conduct all parts of the interview in a 15-minute period at pre- and post-test. However, during class they each perform 15 minutes of a typically hour-long interview and are not required to include all parts of the interview at once. It may be that students are still unsure how to include all of these skills in a 15-minute interview and that altering the format of the class could examine this potential explanation further. In addition, future research could score other, longer, interview encounters using SPICES to determine if it is the time limit that is responsible or if further practice is needed.

A strength of this study is that it advances the literature in training psychology students. Very few studies examine training of clinical psychology students using simulated patients; nor do they analyze exactly how skills are assessed. The updated and now factor analyzed scale can be used with similar programs to assess progress in empathic communication, professional presentation, and appearance. It was made up of ratings from multiple raters who were familiar with the measure and inter-rater reliability was at least adequate. Another strength of this factor analysis is that the sample size of 197 is appropriately large for the number of items on the SPICES form. The sample is also unique in that it is made up of students in the same year of their training, which reduces the variance of past experiences and provides generalizability for students in similar training programs at the same level. Finally, the pre-post design allows for discussion of improvement, as there is a valid baseline, and factors such as skills acquired and simulated patient experience are controlled for in this class.

This analysis also has some limitations. In terms of generalizability, we have data to support similar findings with other first year clinical psychology students but not for early career professionals or students in other years of similar programs. It is also noteworthy that of the two years of data, one year was disrupted by the COVID-19 pandemic. While the class structure was maintained as much as possible, all experiences were transferred to an online format mid-semester. The influence of COVID-19 on students and their skill acquisition is not fully understood at this time. Future studies should assess the impact that the stress of COVID-19 and the move to online instruction has on psychology trainees.

Conclusions

This study accomplished its goal of both identifying factor structures for SPICES pre- and post-training as well as illuminating what is learned and specified in an experience-based diagnostic interviewing class using simulated patients. Future research could use this same instrument to determine if similar gains and/or factors emerge when evaluating students without the use of simulated patients. It is also of note that the post-test for 2020 was impacted by the COVID-19 pandemic. It is unclear at this time the full impact of this pandemic on the students' learning and how simulated patient role plays are experienced over zoom. To address this limitation, confirmatory factor analyses should be implemented on future iterations of this study to demonstrate if there was a significant effect of the pandemic on the findings, as well as to confirm the overall factor structures.

These findings have implications for teaching basic interviewing skills to first year psychology doctoral students. Based on the two factors in the pre-test SPICES, students seem to understand interviewing in terms of communication and presentation. Many students enter interviewing courses with limited direct psychological experiences. This study has demonstrated the importance of providing students with the opportunity for practical experience in interviewing. Instructors and trainers can aid students in communicating empathically early on in training by utilizing simulated patients. Many programs and classes use students as clients in role-plays, but the seriousness, severity, and anonymity of the simulated patients helps to teach empathic communication, not just the practice of speaking to someone. This study emphasizes both the impact of direct instruction and role-play, through improvement in interviewing skills, and presents a factor structure for measuring those skills.

The split of the Professional Presentation factor into Appearance and Interview Structure factors at post-test demonstrates an area of needed improvement early in the training of emerging psychologists. It is recommended that trainers introduce students to the concept of a full interviewing session and what that entails, as opposed to only discussing specific aspects such as consent and suicide assessments. Discussing how the various aspects of the interview work together to build rapport and to increase the amount and veracity of information collected will help students develop their interviewing skills. It is also important that programs teach students how to present themselves in a way that communicates professionalism and confidence as well as building the therapeutic alliance.

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