VALIDITY EVIDENCE FOR THE INTERPRETATION AND USE OF ESSENTIAL ELEMENTS OF COMMUNICATION GLOBAL RATING SCALE SCORES

Nancy Rhoda Schneider

Follow this and additional works at: http://digitalrepository.unm.edu/educ_ifce_etds

Recommended Citation
Schneider, Nancy Rhoda. "VALIDITY EVIDENCE FOR THE INTERPRETATION AND USE OF ESSENTIAL ELEMENTS OF COMMUNICATION GLOBAL RATING SCALE SCORES." (2016). http://digitalrepository.unm.edu/educ_ifce_etds/34
Nancy Rhoda Schneider  
Candidate  

Educational Psychology  
Department  

This dissertation is approved, and it is acceptable in quality and form for publication:

Approved by the Dissertation Committee:

Jay Parkes, PhD, Chairperson  

Terri Flowerday, PhD  

Teresita McCarty, M.D.  

Bronwyn Wilson, M.D.
VALIDITY EVIDENCE FOR THE INTERPRETATION AND USE OF ESSENTIAL ELEMENTS OF COMMUNICATION GLOBAL RATING SCALE SCORES

by

NANCY RHODA SCHNEIDER

B. S., Nursing, Emory University, 1977
B. V. A., Georgia State University, 1984
M.B.A., University of Phoenix, 1999

DISSERTATION
Submitted in Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy
Educational Psychology

The University of New Mexico
Albuquerque, New Mexico

December, 2015
DEDICATION

This work is dedicated to patients and those who care for them.

“Compassion is not a relationship between the healer and the wounded. It’s a relationship between equals….Compassion becomes real when we recognize our shared humanity.”

Pema Chödrön
(Chodron, n.d.)

“The players are connected. Each player interpreting the music individually constantly modulates and is modulated by the other… The music is collectively created and every performance is unique.”

Dr. Oliver Sacks
(Sacks, 2015, p. 364)
ACKNOWLEDGMENTS

I wish to thank many wonderful professors, colleagues, family and friends for their inspiration, knowledge, patience, persistence and confidence in me. Completing this dissertation was possible because of their collective guidance and support. I extend my deepest gratitude to my advisor and committee chairman, Dr. Jay Parkes. His statement, “It’s not what the numbers are, it’s what the numbers mean!” inspired me to study Educational Psychology. He’s been my long-standing guide on the quest to find meaning in the numbers and mentor throughout the long journey that has become this dissertation.

My committee members offered timely direction and encouragement throughout the process. Dr. Teresita McCarty mentored me in the field of medical education and was a buoy in stressful times. Her proverbial advice to, “Be like lichen,” helped me weather many storms. Dr. Terri Flowerday encouraged me to find a bridge between educational psychology and patient care. Dr. Bronwyn Wilson has always been a role model of dedication to patient-centered communication. I extend heartfelt thanks to each of them for helping me grow both professionally and personally.

I am grateful for guidance from wise teachers. Dr. Vera John Steiner offered the liberating suggestion to “Spend time with your metaphors.” Dr. Jan Armstrong gifted me with hours of conversation immersed in theory and qualitative methods. Dr. Linney Wix introduced me to poesis as a path of art and soul. I feel fortunate to have known these three women who, Hecate-like, stood with me at the crossroads of thought and imagination.

Colleagues and friends who faithfully encouraged me throughout the years include Dr. Scott Obenshain, Dr. Teresa Anderson, and Dr. Ann Morrison. I am much obliged to my coworkers in Assessment & Learning; without their flexibility and indulgence, I could not have completed my program requirements. Many thanks to my friends, Jody Meller, Deana Richter, Lou Clark and Kim Persinger, who gently reminded me that they had not forgotten my goal and neither should I.

The National Board of Medical Examiners generously granted access to the Step 2 Communication and Interpersonal Skills scores used in this study. Many thanks to Rob Langmead, my ‘honest broker,’ who de-identified and formatted the student grade data while patiently answering all of my many questions.

I am thankful for my family. Their love and support never flagged in spite of unexpected and challenging life events. I especially appreciate the endurance of my wife, Madie LaMarre, who graciously read several ‘final’ drafts. Thanks to her thoughtful questions and wise editorial feedback I was able to conclude this dissertation journey just in time.

Finally, I will be forever grateful for the inspiration of my son, Jon, who always and still believes in me.
VALIDITY EVIDENCE for the INTERPRETATION and USE OF ESSENTIAL ELEMENTS of COMMUNICATION GLOBAL RATING SCALE SCORES

by

Nancy Rhoda Schneider

B.S.N., EMORY UNIVERSITY, 1977

B.V.A., GEORGIA STATE UNIVERSITY, 1984

M.B.A., UNIVERSITY OF PHOENIX, 1999

Ph.D., EDUCATIONAL PSYCHOLOGY, 2015

ABSTRACT

Purpose

Clinical communication influences health outcomes, so medical schools are charged to prepare future physicians with the skills they need to interact effectively with patients. Communication leaders at The University of New Mexico School of Medicine (UNMSOM) developed The Essential Elements of Communication – Global Rating Scale (EEC-GRS) to teach and assess patient-centered communication skills. The instrument contains seven, behaviorally anchored Elements, which support the validity and reliability of scores. This study evaluated new validity evidence that supports the interpretation and use of scores resulting from the instrument.

Method

Two methods were utilized to evaluate validity evidence. (1) Correlation studies were conducted that compared the relationship between EEC-GRS scores with both Patient Satisfaction and the National Board of Medical Examiners Step 2
Communication and Interpersonal Skills (CIS) scores. (2) Exploratory Factor Analysis was conducted to determine how many constructs the instrument measured, and how these constructs were related.

**Results**

Results suggested correlation ($r = .76$) and predictive strength ($r^2 = .58$) between EEC-GRS and Patient Satisfaction scores. There was also evidence of outcomes from the EEC-GRS to predict scores on Step 2 CIS ($r^2 = .16$). In addition, Patient Satisfaction was correlated with Step 2 CIS scores ($r = .44$) and predictive of Step 2 CIS scores ($r^2 = .19$). Subsequently, factor analysis resulted in a 2-factor structure. To explain the factor structure, key descriptive words were extracted from the each element in the factor cluster and linguistic themes were evaluated. Words defining Factor-one described interaction *with* the patient, whereas words associated with Factor-two suggested one-directional communication from the clinician *to* the patient.

**Conclusions**

This study produced new validity evidence supporting the usefulness of the EEC-GRS at UNMSOM. Results suggest that the instrument has both curricular and assessment value to scaffold the development of medical students’ patient-centered communication skills and thus prepare them for the clinical environment.
# TABLE OF CONTENTS

Committee Signature Page ........................................................................................................ i
Title Page ................................................................................................................................ ii
Dedication ................................................................................................................................. iii
Acknowledgements ................................................................................................................... iv
Abstract .................................................................................................................................... v

TABLE OF CONTENTS ........................................................................................................... vii

LIST OF FIGURES .................................................................................................................. xi

LIST OF TABLES ..................................................................................................................... xii

CHAPTER 1 INTRODUCTION ................................................................................................. 1

Background and Significance ................................................................................................. 2

Health Outcomes .................................................................................................................... 2
Patient Satisfaction .................................................................................................................... 3
Accreditation ............................................................................................................................ 4
Kalamazoo Consensus Statement ............................................................................................ 7
Communication Skills Education ............................................................................................ 8
Communication Skills Education at UNMSOM ...................................................................... 9

Validity Argument ................................................................................................................. 10
Validity Evidence ..................................................................................................................... 10

Alignment with Construct ..................................................................................................... 11

Patient-centered communication skills ................................................................................. 11
Patient Satisfaction ................................................................................................................. 12

The Test ................................................................................................................................. 13
VALIDITY EVIDENCE

Content and Development.................................................................13
Format .................................................................................................16
Raters .................................................................................................17
Standard Setting and Cut Scores..........................................................19
Assignment to Alternative Treatments ...............................................19
Summary .............................................................................................20

CHAPTER 2 METHODS........................................................................23
Instrumentation ................................................................................23
Procedures ........................................................................................26
  Assessment Context ........................................................................26
  Scoring and Standard Setting .........................................................27
  Raters and Reliability ......................................................................28
  Quality Assurance ...........................................................................30
Data ....................................................................................................32
  Demographic Information ..............................................................32
  Research Approval and Description of Data ....................................35
Analysis ..............................................................................................37
  Research Question 1 .................................................................37
  Research Question 2 .................................................................37
  Research Question 3 .................................................................38
    Internal Structure .................................................................38
    Factors ......................................................................................39
    Factor Analysis Methods .........................................................39
APPENDICES ................................................................................................................. 68

APPENDIX A  2005 EEC-GRS ......................................................................................... 68

1. Open the Discussion ................................................................................................. 68
2. Build a Relationship ................................................................................................. 69
3. Gather Information .................................................................................................. 70
4. Understand the Patient’s Perspective ...................................................................... 71
5. Share Information .................................................................................................... 72
6. Reach Agreement ..................................................................................................... 73
7. Provide Closure ........................................................................................................ 73
8. Patient Satisfaction .................................................................................................. 74

APPENDIX B  2002 COMMUNICATION SKILLS COMMITTEE ................................. 75

REFERENCES .................................................................................................................. 76
LIST OF FIGURES

Figure 1. Communication Skills Schema, Nomological Network, Correlations and Paths...........................................................................................................................................36

Figure 2. Research Question 1 .................................................................................................................................................................................................42

Figure 3. Research Question 2 .................................................................................................................................................................................................45

Figure 4. Research Question 3 .................................................................................................................................................................................................47

Figure 5. Factor Plot in Rotated Factor Space .................................................................................................................................................................50
LIST OF TABLES

Table 1. Content Comparison of Kalamazoo Consensus Statement and EEC-GRS ..........15
Table 2. Essential Elements of Communication Global Rating Scale: Elements
   and Subcategories ........................................................................................................25
Table 3. Demographic Data: UNMSOM and U.S. Medical Students Graduating
   2006 – 2009 ..................................................................................................................33
Table 4. Correlation Matrix & Descriptive Statistics for EEC-GRS, Patient Satisfaction,
   and Step 2 CIS scores .................................................................................................44
Table 5. Factor Pattern Matrix ......................................................................................49
Table 6. EEC-GRS Key Words Associated with Factor Pattern .................................58
Table 7. Key Words from Elements Associated with Factors 1 & 2 ...............................61
Chapter 1

Introduction

A physician who communicates in a patient-centered manner may positively influence the health outcomes of his or her patients, and the process of building life-long clinical communication skills begins in medical school. Medical schools must assure that graduates are fully prepared to enter the world of clinical practice. Preparing medical students to become effective physicians involves building competence in multiple domains. The Accreditation Council for Graduate Medical Education (ACGME) defines six core competencies required to provide safe and effective medical care (2008). Medical schools assess students’ developing skills in these domains and certify minimum skill attainment prior to graduation. A national licensing agency requires that medical school graduates demonstrate initial clinical and communication skill competence to qualify for entry into a residency program of supervised post-graduate practice.

Each of the six domains defined by the ACGME has unique qualities and all are essential for safe and effective medical practice (2008). One of the ACGME core competencies, Interpersonal and Communication Skills, involves the effective interaction between physician and patient in a clinical encounter. This paper will describe the clinical communication skills domain and how medical schools address the educational requirement. It will review educational methods used at the University of New Mexico School of Medicine (UNMSOM). In particular it will describe the Essential Elements of Communication Global Rating Scale (EEC-GRS) that was designed at UNMSOM to prepare students with the foundational communication skills necessary to enter the medical profession. (The EECGRS is included in Appendix A.) Existing validity
evidence related to the interpretations and uses of EEC-GRS score outcomes will be described. Finally, a study will be proposed to investigate new validity evidence in order to further understand the interpretations and uses of EEC-GRS score outcomes. To better understand the relevance of this study, it will be helpful to review some background related to physician-patient communication skills.

**Background and Significance**

Communication is woven throughout every aspect of a patient’s healthcare experience. Studies document the impact of physician-patient communication on a variety of medical outcomes (Dillon, 2012; DiMatteo et al., 1993; Kaplan, Greenfield, & Ware, 1989; Stewart, 1995; Stewart et al., 2000). At all levels of healthcare regulation from national policy and licensing agencies to specific standards of patient care, communication ranks as an essential skill for physicians. American national healthcare policies such as The Health Information Portability and Privacy Act (HIPPA) and the Affordable Care Act (ACA) recognize the importance of communication in healthcare. Various models of healthcare such as the patient centered medical home require effective communication for success. Third party payers support effective healthcare communication due to its relationship with health outcomes, system efficiencies and the cost of care (Levinson, Lesser, & Epstein, 2010).

**Health Outcomes**

From the level of social policy down to individual patient satisfaction, communication skills are credited with influencing a cascade of health outcomes (Simpson, 1991). Studies support the observation that when the partnership between physicians and patients works well patients are more likely to participate in decision-
making, comply with treatment recommendations, keep follow-up appointments and increase their likelihood of improved healthcare outcomes (DiMatteo et al., 1993). Effective clinical communication is associated with individual patient benefits and systemic efficiency, while ineffective or poor patient communication is linked to patient dissatisfaction and litigation (Fallowfield & Jenkins, 1999; Simpson, 1991; van Zanten, Boulet, & McKinley, 2007). Patients may forgive medical error if they feel their physician cares about them. However, patients are less forgiving if they feel that communication with their physician was disrespectful or disinterested. Conversely, when physician communication engenders confidence and trust, the benefits extend beyond individual patient outcomes to healthcare systems, economic efficiencies, and social consequences (DiMatteo et al., 1993; Levinson et al., 2010; Stewart, Ryan, & Bodea, 2011; Stewart, 1995).

**Patient Satisfaction**

The impact of patient satisfaction as a measure of patient-centered care on health outcomes and the cost of care is well documented (Kaplan et al., 1989; Stewart et al., 2011). One such study conducted by Roter (1987) assessed the link between patient satisfaction with the encounter and the impact of physician communication on a patients’ ability to recall information. She divided communication dimensions into “task and affective, socio-emotional behaviors, which were interpreted as patient-centric such as sharing information and counseling” (Roter, 1987, p. 438). Roter found that patients were able to discern the difference between the two. Though task behaviors were physician-centric, such as giving directions and asking questions, patients were sensitive to the affective dimension of voice quality, intonation, and non-verbal interaction impacted how
the task was conveyed (Roter, 1987). It demonstrated the patient’s ability to perceive and interpret the interaction between the affective and task dimensions. They discovered a positive pattern associated with the quality of a physician’s socio-emotional communication and a patient’s ability to recall information, feel satisfied and have a positive global impression of the visit. Conversely, they also discovered a negative outcome pattern associated with an emphasis on task-oriented behaviors with lesser degrees of affective quality (Roter, 1987).

When physicians attended to patient preferences it influenced the patients’ perceptions of their patient-centeredness and feelings of common ground with the physician. These indicators of satisfaction are correlated with patient outcomes. Patients’ perceptions of patient-centeredness were reported to result in quicker resolution of health concerns, subjective reports of better health, fewer diagnostic tests and fewer referrals to other physicians (Stewart et al., 2000). The relationship between patient satisfaction with the medical encounter and health outcomes continue to validate the importance of preparing medical students with the patient centered communication skills they will need for success in their medical practice (Griffith, 2003; Roter, 1987)

**Accreditation**

Recognizing the benefits of successful clinical communication, licensing agencies require evidence of these skills. There are numerous agencies that license medical education and regulate safe medical care that monitor the continuum of practice from entrance into the profession through ongoing certification of professional skills and knowledge. National agencies which require demonstrations of communication skills competence include the Joint Commission on Accreditation of Healthcare Organizations
(JCAHO), Accreditation Council for Graduate Medical Education (ACGME), the American Board of Medical Specialties (ABMS), the United States Medical Licensing Examiner (USMLE), and the Liaison Committee on Medical Education (LCME). (Liaison Committee on Medical Education, 2013; Makoul, Krupat, & Chang, 2007; Mercer et al., 2008).

The LCME and USMLE are specifically involved with certifying medical education and competency outcomes for entering the profession. The LCME monitors medical education programming to assure that medical students have the opportunity to learn the knowledge, skills and attitudes to prepare them for entering the profession. The LCME document, Functions and Structure of a Medical School, describes the requirement for all U.S. medical schools to assess core clinical skills, and specifically includes communication skills Liaison Committee on Medical Education, 2013).

The complementary agency, USMLE, assures that students are prepared with the requisite skills and knowledge to progress in the medical school curriculum through national licensing examinations. They administer three ‘Step’ exams to certify progressive competence. The Step 1 exam tests basic science knowledge as the foundation for clinical skills. Passing this first exam is required mid-way through the second year prior to clinical clerkships. The Step 2 examination is a two-part assessment involving a written test of clinical knowledge (Step 2 CK) and a performance assessment of three clinical skills domains (Step 2 CS). Students take this exam after completing the clinical clerkships, at the end of the third year. They are assessed on the applied knowledge and skills that are central to a patient encounter including physical examination, patient-centered communication, and clinical note writing. In order to
minimize variation in the competence of entry-level residents and hold applicants to medical residency programs to a common standard, passing each component of Step 2 CK and CS is required to enter supervised medical practice in an accredited residency program (Makoul et al., 2007; Mercer et al., 2008). Passing these exams is a graduation requirement for many medical schools including UNMSOM. The final hurdle, Step 3, is designed to demonstrate that the resident possesses adequate clinical knowledge for independent practice (United States Medical Licensing Examiner, 2014). These gateway examinations help to assure patient safety by establishing criterion-referenced standards for the knowledge and skill required to practice progressively independent medicine.

The requirement for medical schools to prepare students with adequate clinical communication skills is a relatively new development. Historically, medical knowledge and diagnostic reasoning were the most highly valued skills and the colloquial ‘bedside manner’ was appreciated as pleasant but not essential. Once research provided evidence that clinical communication skills influenced patient outcomes, communication skills education emerged from its homespun origin into a legitimate clinical skill (Makoul, 2003). Licensing bodies began requiring that all medical schools prepare their graduates with these skills (Asbridge, Poulin, & Donato, 2005; Makoul, 2003; Simpson, 1991; Smith et al., 2011). In spite of common requirements, medical education licensing agencies do not prescribe how communication skills are taught or assessed in medical schools. This has resulted in a variety of instructional methods and assessment instruments that medical schools use to model, teach and assess clinical communication skills (Makoul, 2003).
Kalamazoo Consensus Statement

The Bayer-Fetzer Conference on Physician-Patient Communication in Medical Education convened in 1999 to evaluate the variety of clinical communication skills educational methods used in medical schools. This invited group of twenty-one medical educators and representatives from professional organizations and credentialing agencies compared the similarities, differences, and psychometric properties of five communication skills instruments. The instruments they evaluated included: the “Bayer Institute for Health Care Communication E4 Model, the Three Function Model/Brown Interview Checklist, the Calgary-Cambridge Observation Guide, the Patient-centered clinical method, and the SEGUE Framework for teaching and assessing communication skills (Bayer-Fetzer-Participants, 2001). Representatives of accrediting agencies and communication skills organizations (ACGME, CanMeds 2000 Project, ECFMG, Macy Health Communication Initiative) considered the instruments’ strengths in the context of the criteria they used to evaluate physician-patient communication skills (Bayer-Fetzer-Participants, 2001). The participants distilled the presentations into the essential elements occurring in most clinical encounters: “Open the Discussion, Gather Information, Understand the Patient’s Perspective, Share Information, Reach Agreement on Problems and Plans, and Provide Closure” (Bayer-Fetzer-Participants, 2001). Each of the elements included sets of task-based behaviors, which could be taught, observed, and assessed.

This collaboration resulted in recommendations for medical educators to use for developing an evidence-based physician-patient communication skills curriculum, assessment and evaluation (Bayer-Fetzer-Participants, 2001). Their findings published as The Essential Elements of Communication in Medical Encounters: The Kalamazoo
Consensus Statement, became an important resource for developing and evaluating communication skills instruments in medical schools (Bayer-Fetzer-Participants, 2001).

**Communication Skills Education**

Medical schools approach the charge to prepare students with effective clinical communication skills differently (Rider, Hinrichs, & Lown, 2006). Yet, all must assess student readiness for common purposes: advance in the curriculum, pass the national Step 2 CS and ultimately prepare for the practice environment. Medical schools use performance assessments for students to demonstrate adequate clinical and communication skills. A performance assessment format that was developed and widely used in medical education is the Objective Structured Clinical Examination (OSCE). Well-designed OSCEs support validity and reliability evidence for score interpretations and score uses by providing a standardized context for students to demonstrate required clinical and communication skills (Wass, van der Vleuten, Shatzer, & Jones, 2001).

OSCE blueprints are based on educationally and clinical relevant cases that are portrayed by standardized patients (SPs). SPs are actors or individuals from the community who are trained to simulate patient encounters for both formative and summative assessment purposes (van Zanten et al., 2007). SPs are a unique learning resource. They are widely utilized at the local and national levels and are integral to Step2CS, which is built around 12 SP encounters. SPs may be trained to rate a student’s performance using faculty developed assessment instruments (van Zanten et al., 2007). Many studies provide validity and reliability evidence that supports the use of SPs to portray cases and score students in performance assessments (Rose & Wilkerson, 2001). Unlike the authentic clinical environment where patients are inherently vulnerable and no
two patients present the same learning issue or challenge, SP methodology provides an opportunity for students to encounter the same simulated patient case for the purposes of developing and demonstrating both communication and clinical skills.

**Communication Skills Education at UNMSOM**

With the widespread use of OSCEs in medical education, medical schools developed instruments to assess their students’ communication skills. UNMSOM utilized a Global Rating Scale developed by faculty. This instrument was based on the Toronto Consensus and the Educational Commission for Foreign Medical Graduates (ECFMG) in consultation with Miriam Friedman, Ph.D. (McCarty, 2015). In 2002, after the Kalamazoo Consensus Statement was published, faculty and communication experts at UNMSOM reorganized and revised the existing instrument to incorporate the new recommendations. The new Essential Elements of Communication Global Rating Scale (EEC-GRS) was developed to assess medical students’ patient-centered communication skills. (The members of the 2002 Communication Skills Committee are listed in Appendix B.) The design of the instrument incorporated the elements identified in the Kalamazoo Consensus Statement that represent the sections of a typical patient encounter (Bayer-Fetzer-Participants, 2001). Since 2002, UNMSOM has used the EEC-GRS to introduce students to patient-centered clinical communication skills during their first semester of medical school (http://som.unm.edu/ume/academic-programs/competencies.html, 2014). The EEC-GRS is used to score the communication skills of medical students’ simulated clinical encounters. Outcomes contribute to instruction, formative feedback, promotion in the curriculum, assignment to remediation treatments, and curriculum review. The longitudinal use of the same rubric across
curriculum and assessment standardizes faculty to a common metric for both learning and assessing skills and makes learning objectives and expectations clear to students (Duffy et al., 2004).

**Validity Argument**

UNMSOM uses EEC-GRS scores to measure students’ progress in the clinical communication skills domain. The scores themselves are interpreted as indicative of student learning, and are then trusted to measure readiness to advance in the curriculum. Therefore, it is important to ascertain whether these score interpretations are legitimate for their explicit purposes. In 2014 the American Educational Research Association, American Psychological Association and National Council on Measurement in Education updated The Standards for Educational and Psychological Testing. (AERA, APA, & NCME, 2014) This reference categorizes types of validity evidence that will support the interpretation of scores and their applications. Prior to this time, there has been no systematic evaluation of existing validity evidence to support the current interpretations and applications of EEC-GRS scores. The next section will evaluate evidence and propose further validity studies related to the internal structure of the instrument and the relationship of score outcomes to external variables.

**Validity Evidence**

The 2014 ‘Standards’ recommend evaluating specific types of evidence to support interpretations of test scores (AERA, APA, & NCME, 2014). Evidence relevant to this study that is endorsed by the current ‘Standards’ include (a) the alignment of the test with the construct it purports to measure; (b) the appropriateness of test content, adequate content representation, and relationships with conceptually related concepts; (c) test
development; (d) test format; (e) raters’ selection and training; (f) standard setting; (g) the use of the scores to assign students to alternate treatments (AERA, APA, & NCME, 2014; Cook, 2006).

Alignment with construct

**Patient-centered communication skills.** Designing a sound educational instrument begins with defining the construct and extracting an authentic representation for the purposes of test development. The construct of clinical communication skills has emerged out of what has been colloquially referred to as ‘bedside manner,’ a pleasant but not essential attribute. Since studies now suggest that clinical communication contributes to health outcomes and the skills are discrete, licensing bodies require medical schools to teach and assess the skills in a formal structured context (Simpson, 1991; Smith et al., 2011; van Zanten et al., 2007).

The EEC-GRS is based on the theoretical model of patient-centered communication. Patient centered communication requires collaborative interaction oriented around the patient needs (Illingworth, 2010; Levinson et al., 2010; Mead & Bower, 2000; Stewart, 2001). Practitioners demonstrating these skills respect the patient as an individual with a unique story to tell and as a partner in their care. The goal of patient-centered communication is creating a partnership with the patient who will feel empowered to make decisions, which positively impact their own healthcare and health outcomes.

When communication is effective, patient and physician partner to discover the best plan of care. The partnership includes the physician’s medical agenda for determining a diagnosis and treatment plan as well as the patient’s agenda to address their
symptoms or particular needs. Done well, both agendas are satisfied. When the physician understands the patient’s perspective and builds an effective relationship, the partnership is a vehicle for conveying correct and comprehensive information to support an accurate diagnosis and realistic treatment plan. In a clinical setting, trust facilitates dialog and promotes a safe context for the patient to share sensitive information.

**Patient satisfaction.** Patient satisfaction is a conceptually related dimension of the clinical communication skills domain and reflects the outcome of a physician’s communication skills. The patient’s perspective provides another lens and contributes to content representation in the EEC-GRS (AERA, APA, & NCME, 2014). Patient perceptions are important to measure due to the positive relationship between physician communication skills, patient satisfaction, patient compliance with treatment plans, and return appointments. Missing return appointments creates gaps in compliance with treatment plans and negatively impacts medical outcomes. Dissatisfied patients are less likely to keep their return appointments and follow medical recommendations (DiMatteo & Hays, 1980). Healthcare delivery systems monitor medical outcomes and patient satisfaction as quality indicators, since the information provides feedback to care providers and direction for system improvement (Cleary & McNeil, 1988).

While a behaviorally anchored global rating scale assesses the seven Elements, patient satisfaction is assessed in a Likert-style format. (Refer to Appendix A for the Patient Satisfaction Question.) The 8th and final question on the EEC-GRS, asks the patient how likely he or she is to return to this physician? This question highlights important consequences of a physician’s communication skills on a patient’s subjective experience. It is intended to capture the patient’s subjective experience in realistic terms,
since a direct measure of patient satisfaction is reflected in whether they return to the clinician (Kaplan et al., 1989; Simpson, 1991; Stewart et al., 2011). Stewart (2001) found that the subjective dimension of patient perception is functionally measured in the patient’s satisfaction with the healthcare encounter. In addition, Roter discovered that patients may indicate their perceptions holistically without identifying particular words spoken during the encounter (Roter, 1987). These findings provide evidence that a query presented in a Likert is a reasonable format for assessing patient satisfaction. Including a patient satisfaction component is an authentic reminder to learners of the value of the patient perspective on the communication task. It will reflect feedback they will receive throughout their professional career.

The Test

**Content and Development.** The structural origin of the EEC-GRS in the Kalamazoo Consensus Statement is a source of content validity evidence. The original EEC-GRS was based on a prior instrument developed around the Toronto Consensus Statement (McCarty, 2015; Simpson, 1991). The EEC-GRS was designed to represent typical elements of patient-centered communication within the context of the patient encounter. An effective partnership between the patient and the physician is interpreted in the EEC-GRS based on the theoretical underpinnings described in the Kalamazoo Consensus Statement (Bayer-Fetzer-Participants, 2001; Cook, 2006). The Bayer-Fetzer participants also recommended a task-oriented approach to ground the complexities of communication into effective behaviors, which could be observed within an authentic clinical encounter. They wanted to distinguish the key tasks and supporting knowledge,
skills and attitudes, which contribute to effective clinical communication (Bayer-Fetzer-Participants, 2001).

The developers of the instrument wanted to create a robust instrument that would produce useful scores. The decision to use The Kalamazoo Consensus Statement as the theoretical basis for developing a new instrument was based on the following evidence and theory:

1. There was strength in a consensus of professional clinicians and educators that created a link with authentic practice.
2. The consensus had reviewed current instruments based on rigor and psychometric properties.
3. The recommendations included descriptions of task-based behaviors, which could be observed and supported reliable scoring.
4. The patient-centered perspective of the consensus mirrored core values at the School of Medicine with a long history of honoring the importance of the patient’s “disease and illness experience” (Bayer-Fetzer-Participants, 2001, p. 391).

The structure of the EEC-GRS is similar, but not identical to the elements and associated behaviors identified by the Kalamazoo consensus. UNMSOM faculty reordered these elements slightly based on their thoughts about the sequence of the interview and shortened element six. These seven elements provided the theoretical and structural foundation for the new instrument, which is illustrated in Table 1

With the instrument’s foundation in place, UNMSOM clinical educators fleshed out the elements into sections within each element in order to instill more granularity for
assessment purposes. Within each element section or subsection, the UNMSOM designers identified and defined ‘behavioral anchors,’ which could be associated with a range of skill quality. The ‘anchors’ define observable behaviors in concise phrases that are easy to identify and score. The language clarity supports accurate performance scoring. These behaviors were intended to reflect a continuum of skill from medical students to proficient medical practitioners. Scores for each element range from 1 to 5 and the sum of these scores result in a final total score between 7 and 35. The new instrument was implemented at UNMSOM with medical students in 2002 and continues to be used for curricular and assessment purposes.

Table 1

Content Comparison of Kalamazoo Consensus Statement and EEC-GRS

<table>
<thead>
<tr>
<th>Kalamazoo Consensus Statement</th>
<th>EEC-GRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. “Build the doctor-patient relationship”</td>
<td>1. Open the Discussion</td>
</tr>
<tr>
<td>2. Open the Discussion</td>
<td>2. Build a Relationship</td>
</tr>
<tr>
<td>4. Understand the Patient’s Perspective</td>
<td>4. Understand the Patient’s Perspective</td>
</tr>
<tr>
<td>5. Share Information</td>
<td>5. Share Information</td>
</tr>
<tr>
<td>6. Reach Agreement on Problems &amp; Plans</td>
<td>6. Reach Agreement</td>
</tr>
<tr>
<td>7. Provide Closure”</td>
<td>7. Provide Closure</td>
</tr>
</tbody>
</table>

Note: a. (Bayer-Fetzer-Participants, 2001, p. 391)
**Format.** Programs may use different formats or instruments to score clinical and communication skills, with variations in both content and format. Test format is a validity consideration, as the format should be selected based on its ability to adequately assess the domain under consideration. Test format decisions are based on how well the format can represent the domain and therefore multiple formats may be necessary to assess different domains (Wass, Van der Vleuten, Shatzer, & Jones, 2001). When the instrument format is an effective platform for the domain it helps avoid possible “distortions of the meaning” of outcomes (AERA, APA, & NCME, 2014). Typical test formats for assessing clinical and communication skills within an SP encounter are checklists and global rating scales (Epstein, 2007).

Of the checklist and the global rating scale formats, the checklist is appreciated for its objectivity and reliability (Regehr, MacRae, Reznick, & Szalay, 1998). Checklists utilized in performance assessments sample a set of tasks associated with the skill being assessed. Skills that lend themselves to a checklist include foundational clinical skills of a medical student such as history taking and physical examination. Check listing these skills in performance assessments can effectively document clinical competence at a developmentally appropriate level. While the yes/no format of a checklist lends itself to scoring reliability and a novice’s step-wise performance of certain skills, a disadvantage is that it may not capture more expert levels of judgment or more subtle skills. Regehr et al. (1998) notes, “relying only on checklists may reward thoroughness rather than competence, and may not allow for recognition of alternate approaches to a problem” (p. 994)
Checklists are an effective test format when the domain reduces to behavioral
tasks that allow the student to show they can perform a skill. However, they do not have
universal application. Epstein notes, “Many aspects of competence, such as history taking
and clinical reasoning are content-specific… However, some important skills (e.g., the
ability to form therapeutic relationships) may be less dependent on content” (Epstein,
2007, p. 388). Clinical communication skills are less content specific than history taking
or physical examination skills, but significantly influence clinical outcomes and should
be assessed. One argument in support of a global rating scale test format is that the
resulting scores represent synthesized behaviors verses literally documenting behaviors.
Medical schools use various instruments to assess communication skills and Epstein
notes, “…there is little evidence that any one scale is better than another” (Epstein, 2007,
p. 393). However, the study conducted by Regehr, et al., reported greater evidence for
construct validity in their global rating scale scores compared with their checklist score
outcomes. In addition, concerns about reliability from global rating scales verses
checklists were mitigated if raters are trained adequately (Parkes, Sinclair, & McCarty,
2009; Wass et al., 2001).

Raters. SPs are in a unique position to observe students’ communication skills
first hand, however rater training is essential for score validity (Parkes et al., 2009).
Raters’ responses should align with the use and interpretation of the scores (AERA, APA,
& NCME, 1999; American Educational Research Association, American Psychological
Association, and National Council on Measurement in Education (AERA, APA, &
NCME), 2014). In order to assure consistency between instrument design and rater
interpretation, SPs at UNMSOM receive many hours of training learning to score
accurately. Training involves an initial four-hour session where SPs learn how to interpret the anchors and to identify behaviors associated with those anchors. They also learn how to determine a global score based on the behaviors they observe (associated with ‘anchors’). SPs also receive six to eight hours of training to standardize their scoring (and performance) for a specific patient case. This promotes accuracy for criterion referenced scoring supporting score validity. Since patients are the recipients of communication in a clinical environment, the SP is trained to embody that unique perspective in the performance assessment and score the student accordingly. Therefore, scoring is situated in the patient perspective. The patient filter provides a view of the encounter that is not available to outside observer and supports validity evidence related to aligning the response processes of the rater with the interpretation of the patient-centered communication skills score.

Inter-rater reliability is ascertained through a procedure that organizes mean scores into groups by rater. Descriptive statistics are run for each rater’s scores and mean scores of each rater are compared to determine statistical similarity within the case group. Because students are randomly assigned to SP raters, it is assumed that each rater’s score distribution for their case will be statistically similar. The results of these comparisons determine the need to rescore a student’s communication skills performance. If a student scored poorly and their SP/rater was noted to score statistically significantly lower than other SPs in their case grouping, the student’s encounter is re-scored. This evaluation of scores is used to identify SP/raters who need further training to accurately score the instrument.
**Standard Setting and Cut Scores.** As a criterion referenced instrument, the EEC-GRS reflects the complexity of the communication skills domain with objective behaviors to anchor the score. Cut scores take into account developmental learning objectives and increase progressively across time. Since each of the seven Elements is weighted equally (and not developmentally), beginning students will have lower total scores. Cut scores increase as students progress in the curriculum.

Developmentally appropriate cut-scores were identified using the Modified-Angoff method of standard setting (Verhoeven, Van der Steeg, Scherpbier, Muijtjens, & van der Vlueten, 1999). During the standard setting procedure, faculty identified behaviors indicative of a minimally acceptable student performance at the targeted developmental level. The score associated with these behaviors determined the standard or cut score for that assessment. Discussion would continue until a consensus was reached. To validate the cut score following an assessment, the committee viewed videos of student performances with scores within a point or two around the cut score. The group’s original determination of the pass/fail cut score was either confirmed or adjusted prior to releasing the scores. Confirming the cut score following the performance assessment provides validity evidence for the accuracy of the cut score as well as the reliability of the scoring process.

**Assignment to Alternative Treatments.** The EEC-GRS is used for curricular and assessment purposes. Scores are assigned to periodic, communication skills assessment for students across the medical school curriculum. They are intended to be supportive and not restrictive of student progress. Scores provide formative feedback to students for the purpose of targeting needed skill development with practice. The scores
are used for progression in the curriculum and to identify students with marginal or failing performance. These students work with a Clinical Faculty Coach and may receive intensive remediation prior to advancing. Remediation involves role-play with an SP and faculty coach. Based on Ericsson’s model of deliberate practice with feedback, coaches refer to the behavioral anchors to reinforce behaviors associated with effective skills (Ericsson, 1993).

**Summary**

Existing evidence supporting a validity argument has been discussed in relation to the alignment of the test with the construct of clinical communication, domains related to the construct, patient satisfaction, test content, the qualification and experience of judges, standard setting and the use of scores to assign to alternative treatments. Further studies are needed to explore validity evidence in the following areas.

1. **Evidence based on internal structure:** The internal structure of the EEC-GRS is based on seven elements and behavioral anchors from the Kalamazoo Consensus Statement. The designers assumed that the test content and internal structure of the EEC-GRS reflected a unified construct of clinical communication skills. The ‘Standards’ note, “The conceptual framework for a test may imply a single dimension of behavior, or it may posit several components that are each expected to be homogeneous, but that are also distinct from each other” (AERA, APA, & NCME, 2014, p. 16). Evidence has not been evaluated to assess whether EEC-GRS scores reflect unidimensionality or multidimensionality. If multidimensional, it is not known how many dimensions (or factors) are represented or their relationship to one
another. Evaluating patterns resulting from factor analysis will contribute to an understanding of the instrument’s internal structure, which is needed to support the interpretation of scores for their intended purposes (Chatterji, 2003). Exploring this question may inform curricular strategies to prepare students for educational assessment and potentially for the clinical world.

2. **The relationship of the instrument with construct related domains:** Patient satisfaction has been shown to reflect the quality of the patient’s experience with a physician’s communication. Therefore, further investigation into the relationship of the final Question 8, patient satisfaction, to the scores derived from Elements one through seven would provide evidence to support a validity argument that the EEC-GRS measures patient-centered communication. It may also provide evidence with application in the clinical environment where patient satisfaction has become the de facto measure of physician communication skills.

3. **Evidence related to external variables:** It is not known whether score outcomes from the EEC-GRS predict student scores on the Communication and Interpersonal Skills (CIS) component of USMLE Step 2 CS examination. Since all medical schools strive to prepare their students for this national gateway examination, a local assessment that predicts performance on the national examination would help students gauge their progress and readiness. This study will identify the strength of the relationship between scores resulting from the local instrument and scores from the national exam.
Exploring these topics may contribute to the larger discussion of how to prepare medical students to pass their national examination and progress in the profession.
Chapter 2

Methods

This section describes the methodology for collecting additional validity evidence pertaining to EEC-GRS scores at the UNMSOM. The proposed study will explore aspects of the internal structure of the instrument and how score outcomes relate to the external variables of patient satisfaction and the national qualifying examination, USMLE Step 2 CS Communication Skills. The research design will include correlational studies to test the strength of relationships between internal and external variables with bearing on internal structure and the predictive value of the EEC-GRS on Step2CS. The following sections will describe the components of the study including participants, instrumentation, data and analysis.

Instrumentation

This section will describe the structure of the EEC-GRS and related educational processes. Since validity is highly contextual, understanding the specific instrument and context is intended to inform the methods of the study (Howley, 2004). The EEC-GRS has been in continuous use with UNMSOM medical students since 2002. The instrument has served as a curricular scaffold and assessment instrument for patient-centered communication skills. Progressive skill development is reflected in the scores, and passing standards are adjusted as students move through the curriculum.

The EEC-GRS is a global rating scale, which was chosen for its capacity to assess the complexity of the communication skills domain. In contrast to a checklist with discrete scoring options (e.g. yes/no), global rating scales require judgment to evaluate accurately the quality of a learner’s performance. Scoring accuracy is sensitive to
training, but with adequate training, scores have the capacity to capture the development of expertise and other nuanced outcomes sensitive to more subjective interpretations of a performance (Ilgen et al., 2015).

The scale is organized into seven main categories, or ‘Elements,’ which were described in the Kalamazoo Consensus statement. The elements delineate fundamental components of patient-centered communication in a clinic encounter. These are: (1) Open the discussion, (2) Build a relationship, (3) Gather information, (4) Understand the patient’s perspective, (5) Share information, (6) Reach agreement, and (7) Provide closure (Bayer-Fetzer-Participants, 2001). Each element is weighted equally in the final score. Each is scored on a global, 1-4 scale. A score of 1 indicates either absent skill or unacceptable performance in that skill domain. A score of 2 indicates developing skills, which a novice may demonstrate. A score of 3 indicates skills, which are adequate, but not expert. A score of 4 indicates expert communication skills, which are both patient centered and nuanced. The student receives a final score that is the sum of the 7 element scores. Score sums range from 7 to 35. (Refer to the complete EEC-GRS in Appendix A.)

Each element is divided into sub-sections, which describe aspects of the element. The designers of the instrument defined behavioral anchors to support reliable scoring. These ‘anchors’ are brief descriptive phrases, which raters check after observing a student’s performance. The anchors tie the global score to objective behaviors for the purpose of score validity and reliability. Refer to Table 2 for the Elements and subcategories, which provide the structure for the EEC-GRS.
## Table 2

*Essential Elements of Communication Global Rating Scale: Elements and Subcategories*

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Open the Discussion</td>
<td>• Introduction</td>
<td>• Patient Opening</td>
<td>• Agenda Setting</td>
</tr>
<tr>
<td>2</td>
<td>Build a Relationship</td>
<td>• Listening</td>
<td>• Empathy and Respect</td>
<td>• Nonverbal</td>
</tr>
<tr>
<td>3</td>
<td>Gather Information</td>
<td>• Context</td>
<td>• Questions</td>
<td>• Organization &amp; Transitions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Physical Examination</td>
<td>• Personal Privacy</td>
<td>• Physical Examination</td>
</tr>
<tr>
<td>4</td>
<td>Understand the Patient’s Perspective</td>
<td>• Patient Concerns</td>
<td>• Patient Beliefs &amp; Preferences</td>
<td>• Expressions of Feeling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Specific Circumstances (such as found in vulnerable populations, e.g. patients who speak another language, the cognitively impaired, the mentally ill)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Share Information</td>
<td>• Vocabulary</td>
<td>• Patient Understanding of Illness</td>
<td>• Clinician Information &amp; Explanation</td>
</tr>
<tr>
<td>6</td>
<td>Reach Agreement (Planning, Evaluation and Treatment)</td>
<td>• Negotiation</td>
<td>• Implementation</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Provide Closure</td>
<td>• Patient Next Steps</td>
<td>• Physician Conclusion</td>
<td></td>
</tr>
</tbody>
</table>
An eighth and final question that assesses the patient’s satisfaction with the encounter follows the seven Elements of the EEC-GRS. This question is scored on a 1-5 Likert-scale, which is not part of the overall communication score. The Likert scale is based on the patient’s subjective experience with the clinical encounter, since the factors that influence patient satisfaction are difficult to quantify (Kinderman & Humphries, 1995). The SP rates how likely they are to return to the clinician (clinical learner). The question is phrased to reflect the authentic medical environment where a patient’s return to a clinician is often predicated on their satisfaction with the medical encounter, so the return to the physician is used as a realistic proxy for satisfaction with the encounter (Sun et al., 2000). A score of one indicates, “I would go out of my way to avoid returning to this clinician.” A score of five indicates, “I would go out of my way to return to this clinician.” (See EEC-GRS in A for the text of question 8.) The score on Question 8 does not contribute to the student’s global communication skills score, however it informs the student and educators about the patient’s perception. The SP must explain scores of 1 or 2 since they are less common and indicate a particular performance deficit.

Case development and case portrayal bear a large burden of content-related evidence for the scores. This requires thoughtful attention to case development and case portrayal. Experienced clinical faculty write cases that are mapped onto a blueprint of clerkship objectives to assure domain representation. The cases represent patient presentations, which would be familiar to students from their clerkship experience. These cases contribute authenticity to the assessment from the practice domain and provide validity evidence related to content for score outcomes (Newble, 2004).
OSCE logistics reflect the basic structural aspects of the national examination. Both the UNMSOM OSCE and Step 2CS have the following in common: (1) assess communication skills, clinical skills (history and physical examination), and clinical note writing within a simulated clinical encounter; (2) patient encounters are 15 minutes; (3) SPs are trained to portray patient cases in a standardized manner; (4) case presentations represent common medical problems; (5) student performances are scored by SPs who portrayed the case; (6) utilize assessment instruments to score performances; (7) Encounters are recorded for review purposes; (8) results are conjunctive, so students must pass each category in order to receive credit for the exam.

**Scoring and standard setting**

The April OSCE is typically the third and final preparation before students leave to take the USMLE Step 2 CS examination. Students receive a score of Credit or No-credit based on the average communication skills scores across five cases within the OSCE. Credit and No-Credit standards were established using a modified Angoff method and validated following case performance in the OSCE by faculty who review videos of failing student performances (Friedman, 2000; Howley, 2004; Verhoeven et al., 1999). Multiple cases help minimize the impact of case variability due to case difficulty, SP performance quality, and other non-systematic sources of error variance that may influence score reliability. Since the OSCEs are designed to help students practice skills they must demonstrate to pass Step 2CS (case type and length, SP presentations and performance expectations), they should be most prepared to take the exam immediately after their 3rd OSCE when the practice effect is the strongest. Following this OSCE, students are encouraged to take Step 2CS as soon as possible, typically between April
and June. Since the third OSCE scores are closest in time to the student’s performance on Step 2CS, the communication skills scores from this OSCE will be used to determine whether a predictive relationship exists between UNMSOM OSCE 3 scores and Step 2CS scores.

**Raters and Reliability**

The two most important factors influencing evidence in favor of valid interpretations of the scores and reliability are case quality and rater training (Boulet, McKinley, Whelan, & Hambleton, 2003). Once the assessment instruments are developed, score accuracy is influenced heavily by the precision of the raters. Scoring accuracy for a complex instrument such as the EEC-GRS requires discrete skills that are sensitive to training (Parkes et al., 2009). SPs may be trained to score according to a rubric. Evidence of score validity resulting from SP raters has been documented in high stakes national examinations with the proviso that SPs receive adequate training in how to score the rubric (van Zanten et al., 2007). The USMLE built Step 2 CS around 12 SP cases and use highly trained SPs to rate the communication skills of examinees. A 2006 USMLE study of data from 12,863 IMGs in 154,266 simulated patient encounters found that, “well-trained and monitored SPs, as part of a standardized examination, can provide meaningful evaluations of IMGs’ communication and interpersonal skills” (van Zanten et al., 2007).

AT UNMSOM, a four-hour workshop introduces SPs to the scoring process. This training is repeated annually or as needed to develop or maintain scoring skills. The first EEC-GRS training stresses the following learning objectives. SPs must be able to describe: (1) the importance of standardized case portrayal (including case information,
affect and simulated symptoms) and accurate scoring; (2) the difference between a global rating scale and a checklist; (3) how the EEC-GRS describes a set of communication skills that impact clinical care and patient satisfaction. As a group, they practice scoring videos of student encounters with SPs. They enter scores on a computer, as they will during the OSCE. They standardize their scores with the trainer and one another. During training for a specific case, SPs practice scoring role-plays within the group and videos of prior student encounters. SPs are required to be standardized with the trainer and other SPs within the case.

During the OSCE, the SP interacts with the student during the encounter and documents observations of student performance on the EEC-GRS. Following the case, the SP must accurately recall the performance and assign a global score based on the established criteria and enter the grade data into a computer. The SP’s ability to learn these skills is a qualification of the position (Parkes et al., 2009).

Scores from the third OSCE are derived from five case performances in order to mitigate person-by-case variance. The study by Boulet et al. (2003), found that person-by-case scores showed the greatest variation, further supporting the importance of the number and type of cases providing the greatest impact on the reliability of scores. Non-systematic measurement error resulting in person-by-case variance (case difficulty and performance variance) can be mitigated by repeated student performance measurements in different cases with standardized case presentations performed by a variety of SPs (Boulet et al., 2003; Turner & Dankoski, 2008).
Quality Assurance

Procedures that promote accurate score production and minimize error support scoring reliability and provide evidence of validity. Some sources of error variance may be influenced by the testing environment and test administration (Downing, 2003). However, standardizing and systematizing the test and administration helps to mitigate systematic and non-systematic sources of error. Standardized testing environment, SP cases, SP training, test administration, and assessment materials support fairness throughout the OSCE process. Students are oriented as a group prior to the assessment day with the same information regarding performance expectations, OSCE schedule, and equipment. Once in the assessment environment, students hear an announcement to begin and end every encounter. All students have the same, structured amount of time to complete the cases. Each group is tested on the same five cases based on the blueprint from their clerkship rotation. The representative patient presentations give students an opportunity to demonstrate a range of relevant skills. SPs are trained to portray patient cases in a standardized, authentic manner and to rate assessment rubrics accurately.

Multiple quality assurance measures are in place to reduce unsystematic sources of error. Trainers and assessment staff supervise and evaluate score quality. SPs are trained to standardize scoring based on the EEC-GRS rubric, to report questions or ambiguity about scoring to the trainers for clarification, and to enter data accurately. Post assessment analysis of grades is conducted to assure that students receive accurate score information. Because low scores have negative consequences for students, including remediation and deceleration in the curriculum, scores are carefully reviewed before being released to students. The quality review procedure is based on the random
assignment of students with a case. Therefore, the distribution of scores within a case that are assigned by individual SPs to a set of students should reflect the overall distribution of the scores assigned by all SPs within the case for that group of students. The distribution of each SPs scores with a case are calculated. The scores are evaluated for statistical similarity within the case.

Scores are prepared for review by grouping the raw scores by SP and evaluating the scores for statistical similarity between SPs within a case. If a student scores below the standard and the SP who assigned the score is in a statistically lower scoring group from their cohort, the case trainer will review the video of the encounter. This trainer, blinded to the original score, reviews the video of the student’s encounter and rescores the performance. This score is recorded as the final grade. However, if the review determines that the SP’s score was inaccurate, he or she is coached to improve score accuracy. Scores are also verified by video review if an SP is discovered to be less reliable, even without assigning a failing score. An SP would be contacted for feedback and coaching to improve their scoring accuracy. SPs who cannot learn to score accurately will be released from the program. These procedures are conducted for every performance assessment to minimize sources of error in support of the validity of the scores.
Data

Demographic Information

Archival data from participants in this study was drawn from medical students who graduated from UNMSOM between 2006 and 2009 (2006 (n=65), 2007 (n = 79), 2008 (n=75), 2009 (n=70). All students had completed their third OSCE in April and there were no exclusion criteria. After names were removed, data were coded with numeric identifiers. They were scanned for gaps and participant data were eliminated if scores were unavailable from (a) the April OSCE (5 participants), (b) Step 2CS (46 participants), or (c) demographic information was missing (6 participants). After eliminating participants with missing data, the remaining 216 complete records were analyzed in this study.

UNMSOM participants were compared with their national peers to evaluate how well this student group represented the larger cohort of medical students. Comparisons included demographic characteristics and scores from the Medical College Admission Test (MCAT). Table 3 presents these data.

Demographic data for participants was compared with national data. UNMSOM student demographic information was self-reported during the medical school admissions process and was obtained from records held in the UNMSOM Program Evaluation and Research (PEAR) Unit. Collective data reported for U.S. medical students from the study time period was obtained from the Association of American Medical Colleges website, the national organization that collects and reports aggregate data annually (AAMC, 2015a).
Table 3

Demographic Data: UNMSOM and U.S. Medical Students Graduating 2006 -2009

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>UNMSOM Students&lt;sup&gt;a&lt;/sup&gt; (n = 216)</th>
<th>U.S. Medical Students&lt;sup&gt;b&lt;/sup&gt; (N = 64,702)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>29</td>
<td>24</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>44%</td>
<td>52%</td>
</tr>
<tr>
<td>Female</td>
<td>56%</td>
<td>48%&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>58%</td>
<td>60%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>29%</td>
<td>2%</td>
</tr>
<tr>
<td>Asian</td>
<td>7%</td>
<td>20%</td>
</tr>
<tr>
<td>Native American</td>
<td>5%</td>
<td>.34%</td>
</tr>
<tr>
<td>Black</td>
<td>.9%</td>
<td>6%</td>
</tr>
<tr>
<td>No report</td>
<td>.4%</td>
<td>11%</td>
</tr>
<tr>
<td>Residence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-state</td>
<td>161</td>
<td>61%</td>
</tr>
<tr>
<td>Out-of-state</td>
<td>23%</td>
<td>39%</td>
</tr>
<tr>
<td>International</td>
<td>4</td>
<td>2%</td>
</tr>
<tr>
<td>GPA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undergraduate</td>
<td>3.5</td>
<td>3.7&lt;sup&gt;5&lt;/sup&gt;</td>
</tr>
<tr>
<td>Science</td>
<td>3.4</td>
<td>3.6&lt;sup&gt;5&lt;/sup&gt;</td>
</tr>
<tr>
<td>MCAT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biological-Science</td>
<td>10</td>
<td>11&lt;sup&gt;6&lt;/sup&gt;</td>
</tr>
<tr>
<td>Physical-Science</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Verbal Reasoning</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>MCAT total</td>
<td>28</td>
<td>31</td>
</tr>
</tbody>
</table>

<sup>Note.</sup>
<sup>a</sup>UNMSOM data was obtained from PEAR archive
<sup>b</sup>U.S. medical student data was obtained from the Association of American Medical Colleges website.
The most recent data available was reported. (AAMC, 2015a)
UNMSOM participants tended to be older than their national peers. The mean age for the local cohort was 29 years old, which is 5 years older than the national group. The longer educational trajectory may represent time spent working in other professions or increased time to complete undergraduate prerequisite coursework. However, the older student body may also have gained the emotional maturity that may come with age. Because the mission of UNMSOM was to address healthcare needs of the state, the school admitted mostly in-state students who planned to return to their home communities to practice medicine. 75% of the study participants were New Mexico residents and 25% were out-of-state.

The ethnicity of both UNMSOM and U.S. medical students is predominately White. However, Hispanic students are more highly represented at UNMSOM (29%) compared with 2% nationally reflecting state demographics (United States Census Bureau, 2013). There were proportionately fewer Asian students (7%) at UNMSOM verses the national cohort (20%). Native American students represented only 5% of the UNMSOM student population, however, their representation was very low in the national sample (0.34%). For this time period, Black students were the least represented ethnic group in NM at 0.9% (compared with 6.4% nationally). See demographic data in Table 3. New Mexico had a higher proportion of females (56%). Nationally the distribution was reversed with 48% males.

The selection process for medical school is highly competitive and admissions decisions are strongly influenced by Medical College Admission Test (MCAT) scores and undergraduate Grade Point Average. The MCAT is a standardized, multiple-choice examination that is designed to test undergraduate science knowledge, verbal reasoning,
and higher order thinking skills. While these scores are indicators of a student’s ability to perform academically, the AAMC notes that a wide range of students have the capacity to succeed in medical school (AAMC, 2015b). UNMSOM students perform within the range of matriculants nationally, albeit with somewhat lower mean scores. However, since these admissions criteria reflect the cognitive domain they do not predict students’ ability to communicate effectively with patients, and therefore they do not differentiate the study participants from their national peers.

**Research Approval and Description of Data**

UNM Institutional Review Board (IRB) approved this research proposal prior to acquiring or manipulating data for this study. The study used archival data from graduated students. Data included EEC-GRS scores, patient satisfaction (Question 8) scores, and subsequent Step 2 CS scores. Data from medical student assessments had been retained in a secure, password-protected database at UNMSOM. After IRB approval and before the data were accessed, they were linked with numeric codes and stripped of personal identifiers.

Study participants had completed all seven clinical clerkships (Family Medicine, Internal Medicine, Obstetrics and Gynecology, Surgery, Neurology, Psychiatry, and Pediatrics). Since they were encouraged to take Step 2 CS immediately following their April OSCE, their scores should reflect peak communication skills development prior to taking the national examination. The close proximity between the April OSCE and Step 2 CS decreased the potentially confounding influence of time. Finally, permission was obtained from the National Board of Medical Examiners to use Step 2 CIS scaled scores for the purpose of this dissertation. The relationship between students’ OSCE 3 and Step
2CS communication skills scores were used to evaluate whether and to what extent EEC-GRS scores predict performance on the national examination.

This study investigated validity evidence for EEC-GRS scores based on the nomological network which linked EEC-GRS communication skills scores, Patient Satisfaction Scores, and USMLE Step 2 CIS scores, all of which purport to reflect the construct of patient-centered communication. Refer to Figure 1 for a diagram that displays the communication skills schema, nomological network, assessments, correlations and paths evaluated in this study.

Figure 1

*Communication skills schema, nomological network, correlations and paths*
Analysis

Research Question 1 (RQ1)

Do student communication skills scores, measured by EEC-GRS, predict their scores on Step 2 CS?

Research Question 1 investigated how well the EEC-GRS composite (total) and component (Element) scores predicted students’ Step 2 CS communication skills’ scores. Since one purpose of EEC-GRS scores is to indicate how well students are prepared for USMLE Step 2CS, results from this analysis will inform the utility of the instrument for curricular and assessment purposes at UNMSOM.

A correlation analysis was conducted to evaluate the relationship between EEC-GRS scores and Step 2CS scores. Descriptive statistics of score data were reported and relevant assumptions checked. Pearson’s product moment correlation matrix was calculated to investigate the strength, direction and statistical significance of the resulting correlations. Relationships among the variables were evaluated for evidence of convergent and predictive validity.

Research Question 2 (RQ2)

Do student communication skills scores, measured by the EEC-GRS, predict their patient satisfaction outcomes and do patient satisfaction scores predict student communication skills performance on Step 2CS?

Research Question 2 explored the relationship between Patient Satisfaction (Question 8) and EEC-GRS total scores as well as the relationship between Question 8 and students’ performance on Step 2CIS. It investigated whether there is a predictive
correlation between these scores. The results of the study will inform the curriculum and assessment of patient centered communication skills at UNMSOM to prepare students for the national examination.

Descriptive statistics of these data (Question 8 scores, EEC-GRS composite scores and Step 2 CIS scores) were reported and relevant assumptions checked. Next a matrix of Pearson’s product moment correlations will be constructed and reported. The strength, direction and statistical significance of the resulting correlations were evaluated and reported. Relationships among the variables assessed on these different measures were evaluated for evidence of convergent and predictive validity.

**Research Question 3 (RQ3)**

How many constructs does the EEC-GRS measure and how are those constructs related?

Research Question 3 investigated the factor structure of the instrument in order to understand the how the pattern of constructs contributed to score outcomes.

**Internal Structure.** The developers of the EEC-GRS postulated that the seven elements are sufficiently homogeneous to support a unidimensional representation of the construct, patient-centered clinical communication skills. An Exploratory Factor Analysis (EFA) was conducted to analyze the internal structure of the EEC-GRS for patterns among the factors (Chatterji, 2003). This research question required investigating the number of dimensions measured by the EEC-GRS, and the contribution of each of the seven elements and Question 8 to the total EEC-GRS score. All data was included in this analysis including scores from each of the seven elements, and total EEC-GRS scores.
**Factors.** Factor analysis was conducted to identify the number of factors (proxy for dimensions or constructs measured) present in the scores. The number and interrelationship of the factors provided information about the internal structure of the instrument. The strength of the relationships between the elements was used to identify latent variables within the instrument. These results will inform a discussion of validity evidence regarding the construct(s) and content validity of the EEC-GRS.

**Factor Analysis Methods.** Suitability of the data for factor analysis was determined by calculating a Kaiser-Maer-Olkin (KMO) measure of sampling adequacy. The data were found suitable, and an Exploratory Factor Analysis (EFA) was conducted to determine the number of factors present in EEC-GRS scores and the amount of variance explained by each factor. Next Principle Axis Factoring (PAF) was used to extract factors. Utilizing the correlation matrix previously constructed and assuming linearity, correlations were evaluated to determine the interrelationship of the elements. The fewest factors, which explained the most variance, were extracted. To identify these factors, Eigenvalues for each factor were calculated and factors with Eigenvalues (EV) >1 were retained. A scree plot was created from these factors to confirm that the most robust factors have been retained. After extraction, the factors were rotated, first through an oblique rotation. If a factor’s value had a small to moderate correlation (approximately 0.3) then orthogonality was justified and an orthogonal rotation was conducted. All obtained factor loadings, total variance and variance explained by each factor after rotation were reported. To determine the threshold of significance for loading, the factor pattern was evaluated for low, medium and high loadings. Common factors, the total variance explained by the factors before and after rotation, and EVs were reported.
**Evaluation.** The factor structure of the instrument was evaluated for evidence regarding the number of dimensions and their relationship to one another. Evidence of unidimensionality or multidimensionality was evaluated to determine the most appropriate reliability statistic to report. Results of this study will contribute to educational refinements for teaching and assessing patient centered communication skills at UNMSOM.

**Summary**

The three prongs of the proposed validity study pertained to (a) factor analysis of the internal structure of the EEC-GRS and how well it represents the construct of communication skills intended in its design; (b) the utility of score interpretation for ascertaining readiness to take Step 2CS; and (c) the relationship between communication skills scores and patient satisfaction scores measured by the instrument. Evidence regarding these relationships may inform communication skills curriculum and assessment at UNMSOM. Beyond academic success, a deeper understanding of the structure of the instrument and correlations with external variables should help educators prepare the student for success with patients in the clinical environment.
Chapter 3

Results

This section reports results from validity studies that were conducted to evaluate the relationships between the EEC-GRS, Patient Satisfaction, and Step 2 CIS scores and to investigate the internal structure of the EEC-GRS. Research Questions 1 and 2 analyzed external and predictive validity evidence between EEC-GRS and Patient Satisfaction scores on Step 2 CIS outcomes. Understanding whether these scores are correlated and whether they are predictive of student performance on the professional gateway examination will inform communication skills curriculum and assessment at UNMSOM. Outcomes from Research Question 3 are designed to explore the internal structure of the EEC-GRS. Exploratory factor analysis of the EEC-GRS elements clarified how many constructs are measured and how these constructs are related. The results are reported as evidence of how the constructs are organized and their contributions to the percent of variance explained by the EEC-GRS scores.
Research Question 1

Do student communication skills scores, measured by the EEC-GRS, predict their scores on Step 2CIS? Refer to Figure 2 for a diagram of Research Question 1.

Figure 2

Research Question 1

A correlational study was conducted to evaluate the association between the EEC-GRS average element scores and total average scores with students’ performance on Step 2 CIS. Descriptive statistics determined that scores were normally distributed, variables were independent, and assumptions for correlation were found tenable. A Pearson’s product moment correlation matrix for EEC-GRS elements and case score averages and Step 2CIS scores was calculated and reported in Table 4. All resulting correlations were
statistically significant (p = .01). The Pearson’s correlation between EECGRS total average scores and scores on Step 2 CIS was positive with moderate strength (r = .40). The coefficient of determination (r² = .16) indicated that EECGRS total scores predicted 16% of the variance in Step 2 CIS scores. This demonstrates that as a student’s EECGRS score increases, so does their Step 2 CIS score.
VALIDITY EVIDENCE

Table 4

*Correlation Matrix & Descriptive Statistics for EEC-GRS, Patient Satisfaction, and Step 2 CIS scores*

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>E1.avg</th>
<th>E2.avg</th>
<th>E3.avg</th>
<th>E4.avg</th>
<th>E5.avg</th>
<th>E6.avg</th>
<th>E7.avg</th>
<th>Total avg</th>
<th>PS avg</th>
<th>Step 2 CIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1.avg</td>
<td>3.15</td>
<td>.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E2.avg</td>
<td>3.24</td>
<td>.31</td>
<td>.62</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E3.avg</td>
<td>3.08</td>
<td>.27</td>
<td>.51</td>
<td>.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E4.avg</td>
<td>3.07</td>
<td>.28</td>
<td>.43</td>
<td>.61</td>
<td>.52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E5.avg</td>
<td>3.20</td>
<td>.27</td>
<td>.42</td>
<td>.44</td>
<td>.42</td>
<td>.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E6.avg</td>
<td>3.00</td>
<td>.31</td>
<td>.39</td>
<td>.31</td>
<td>.21</td>
<td>.34</td>
<td>.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E7.avg</td>
<td>2.89</td>
<td>.36</td>
<td>.42</td>
<td>.32</td>
<td>.33</td>
<td>.38</td>
<td>.41</td>
<td>.62</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total avg</td>
<td>21.63</td>
<td>1.51</td>
<td>.76</td>
<td>.77</td>
<td>.70</td>
<td>.72</td>
<td>.67</td>
<td>.66</td>
<td>.72</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PS avg</td>
<td>3.21</td>
<td>.32</td>
<td>.62</td>
<td>.67</td>
<td>.52</td>
<td>.56</td>
<td>.48</td>
<td>.45</td>
<td>.50</td>
<td>.76</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Step 2 CIS</td>
<td>78.58</td>
<td>4.93</td>
<td>.26</td>
<td>.36</td>
<td>.28</td>
<td>.31</td>
<td>.33</td>
<td>.20</td>
<td>.27</td>
<td>.40</td>
<td>.44</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note.* N=216 All correlations are two-tailed and statistically significant (*p* = 0.01)
Research Question 2

Do student communication skills scores, measured by the EECGRS, predict their patient satisfaction outcomes and do patient satisfaction scores predict student communication skills performance on Step 2 CIS? Refer to Figure 3 for diagram of Research Question 2.

Figure 3

Research Question 2

The correlation matrix (Table 4) was evaluated to assess the strength and direction of the relationship between the EECGRS, both element and total average scores, and patient satisfaction scores, and then between patient satisfaction scores and Step 2 CIS scores. All correlations were statistically significant ($p = .01$). The correlation between EECGRS total average and patient satisfaction averages yielded a strong positive correlation ($r = 0.76$) indicating that a student’s total score on the EECGRS was a strong
indication of how well they would do on the Patient Satisfaction question. A coefficient of determination was calculated ($r^2 = .58$) further suggesting that EECGRS total scores accounted for 57% of the variance in Patient Satisfaction scores. The strong positive correlation and high percent of variance explained by Patient Satisfaction scores provide evidence to support the convergent validity between the two measures. In clinical medicine patient satisfaction is associated with effective physician communication skills. The relationship between outcomes on these two measures implies that the instruments share construct representation and reinforces the continued use of both instruments at UNMSOM to assess patient-centered communication.

Next, the study compared outcomes from the Patient Satisfaction question with Step 2 CIS scores. The correlation between these scores indicated a positive relationship of moderate strength ($r = 0.44$). Additionally, the coefficient of determination ($r^2 = .19$) suggested that Patient Satisfaction scores explained 19% of the variance in Step 2 CIS scores. The strength of these relationships suggests evidence of convergent, predictive and external validity between UNMSOM EEC-GRS, Patient Satisfaction, and Step 2 CIS scores.
Research Question 3

How many constructs does the EEC-GRS measure and how are those constructs related?

Refer to Figure 4 for a diagram of Research Question 3.

Figure 4

Research Question 3

This study was designed to evaluate the internal structure of the EEC-GRS, the number of factors (constructs) assessed by the EEC-GRS, the pattern among factors, and the amount of variance explained by each factor. Since the factor structure of the instrument has not been verified, an Exploratory Factor Analysis (EFA) was conducted on all seven elements. First, an assessment of factorability including element intercorrelation suggested reasonable factorability. (All r’s > .40). Sample size was evaluated using the subject to item ratio (31:1), which indicated a robust sample size
(Costello & Osborne, 2005). Sampling adequacy was assessed further using the Kaiser-Meyer-Olkin (KMO) measure. The KMO measure of sampling adequacy (0.83) was above the recommended value of 0.6. All assumptions of EFA were checked and found tenable.

Subsequently, factors were extracted using Principle Axis Factoring. Resulting communalities were greater than 0.3 confirming that each element shared some variance with other elements. Decisions as to which elements to retain were based on Eigenvalues (EVs) using the Kaiser criterion. Factors three through seven (EVs < 1) were eliminated; the remaining two factors (EVs > 1) were retained. Factor 1 explained 51% of the total variance and Factor 2 explained 16%, accounting for 67% of the total variance. A scree plot was generated to visualize the slope of the factors, and a distinct drop noted after the 2nd Factor confirming the decision to retain Factors 1 and 2. Factors were rotated using the direct oblimin method, which resulted in an uncluttered factor structure.

The factor pattern matrix was evaluated for low, medium and high loadings to determine the threshold for loadings and found strong factor loadings with no cross loadings greater than .20. Elements 1-5 loaded onto Factor 1 ($r = .40 - .80$) Elements 6 and 7 loaded onto Factor 2 ($r = .60 - .90$). The pattern matrix (with factor pattern highlighted) is displayed in Table 5. Fifty-five percent of the variance within EEC-GRS scores was explained by the presence of these 2 factors.
The Elements clustered as follows:

**Factor 1:** Element 1 (Open the Discussion), Element 2 (Build a Relationship), Element 3 (Gather Information), Element 4 (Understand the Patient’s Perspective), Element 5 (Share Information).

**Factor 2:** Element 6 (Negotiate a Plan), Element 7 (Provide Closure)

Refer to Figure 5 for a graph depicting the factor plot rotated in factor space displays the distribution of the elements loaded on the retained factors on a standardized scale.

**Table 5**

*Pattern Matrix*

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1avg</td>
<td>.62</td>
<td>.15</td>
</tr>
<tr>
<td>E2avg</td>
<td>.92</td>
<td>-.12</td>
</tr>
<tr>
<td>E3avg</td>
<td>.77</td>
<td>-.08</td>
</tr>
<tr>
<td>E4avg</td>
<td>.65</td>
<td>.07</td>
</tr>
<tr>
<td>E5avg</td>
<td>.43</td>
<td>.23</td>
</tr>
<tr>
<td>E6avg</td>
<td>-.01</td>
<td>.76</td>
</tr>
<tr>
<td>E7avg</td>
<td>.04</td>
<td>.80</td>
</tr>
</tbody>
</table>

The degree to which the Elements were correlated with EEC-GRS total scores opened another perspective on the internal structure of the instrument. To evaluate whether the differences between the correlation coefficients were statistically significant (\( \alpha = .01 \)), Fisher r-to-z transformations were calculated (Lowry, 2015). The z scores were compared and resulted in two groups of statistically similar elements. The first cluster was comprised of Elements 1 – 4; the second cluster was formed by Elements 1-5. Each element within their respective group contributed equally (but differently from
the other group) to the total EECGS scores. The language, which described elements in the first cluster, was more descriptive of patient interaction. The elements forming the second cluster contained more doctor-centric characteristics.

The internal structure of the instrument was suggested by the Factor/Element loadings and the intercorrelation between the Elements. These provided evidence for content validity and construct representation particularly in relation to patient-centered communication. Validity evidence from this study will contribute to decisions regarding the continued use of the EEC-GRS at UNMSOM.

**Figure 5**

*Factor Plot in Rotated Factor Space*
Summary

These analyses were designed to evaluate unexplored validity evidence regarding communication skills scores from the EEC-GRS and the patient satisfaction question. The correlational studies that were conducted suggested evidence of convergent validity between performance on both the EEC-GRS and patient satisfaction with performance on Step 2 CIS. The strength of the correlation between Elements’ correlations suggested evidence of thematic characteristics, which link the elements with the domain of patient-centered communication. The factor analysis of EEC-GRS Elements 1-7 resulted in 2 distinct factors. These factors were strongly related with mutually exclusive element loading structures. In addition to the factor loadings, the differences between correlation coefficients of each element and the total score resulted in two clusters of elements. The grouping of Elements in Cluster One and Two were similar to that of Factor One and Two, which seemed to divide along patient-centric verses doctor-centric lines. These results had implications for domain representation and were informative of the dimensions that were represented by the instrument. The qualitative characteristics of each element and the Elements’ conjoined relationship to the factors will contribute to the discussion in the next section.
Chapter 4

Discussion

The quality of communication between physicians and patients influences medical outcomes and concerns multiple stakeholders (Dillon, 2012; DiMatteo et al., 1993; Kaplan et al. 1989; Stewart, 1995; Stewart et al., 2000). Those with the highest stake in outcomes are the patients themselves, but other parties with vested interests in health outcomes include medical providers, third party payers, social agencies and government policy makers as well as hospital, medical, and educational licensing bodies (Levinson et al., 2010). Poor healthcare outcomes are costly to patients and society. Conversely positive outcomes improve quality of life, economy of care, and process efficiency. The seeds for effective patient-centered communication skills are planted in medical school and prepare medical students with the skills they need to develop successfully as practicing physicians.

To fulfill their charge, medical schools need to use the most effective educational methods to prepare students for their new role. While they lack consensus about which methods are most effective, all of their students must pass USMLE Step 2 CIS to enter the profession (USMLE, 2014). Evidence that supports outcomes from curriculum and assessment instruments helps programs meet their educational charge. The studies reported here were designed to evaluate validity evidence for EEC-GRS, the instrument used at UNMSOM to teach and assess patient-centered communication skills. How the components of the EEC-GRS relate to one another and to Step 2 CIS may further the ongoing conversation of how to teach and assess patient-centered communication skills in academic medicine and is the topic of this discussion.
The EEC-GRS (renamed the New Mexico Clinical Communication Scale, NMCCS in 2010) has been in use since 2001 at UNMSOM. The content and structure of the instrument is intended to represent the construct of patient-centered communication situated in a patient encounter. The seven essential elements of a patient encounter are scaffolded in a behaviorally anchored global rating scale (Bayer-Fetzer-Participants, 2001). Evaluating the internal structure of the instrument and assessing the relationship of EEC-GRS scores with other conceptually related measures provided evidence for content, construct and predictive validity (AERA, APA, & NCME, 2014). The first research question explored whether the EEC-GRS prepared students for performance on Step 2 CIS having implications for whether the instrument should continue to be used for curriculum and assessment at UNMSOM.

**Research Question 1**

Do EEC-GRS total score and Element scores predict Step 2 CIS scores? Refer to Figure 2 for a diagram of Research Question 1.

A positive correlation between EEC-GRS scores and Step 2 CIS scores provided evidence for both predictive and construct validity. Correlational study results indicated a statistically significant, moderately strong, positive association between students’ EEC-GRS scores and their Step 2 CIS scores. This established that student performances on the local examination correlated with their performances on Step 2 CIS. EEC-GRS scores explained 16% the variance in the Step 2 CIS scores. Since Step 2 CIS is designed to measure patient centered communication skills the results suggest that the EEC-GRS measures, at least in part, the same domain.
These measures of validity evidence support the continued use of the EEC-GRS at UNMSOM both for teaching and assessing medical students’ patient-centered communication skills and to prepare students for Step 2 CIS. The correlations are strong enough to give students an indication of how well they will do on Step 2 CIS. The unexplained variance may indicate factors such as differences within students – their personal attributes or their preparation, variations in test environment - date, day and/or time of test, assignment to particular SPs within cases, or the cases themselves. It may also indicate that the EEC-GRS provides students with important additional information about their skills. All of the correlations between Step 2 CIS and each component of the EEC-GRS (total and individual Element scores) were statistically significant. While associations with individual Elements were weaker ($r = .20 - .36$) than with the total score ($r = .40$), the significance of the difference between each Element correlation coefficient and Step 2 CIS score was not statistically significant (based on Fisher’s transformation). Even with weak to moderate strength correlations, they were statistically significant and contribute to the moderately strong correlation between the total Element score and Step 2 CIS. These results suggest the value of the content represented by all seven elements. They each provide a unique contribution to the total score.

Each element contributes to the total score, which has a moderately strong correlation with Step 2 CIS. The success of the EEC-GRS scores to predict outcomes on the national exam substantiates: (a) the behaviorally anchored design of the EEC-GRS to give students the information to develop patient-centered communication skills, and (b) its ability to prepare students to perform well on their gateway exam into the profession. Since EEC-GRS outcomes explain 16% of the variance on Step 2 CIS scores,
it supports the relevance of the EEC-GRS to predict Step 2 CIS outcomes. The 84% unexplained variance indicates that it does more than ‘teach to the test.’ However, the ‘something more’ that it provides could be the topic of a future validity study.

The next step in evaluating predictive, content and construct validity evidence for the EEC-GRS involved Patient Satisfaction outcomes. The final question completed by the SP after the encounter ended concerned the patient’s satisfaction with the clinician’s communication. It was intended to measure the domain of patient-centered communication from the subjective point of view of the patient. This question was oriented to the patient’s likelihood of returning to the clinician. Situated in a patient-relevant context, it defined the behavior by which a patient would indicate satisfaction. By asking the question of whether the patient would return to the physician (medical student), it reflected the most powerful way a patient has of expressing the effect of the encounter - whether they would return. Returning to the physician is an authentic anchor for the construct (satisfaction). The next question explored how medical student communication skills interacted with patient satisfaction outcomes and Step 2 CIS scores.

**Research Question 2**

(a) Do EEC-GRS total and Element scores predict Patient Satisfaction scores?

(b) Do Patient Satisfaction scores predict Step 2 CIS scores? Refer to Figure 3 for a diagram of Research Question 2.

Study (a) investigated the relationship between scores from each EEC-GRS Element and Patient Satisfaction. Student performance on each Element showed a moderately strong, positive correlation with Patient Satisfaction ($r = .45$ to $.67$). However, a stronger positive correlation ($r = .76$) occurred between the EEC-GRS total
score and Patient Satisfaction ($r^2 = .58$), predicting 58% of the variance. The strength of
the association between EEC-GRS and Patient Satisfaction scores was evidence of
convergent validity for both scores reflecting the same domain (patient satisfaction).

Questions of construct validity concern the measurement sensitivity of the
instrument for patient-centeredness. These outcomes were consistent with theory that
patient satisfaction and patient-centered communication are linked (Levinson et al.,
2010). Mead reports on the “discrepancies between measures of patient-centeredness and
patients’ own perceptions’ and ‘an implicit assumption in the literature that patient-
centered behavior and outcomes such as satisfaction and adherence to therapy will be
associated in a simple linear fashion” (Mead, N. & Bower, P., 2000, p. 1106). This study
suggests, at least in this simulated setting with medical students, that a linear correlation
exists between EEC-GRS scores and Patient Satisfaction scores providing evidence of
predictive validity. The SPs (raters) served as proxy for ‘real’ patients, which reflected
Stewart’s recommendation that, “the best way of measuring patient centeredness is an
assessment made by the patients themselves” (Stewart, Moira, 2001, p. 444). SPs
arguably are the best examiners of medical students’ skills in the educational context
because they are systematically trained to portray the patient’s symptoms, life facts,
priorities, and perspective (Parkes et al., 2009). SPs contribute to the authenticity of the
simulated clinical environment with training that supports their decisions as raters. ‘Real
patients’ cannot be brought into clinical educational assessment because of their inherent
vulnerability, so SPs became their proxy. Epstein referred to the ‘patient as the unit of
analysis,’ (Epstein, 2000, p. 3) for measuring the impact of patient-centered
communication skills. He asserts, “The patient is the ultimate arbiter of patient-
centeredness. Because only the patient can report whether she has felt understood or if she has been adequately involved in developing a treatment plan, it is no surprise that the inside perspective is more highly correlated with outcomes than any objective measure of verbal content” (Epstein, 2000, p. 2). The strong correlation and predictive validity of EEC-GRS scores for Patient Satisfaction outcomes provided evidence of predictive, convergent, and construct validity. The results supported the relevance and continued use of the EEC-GRS (all Elements) and the Patient Satisfaction question to measure the patient-centered communication construct.

Study (b) of Research Question 2 evaluated the correlation between Patient Satisfaction and Step 2 CIS. Results suggest a moderately strong positive relationship ($r = .44$), which explained 19% of the variance ($r^2 = .19$) in Step 2 CIS scores. The difference between the correlation coefficients for the EEC-GRS ($r = .40$) and Patient Satisfaction ($r = .44$) on Step 2 CIS was not statistically significant ($p = .01$) based on Fisher’s transformation indicating that both instruments were equally predictive of Step 2 CIS scores. These results suggest that both instruments should be retained for educational programming, as they provide similar information from different perspectives that aid student learning. The EEC-GRS is oriented to the discrete tasks of skill development. Patient Satisfaction is a view into the patient’s subjective perception of the student’s communication skills. In their future, students’ communication skills will be evaluated by patients, but with little specific feedback. These instruments give students insight into the patient point-of-view as well as providing them with feedback to further develop their skills.
Research Question 3

(a) How many constructs does the EEC-GRS measure?

(b) How are these constructs related? Refer to Figure 4 for a diagram of Research Question 3.

These questions of internal structure were studied using factor analysis. The results provided evidence regarding the number and relationship of the constructs measured by the EEC-GRS. Two factors were identified, both with high factor loadings and no cross loadings. Factor 1 included Elements 1 through 5. Elements 6 and 7 loaded onto Factor 2. (Refer to Table 6 for key words associated with the factors.) The two factors explained 55% of the total score variance and had a positive, moderately strong correlation ($r = .55$) with one another.

Table 6

EEC-GRS Key Words Associated with Factor Pattern

<table>
<thead>
<tr>
<th>Element</th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Open</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Build</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Gather</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Understand</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>Share</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>Reach Agreement</td>
</tr>
<tr>
<td>7</td>
<td>-</td>
<td>Close</td>
</tr>
</tbody>
</table>
There are three lenses through which to view the implications of the factor analysis results. These view the factor pattern as artifacts of: (1) Construct (2) Curriculum, and (3) Measurement.

**Construct Relevance**

The construct of patient-centered communication represents a complex interaction of factors. Theory and research regarding patient-centered communication suggested interpretations for the following: (a) the relationship the factors to the construct of patient-centered communication, (b) an explanation for the Element cluster pattern, and (c) how the factors may be conceptually different from one another. These implications reflect Epstein’s concept that, “Our current understanding of patient-centeredness should be a complex web of physician, patient, and interactional factors, rather than one simple coherent construct” (Epstein, 2000, p. 3).

The physician-patient communication web is represented in the EEC-GRS by Element titles and key words or phrases. These key words, primarily verbs or adverbs, describe the specific behaviors associated with each phase of communication within the clinical encounter. From the descriptions, students learn which behaviors are associated with effective clinical communication. This helps them demonstrate skill progression. Since SPs use the same behaviors as anchors to score student performance, learning, performance and scoring are integrated and internally consistent.

To evaluate the factors from a construct relevant perspective, representative words were selected from each element and subcategory. These words (primarily verbs and adverbs) were associated with the scoring category ‘3,’ which represented adequate
skill development at the time of medical school graduation. These words were selected as emblematic of the Element. (Refer to Table 7 for key words grouped by Element.)

Words that represented Factor 1 were qualitatively interactive, relational, and patient-inclusive. They describe communication behaviors ‘with’ the patient. Language associated with Factor 1 is characteristic of what Mead & Bower called the “therapeutic alliance” (Mead & Bower, 2000, p. 1090). Similarly, Balent referred to this quality of patient-centered communication as “2-person medicine” (Mead & Bower, 2000). Both descriptions represent shared power and collateral decision-making between the patient and the physician.

Unlike Factor 1, words that characterized Factor 2 were active and not interactive. Balent’s description of the biomedical model as “one-person medicine” (as cited in Mead & Bower, 2000, p. 1090) is in direct contrast to the concept of a therapeutic alliance between patient and physician. The behaviors in Factor 2 are characterized by doctor-centric or ‘one-person’ medicine. Communication is directed ‘to’ the patient, not ‘with’ the patient. The locus of power and control in a patient encounter determines the degree to which decision-making is shared and patient-centered. Factor 2 represents a shift in the direction of communication. Information directed ‘to’ the patient redirects the encounter away from a ‘therapeutic alliance’ ‘with’ the patient” (Stewart, Brown, Weston, McWhinney, & McWilliam, 2014, p. 149).

The characteristics of Factor 2 may also indicate a gap in student preparedness, which is an educational issue. Reaching agreement (Factor 2, Element 6) is a shared decision-making process. It requires the clinician to facilitate and negotiate skillfully with the patient. A well-meaning but un-coached medical student would naturally
### Table 7

*Key Words from Elements Associated with Factors 1 & 2*

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>E1</strong> Open Discussion</td>
<td><strong>E2</strong> Build Relationship</td>
<td><strong>E6</strong> Reach Agreement</td>
</tr>
<tr>
<td>Polite</td>
<td>Understands</td>
<td>Presents</td>
</tr>
<tr>
<td>Calls</td>
<td>Accepts</td>
<td>Addresses</td>
</tr>
<tr>
<td>Appropriate</td>
<td>Uses previous</td>
<td>Assumes</td>
</tr>
<tr>
<td>Introduces</td>
<td>Rarely interrupts</td>
<td></td>
</tr>
<tr>
<td>Begins</td>
<td>Summarizes</td>
<td></td>
</tr>
<tr>
<td>Open-ended</td>
<td>Demonstrates</td>
<td></td>
</tr>
<tr>
<td>Doesn’t interrupt</td>
<td>Concern</td>
<td></td>
</tr>
<tr>
<td>Offers</td>
<td>Non-verbal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adequate draping</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Professional</td>
<td></td>
</tr>
</tbody>
</table>
‘present, address, assume, and explain’ in a ‘polite’ but unilateral manner. Their scores on the Elements in Factor 2 are the lowest of all the Elements, but hover at or close to a score of three expected at graduation. The numeric score indicates reasonably adequate skill, but the Factor structure suggests that the dimension measured is different from Factor 1. If Factor 1 represents patient-centered behaviors, and Factor 2 represents physician-centered behaviors, and if the goal of the instrument is to teach and assess the former, then the content of Elements 6 and 7 should be re-evaluated for construct representation.

This suggests several considerations for educational programming. 1) Should students be able to demonstrate reach agreement skills at the developmental level assessed during OSCE 3? If not, when and how will they be assessed? (2) Is the passing standard accurate or should it be lowered? (3) What programs can be implemented to give students opportunities to learn patient-centered skills for reaching agreement and closing the encounter? (4) Do the behavioral anchors accurately describe reaching agreement and closing the encounter in a patient-centered manner? Can the content of Elements 6 and 7 be edited to represent the construct of patient-centered medicine more effectively?

**Curriculum Relevance**

The EEC-GRS was designed to assess the continuum of patient-centered communication skills from novice medical students to expert physicians. While validity evidence has not been established for using the instrument across all skill levels, the range of higher scores was inherently restricted since all participants were novices with early clinical communication skills. The factor pattern, based on student scores, may
represent a developmental confound evident in the progression of skills from student to expert performance. These results may indicate that EEC-GRS scores provided accurate information about a learner’s developmental progress. More advanced skills are represented in Factor 2 Elements (6 and 7), which describe a negotiated partnership that is facilitated by the physician with the patient.

At this developmental level, the factors may represent the difference in the student’s ability to be patient-centric with different communication tasks. Student performance underrepresented the more advanced skills of partnered negotiation for treatment planning with the patient. Training may develop skill in one area and not others, and medical students at this level have little or no practice (with feedback) negotiating a patient-centered treatment plan (Fancovic, 2015). The dimensions represented by the Elements (and factor pattern) may indicate differential development of patient-centered communication skills. This finding is also supported by Mead’s notion that, “there is no theoretical reason why practitioners should not demonstrate behaviors indicative of one dimension but not another” (Mead & Bower, 2000, p. 1103). These results indicate that this may be true during the learning process as well. They also have implications for curriculum planning which could include more practice opportunities with feedback. Students would learn how to facilitate a partnership with the patient to negotiate a treatment plan that meets both the patient and the medical objectives.

**Measurement relevance**

As a measurement issue, Factor 2 may simply represent the confounding influence of time. While EEC-GRS scores regress toward a mean of 3 for each of the seven Elements, students’ performance on Elements in Factor 2 is the lowest. Time
pressures to end the encounter may hurry the student toward what seems expeditious resulting in a one-directional plan and conclusion. Mead notes, “the time dimension…explicitly recognizes that the propensity of a doctor to be patient-centered will vary over time, and that some dimensions … require significant time to develop between the doctor and the individual patient.” (Mead & Bower, 2000, p. 1104). Medical students may be particularly sensitive to the impact of time on the quality of their patient-centered communication. Feeling pressured to end the encounter within the allotted 15 minutes and feeling that they must provide a plan for the patient, may squeeze the student toward a one-directional flow of information to the patient and away from interaction with the patient.

**Limitations for application of study outcomes**

**Participants.** Participants were medical students, so interpretations of validity evidence would apply to other medical students but not to practicing physicians. The major difference between UNMSOM students and their national peers were admission test scores. (Refer to Table 3 for demographic information.) However, knowledge tests are not indicative of an ability to learn clinical communication skills.

**Setting.** The EEC-GRS was designed for an educational or clinical setting. However, the setting was simulated and academic, not situated and clinical. The results are limited to application in the educational setting, since the difference between these contexts would influence study outcomes (Mead & Bower, 2000). Confidence is limited for generalizing the results of this study to an actual clinical setting. The results however, are relevant for other medical schools because the participants and context of the study
are very similar. All assess their students in simulated environments with SPs and all must prepare students for Step 2 CIS.

**EEC-GRS Version.** The 2005 version of the instrument was used for this study. In 2011, some of the behavioral anchors were edited to make them easier to recognize and score. The global rating scale format of the seven Elements and the patient satisfaction question were not amended. Because of these amendments, the results of this study should be confirmed using the current version of the EEC-GRS.

**Scoring.** The range of scores was constrained by the educational and developmental level of the participants. It is not known whether the factor structure was impacted by this constraint. The question arises as to whether Factor 2 Elements, 6 and 7 would cluster onto the more patient-centric, Factor 1, if the scores included expert participants.

**Bias.** The best effort was made to select representative words from each Element without considering the implications for factor interpretation. However, there was an inherent potential to bias the interpretation based on word selection.

**Future Studies**

Further studies of validity evidence will lead to a better understanding of EEC-GRS scores. The following research questions were prompted by the outcomes from this study:

1. What accounts for 84% of the variance in Step 2 CIS scores not explained by EEC-GRS or Patient Satisfaction scores?
2. Should generalizeability methods be used to assess reliability of EEC-GRS scores?
3. Is there concurrent validity evidence for the use of the EEC-GRS as a patient-centered communication skills assessment instrument in other medical schools?

4. If students were provided the opportunity to practice and receive feedback on skills associated with Factor 2, would their scores improve and would this effect the factor structure? Would this change in the curriculum impact student’s scores on Step 2 CIS?

5. Is there validity evidence to support the use of EEC-GRS scores to measure expert physician’s skills? While the instrument is designed to assess communication skills behaviors along the continuum of novice to expert, validity evidence has not been established with expert physicians.

6. Would the factor pattern change if EEC-GRS scores resulted from expert physicians’ performances?

7. How would the EEC-GRS generalize to other professional education programs, such as nurse practitioners, physician assistants and pharmacists? All clinical professions value the patient-centered communication model. However, they differ in the way they conceptualize their professional role with the patient, have different professional norms and constructs, and have linguistic and dialectical differences in the way they frame thought models. In the context of burgeoning interest in interprofessional education, Mead encourages further study of the application of the patient-centered model to professions other than medicine (Mead & Bower, 2000).
Conclusion

The findings of this study contribute to the conversation surrounding what Epstein calls, “the science of the art medicine” (Epstein, 2000, p. 3). Learning the art begins in medical school when student-doctors are taught the first steps of the complex interactive dance of partnership with patients. Because effective clinical communication is integral to the partnership, sound educational instruments are needed to support the development of patient-centered skills. Graduates should be prepared to engage patients as partners who are involved in their own health outcomes and quality of life. Utilizing effective educational methods with evidence of valid outcomes scaffolds skill development and provides a platform for building enduring patient-centered communication skills. Educational quality is an obligation incumbent upon all medical schools, so that future physicians enter the profession ready to fulfill their mission to patients for compassionate, effective car
# Appendix A

## Essential Elements of Communication – Global Rating Scale 2005 (EEC – GRS)

### 1. OPEN THE DISCUSSION

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
<td>o No greeting</td>
<td>o Polite greeting</td>
<td>o Personal greeting shows genuine</td>
<td>o Displays welcoming nonverbal</td>
<td>o Polite greeting</td>
</tr>
<tr>
<td></td>
<td>o Does not call you by name</td>
<td>o Calls you by or establishes your</td>
<td>interest</td>
<td>behavior</td>
<td>appropriate name</td>
</tr>
<tr>
<td></td>
<td>o Initiates use of inappropriate variation of your name</td>
<td>o Appropriate formality</td>
<td>o Displays welcoming nonverbal</td>
<td>behavior</td>
<td>o Accurately introduces self with</td>
</tr>
<tr>
<td></td>
<td>o Inappropriate familiarity or informality</td>
<td>o Accurately introduces self with</td>
<td>o Displays welcoming nonverbal</td>
<td>behavior</td>
<td>full name and title</td>
</tr>
<tr>
<td></td>
<td>o Does not identify self by name or title</td>
<td>o Displays welcoming nonverbal</td>
<td>o Displays welcoming nonverbal</td>
<td>behavior</td>
<td></td>
</tr>
<tr>
<td><strong>Patient opening</strong></td>
<td>o Begins with closed-ended question</td>
<td>o Begins with open-ended question</td>
<td>o Asks if there is anything else you</td>
<td>o Summarizes your opening concerns</td>
<td>o Asks if there is anything else you</td>
</tr>
<tr>
<td></td>
<td>o Interrupts your initial response</td>
<td>o begins with open-ended question</td>
<td>want to add after you finish your</td>
<td>and verifies with you</td>
<td>want to add after you finish your</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>initial statement</td>
<td></td>
<td>finish your initial statement</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>o Summarizes your opening concerns</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Agenda setting</strong></td>
<td>o Offers no organizational overview</td>
<td>o Offers an early, brief outline of what to expect</td>
<td>o Offers timely, detailed outline of what to expect during the encounter</td>
<td>o Summarizes your opening concerns</td>
<td>o Summarizes your opening concerns</td>
</tr>
<tr>
<td></td>
<td>regarding what to expect during the</td>
<td>o Offers an early, brief outline of what to expect during the encounter</td>
<td>o Includes an agenda for subsequent</td>
<td>and verifies with you</td>
<td>and verifies with you</td>
</tr>
<tr>
<td></td>
<td>encounter</td>
<td></td>
<td>visits</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>o Includes an agenda for subsequent</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>visits</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

© University of New Mexico School of Medicine
## 2. BUILD A RELATIONSHIP

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Listening</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Misunderstands what you say</td>
<td>o Seems to understand what you say</td>
<td>o Acquires and accurately assimilates the facts and subtleties of your situation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Does not acknowledge or allow attempts to add or correct information</td>
<td>o Accepts correction</td>
<td>o Does not interrupt important silences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Frequently repeats questions</td>
<td>o Uses previous information as basis for subsequent questions</td>
<td>o Uses restatements, summaries, or explicit checks to verify information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Interrupts your responses</td>
<td>o Rarely interrupts</td>
<td>o Summarizes at least once</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Seeks to understand what you say</td>
<td>o Accepts correction</td>
<td>o Uses restatements, summaries, or explicit checks to verify information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Uses previous information as basis for subsequent questions</td>
<td>o Rarely interrupts</td>
<td>o Summarizes at least once</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Summarizes at least once</td>
<td>o Acquires and accurately assimilates the facts and subtleties of your situation</td>
<td>o Does not interrupt important silences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Does not interrupt important silences</td>
<td>o Uses restatements, summaries, or explicit checks to verify information</td>
<td>o Summarizes at least once</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Empathy &amp; attitude</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Gives false reassurance</td>
<td>o Demonstrates or expresses appropriate concern for you</td>
<td>o Responds appropriately to each of your concerns or issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Does not acknowledge your situation</td>
<td>o Makes appropriate eye contact</td>
<td>o Provides nonjudgmental support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Demonstrates or expresses appropriate concern for you</td>
<td>o Makes appropriate eye contact</td>
<td>o Helps you clarify your own feelings and thoughts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Makes appropriate eye contact</td>
<td>o Expresses genuine concern throughout the encounter</td>
<td>o Uses receptive postures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Expresses genuine concern throughout the encounter</td>
<td>o Makes mutually agreeable adjustments in distance or touch for your comfort</td>
<td>o Makes mutually agreeable adjustments in distance or touch for your comfort</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Professional and appropriate clothing or adornment</td>
<td>o Country or cultural background is respected</td>
<td>o Professional and appropriate clothing or adornment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Professional and appropriate clothing or adornment</td>
<td>o Country or cultural background is respected</td>
<td>o Professional and appropriate clothing or adornment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Country or cultural background is respected</td>
<td>o Professional and appropriate clothing or adornment</td>
<td>o Professional and appropriate clothing or adornment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Professional and appropriate clothing or adornment</td>
<td>o Country or cultural background is respected</td>
<td>o Professional and appropriate clothing or adornment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Country or cultural background is respected</td>
<td>o Professional and appropriate clothing or adornment</td>
<td>o Professional and appropriate clothing or adornment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

© University of New Mexico School of Medicine
# 3. GATHER INFORMATION

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Context</strong></td>
<td>o Does not obtain any information about you as a person</td>
<td>o Acquires sufficient information about you as a person</td>
<td>o Acquires important information about you as a person</td>
<td>o Encourages you to share freely your reasons for seeking medical attention</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Seems interested in and briefly explores your life context</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Questions</strong></td>
<td>o Rarely balances open- and closed-ended questions</td>
<td>o Balances open- and closed-ended questions appropriately</td>
<td>o Questions are tailored to you as an individual</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Most questions are closed-ended</td>
<td>o Uses closed-ended questions to check details</td>
<td>o Prompts you to talk freely in response to open-ended questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Questions seem mechanistic and rote</td>
<td></td>
<td>o Clarifies specific information or details through closed-ended questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Organization &amp; transitions</strong></td>
<td>o Transitions are confusing and disorganized</td>
<td>o Explains transitions</td>
<td>o Transitions are seamless and smooth</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Disconcerting, jarring, or random topic changes</td>
<td>o Occasionally backtracks to omitted or forgotten question</td>
<td>o Clear, logical transitions that may be explicit or implicit</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Physical examination</strong></td>
<td>o Does not inform you before performing examination maneuvers</td>
<td>o Explains some examination maneuvers</td>
<td>o Explains examination maneuvers appropriately</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Causes unnecessary pain</td>
<td>o Alerts you before performing private or sensitive maneuvers</td>
<td>o Establishes dialogue about sensations resulting from the examination</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Personal privacy</strong></td>
<td>o Leaves you unnecessarily exposed, inadequately draped</td>
<td>o Uses adequate draping</td>
<td>o Drapes respectfully</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>o Checks on your comfort</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>o Assures privacy in the environment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

© University of New Mexico School of Medicine
4. **UNDERSTAND THE PATIENT’S PERSPECTIVE**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient concerns</strong></td>
<td>o Doesn’t ask about your concerns</td>
<td>o Asks you to express your major concerns at some point in the interview</td>
<td>o Elicits your major concerns early in the encounter</td>
<td>o Consistently follows up on clues or information you volunteer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Ignores concerns you raise</td>
<td>o Follows up on concerns you raise explicitly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Patient beliefs &amp; preferences</strong></td>
<td>o Does not elicit requests or expectations for outcomes today</td>
<td>o Elicits your beliefs or preferences</td>
<td>o Acknowledges your elicited beliefs and preferences</td>
<td>o Consistently addresses your beliefs, preferences, and requests</td>
<td>o Responds to your perspective as understandable and valid</td>
</tr>
<tr>
<td></td>
<td>o Interrupts with suggestions before hearing your preferences</td>
<td>o Addresses most of your requests</td>
<td>o Acknowledges your perspective</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Denies or ignores your requests without explanation</td>
<td>o Acknowledges your perspective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Belittles your perspective</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Expression of feelings</strong></td>
<td>o Denigrates you</td>
<td>o Recognizes and acknowledges explicit expression of emotions</td>
<td>o Facilitates the expression of your feelings</td>
<td>o Anticipates emotional reactions you might be expected to have</td>
<td>o Elicits your means of emotional support</td>
</tr>
<tr>
<td></td>
<td>o Becomes silent and withdrawn</td>
<td>o Asks about your emotions after you have given clues</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Changes the subject when you express emotion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Consider for particularly vulnerable patient populations, e.g., patients who use another language, have dementia or mental illness, or have marked physical limitations that may require special accommodations.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Specific circumstances</strong></td>
<td>o Does not demonstrate awareness of unusual circumstances</td>
<td>o Demonstrates awareness of unusual circumstances and makes accommodation</td>
<td>o Makes attentive, respectful, resourceful, and effective accommodation for unusual circumstances</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

© University of New Mexico School of Medicine
## 5. SHARE INFORMATION

<table>
<thead>
<tr>
<th>Vocabulary</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Uses language you don’t understand</td>
<td>o Uses language appropriate to your educational or intellectual level</td>
<td>o Clarifies vocabulary upon request</td>
<td>o Checks your understanding of technical words and explains if necessary</td>
<td>o Skillful use of technical vocabulary</td>
<td></td>
</tr>
<tr>
<td>o Uses inappropriate language (slang or technical)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patient understanding of illness</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Doesn’t elicit your understanding of your illness or situation</td>
<td>o Acknowledges when you volunteer your understanding of your illness or situation</td>
<td></td>
<td>o Asks about your understanding of your illness or situation</td>
<td>o Highlights areas of similarity between your understanding and medical science</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clinician information &amp; explanation</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Ignores your requests for information</td>
<td>o Gives information that is specific and clear, but not personalized</td>
<td></td>
<td>o Gives full, clear, and thorough explanation of what your symptoms might mean or how they could be investigated</td>
<td>o Verifies your understanding of information</td>
<td>o Offers to provide additional information</td>
</tr>
<tr>
<td>o Consistently disregards opportunities for instruction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

© University of New Mexico School of Medicine
### 6. REACH AGREEMENT (Planning Evaluation and Treatment)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Negotiation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o No plan</td>
<td>o Presents a plan and requests feedback</td>
<td>o Solicits input, negotiates a plan to the extent you desire, and confirms your understanding of the final plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Presents a nonnegotiable plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Implementation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Does not address your ability to implement the plan</td>
<td>o Addresses your hesitations, suggestions, or questions about implementing the plan</td>
<td>o Elicits your suggestions or questions about implementing the plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Ignores or denigrates your ability to implement the plan</td>
<td>o Assumes you are capable of implementing the plan</td>
<td>o Explores barriers to implementing the plan and facilitates possible solutions</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 7. PROVIDE CLOSURE

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient next steps</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Stops abruptly</td>
<td>o Clear explanation of next steps</td>
<td>o Verifies next steps with you (e.g. get dressed, wait in room, make another appointment, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o No indication of next steps (e.g. get dressed, wait in room, make another appointment, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Physician conclusion</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o No conclusion</td>
<td>o Polite, generic conclusion</td>
<td>o Polite, personalized, thoughtful conclusion</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

© University of New Mexico School of Medicine
### 8. PATIENT SATISFACTION

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>o I would not return to this clinician under any circumstances</td>
<td>o I would return to this clinician</td>
<td>o I would return to this clinician above all others</td>
<td>o I would want this clinician to care for all my loved ones</td>
<td></td>
</tr>
</tbody>
</table>

© University of New Mexico School of Medicine
Appendix B

2002 Communication Skills Competency Committee
University of New Mexico School of Medicine

Chairman 2002

Bronwyn Wilson, M.D.

Past Co-Chairmen

Peter Barnett, M.D., Past Co-chairman
Teresita McCarty, M.D.

Members

Jeff Danninger, B.A.
France Doyle, M.D.
Cheri Koinis, M.A., M.Ed.
Teresita McCarty, M.D., Past Chairman
Jan Mines, M.A.
Neal O’Callaghan, P.A.
Audrey Patterson (Ortega), B.A.
Nancy Sinclair (Schneider), RN, MBA
Norm Taslitz, PhD
Tom White, J.D., P.A.
References


Bayer-Fetzer-Participants. (2001). Essential Elements of Communication in Medical Encounters: The Kalamazoo Consensus Statement (Conference on Physician-
Patient Communication in Medical Education). *Academic Medicine, 76*(4), 390-393.


Fancovic, E. (personal communication, August 7, 2015). Do medical students practice making a plan with the patient during clerkships?


