EXAMINING THE RELATIONSHIP BETWEEN THE TIMING OF A PERCEIVED SELF-EFFICACY QUESTIONNAIRE, DURATION OF TRAINING, AND LEVELS OF SELF-EFFICACY AND DEMONSTRATED SKILLS IN SMITH'S PATIENT-CENTERED INTERVIEW

By

Brandon M. Walling

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ABSTRACT

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Smith's Patient-Centered Interview (PCI) is a methodology used by healthcare providers for obtaining health information from patients. Compared to traditional doctor-centered interview and treatment methods intended solely to obtain biomedical healthcare information, Smith's PCI was created as a methodology to obtain biopsychosocial information and considers open-ended communication skills to elicit patients' emotional and social stories in addition to physical symptom data which are obtained using doctor-centered skills. Research has shown that providers who use patient-centered skills have higher patient satisfaction ratings, and their patients show improved physical and psychological health and other individualized health outcomes. Additionally, previous research has shown that residents trained in the PCI rate their self-efficacy higher and score higher in demonstrated PCI skills than untrained residents. However, in previous studies, no significant relationship was found directly linking levels of provider self-efficacy and the subsequent levels of demonstrated PCI skills. The aim of the current study was to explore the influence of the timing of a perceived self-efficacy questionnaire and the duration of the training process. Research questions were presented regarding the effect of the questionnaire timing and training duration and the resulting levels of provider self-efficacy and demonstrated PCI skills. The findings suggest that the timing of the questionnaire does not influence subsequent self-efficacy ratings and that demonstrated PCI skills and perceived self-efficacy ratings increased significantly with duration of training.

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INTRODUCTION

A physician's communicative skills are an important feature of the provider-patient interaction. These communication skills are related to the adequacy of treatment and medical outcomes, the extent that patients comply with advice given by the provider, and patient satisfaction (Kline & Ceropski, 1984). Smith's patient-centered interview (PCI) is an evidence-based methodology that teaches healthcare providers patient-centered, communicative skills that are linked to positive patient outcomes such as patient satisfaction (Fortin, Dwamena, Frankel, & Smith, 2012; Grayson-Sneed, 2014). Patient satisfaction is an important factor that has been connected to patient loyalty, improved retention, consistent profitability (less patient loss), reduced risk of malpractice lawsuits, increased professional satisfaction and staff morale, and, more recently, accreditation issues – as accreditation agencies use patient satisfaction to measure the quality of care (Prakash, 2010). Smith's PCI encourages providers to obtain psychosocial data in addition to doctor-centered, physical symptom data in medical interviews and to use facilitating skills such as open-ended, emotion-seeking and emotion-handling questions to make the patient feel understood, respected, and supported (Fortin et al., 2012). Previous research has shown that providers who were assigned to a PCI training program rate their confidence in using patient-centered skills (self-efficacy) significantly higher and score higher in demonstration of skills than providers assigned to a control condition with no PCI training (Smith et al., 1998). However, when directly examining the direct link between self-efficacy and demonstrated skills, recent research has fallen short in finding a statistically significant relationship between level of perceived self-efficacy and level of demonstrated PCI skills (Grayson-Sneed, 2015), as would be expected from the self-efficacy literature (Bandura, 1986; Gist & Mitchell, 1992; Lee & Bobko, 1994; Mathieu et al., 1993; Saks, 1995; Salas, Tannenbaum, Kraiger, & Smith-Jentsch, 2012). In

these previous studies, the timing of the provider self-efficacy questionnaire has not been constant as some trainees were given the questionnaire before the patient interview while others were given the questionnaire after the demonstrations. Previous studies also ignored the effect of the duration of the training program. The main goal of the current study is to explore how the timing of the self-efficacy questionnaire, duration of the training program, and perceived self-efficacy ratings, are related and relate to the demonstration of PCI skills (rated objectively by coders). The predictions of this research are that residents that took the perceived self-efficacy questionnaire before the demonstrated interview will have higher self-efficacy scores than the providers who took the perceived self-efficacy questionnaire after the demonstrated interview; the correlation between perceived self-efficacy and demonstrated skills will be stronger for the providers who took the self-efficacy questionnaire before the demonstrated interview compared to providers who took the questionnaire after the demonstrated interview; and that ratings of perceived self-efficacy will mediate the relationship between duration of the training program and level of demonstrated skills.

In order to lay the foundation for these predictions, a literature review will be presented discussing the need for the patient-centered interview in the healthcare context, followed by an introduction to the concept of self-efficacy through the lens of Social Cognitive Theory (SCT) (Bandura, 1977), a discussion regarding the effects of timing of self-efficacy questionnaires, and an overview of research regarding the duration of training programs on self-efficacy ratings. Finally, research questions and hypotheses will be offered with regard to the relationships between the timing of the self-efficacy questionnaire, duration of the training program, the level of perceived self-efficacy, and the level of demonstrated PCI skills.

CHAPTER 1: LITERATURE REVIEW

Need for Patient-Centered Interviewing

The development of medicine and clinical practice in the biological sciences was built from a foundation called the "biomedical model" which focuses on information that the health care provider obtains using identification, description, and determination of the causes of disease and then instructing the patient on how to treat their conditions (Fortin et al., 2012; Smith, Fortin, Dwamena, & Frankel, 2013). Biomedical information is collected from a doctor-centered interview and is connected with a modernistic thinking of the illnesses that affect human beings (Larivaara, Kiuttu, & Taanila, 2001). Feinstein (1987) explained that these methods of treating patients are good for diagnosis, but not prognosis. He challenged clinical investigators to create better systems for making health-related decisions that look at long-term medical effects rather than simply alleviating immediate symptoms.

To address all of the needs of patients in the health care context, Engel (1977) proposed the biopsychosocial model – which incorporates information from the social and cultural contexts in which the patient lives along with their psychological and physical systems. This "postmodern" view of healthcare creates a system where "the knower participates in creating the world he or she lives in, observes, and knows" (Larivaara et al., 2001) (p. 8). This kind of care provides for healing relationships; exchanging important patient information and perspectives; and builds trust and understanding between healthcare providers and their patients (Levinson, Lesser, & Epstein, 2010). Street, Makoul, Arora, and Epstein (2009) proposed that clinicians need to understand a patient's values, preferences and beliefs about health, and the provider-patient communication can improve health by empowering patients to be active, capable agents in managing themselves.

Philibert, Patow, and Cichon (2011) suggested that patient-centered care be a fundamental expectation for resident learning and attainment of competence, noting that there should be important consideration of how well patient-centered concepts and behaviors are embedded in day-to-day provider training to stress that respectful communication needs to be learned, supported, and continuously demanded. Additionally, Levinson et al. (2010) proposed that communication skills can be taught and enhanced in a systematic way during the training of new physicians and through continuing medical education for practicing physicians – including practice and feedback. These patient-centered care techniques should promote knowledge of patients as individuals, improve patient transitions to care, and reduce barriers to medication adherence (Ratanawongsa et al., 2012).

However, the biopsychosocial model (Engel, 1977) failed to provide healthcare practitioners with a method for identifying the essential biopsychosocial data as it only provided a definition of the hierarchy of patient information (Smith et al., 2013). In fact, many researchers refuse to define the biopsychosocial model as a "model" because it is only vaguely defined and not operationalized in terms of specific behaviors. The biopsychosocial model is thus not testable, too general, and fails to provide a systematic methodology for collecting biopsychosocial data.

Smith's PCI (Fortin et al., 2012) was created with the biopsychosocial model in mind as it specifically addresses the interdependence of the patient's biological, or physical story, the psychological/emotional story, and the personal/social story to gather a complete picture of the patient's health context. By using the PCI to collect biopsychosocial information, health care providers can uncover all emotional reactions that are associated with having an illness and receiving treatment in addition to traditional biological information (Engel, 1977), thus

increasing patient compliance and satisfaction (Smith et al., 2013). Smith's PCI (Fortin et al., 2012) proposes an 11-step, repeatable, systematic process integrated into the medical interview, where the first five steps compose the PCI, followed by a more clinician-centered approach with patient-centered skills incorporated. In the first five steps the provider uses open-ended, patient-centered skills to encourage new information from the patient and collect the three important stories: the physical symptom story, the patient's personal story and the patient's emotional story. This kind of open-ended communication encourages the provider to listen and understand where the patient is coming from and explains why communication is the most common and most important procedure used by doctors to diagnose and treat illness (Larivaara et al., 2001).

Previous research shows that patient satisfaction is strongly associated with communicative behaviors that occur during the physician-patient interaction, but there is still a large gap between what is perceived as the best practice by experts and what is actually used in clinical settings (King & Hoppe, 2013). King and Hoppe argue that communication skills training needs to be increased. Smith's PCI (Fortin et al., 2012) proposes a behaviorally-defined, logical and replicable method based on empirical evidence and the authors' own experiences and consultations with their clients and other physicians. Because patients seldom verbalize their personal and emotional expresssions directly and spontaneously, if providers lack the skills to encourage that information, the patient begins to think that their ideas and opinions are not important in the treatment process (Larivaara et al., 2001). The communication skills associated with the PCI (Fortin et al., 2012), according to Larivaara et al. (2001), are probably the single most important factor influencing patient satisfaction and patients' ratings of their doctors' performance. In their research to develop Smith's PCI, the authors have found evidence of significant improvements in measures of patient health status and patient satisfaction (Fortin et

al., 2012; Grayson-Sneed et al., 2016; Smith et al., 2006; Smith et al., 2009). Ratanawongsa et al. (2012) also found that a patient-centered curriculum was associated with higher satisfaction ratings in patient-centeredness by internal medicine residents and with higher satisfaction ratings of the providers by the patients.

Despite the fact that use of the PCI results in increased patient satisfaction (Fortin et al., 2012; Grayson-Sneed et al., 2016; Smith et al., 2006; Smith et al., 2009), Heidenreich (2013) warns that care aimed at improving patient satisfaction may not always improve health. In some situations, patients might be looking for antibiotics or narcotics, and a doctor might get a low satisfaction score for doing what is medically correct. By using patient-centered skills, healthcare providers uncover the underlying issues to best treat their patient (Fortin et al., 2012), but sometimes that treatment plan might not be what the patient wants. From a business perspective, patients pay for care and want the best value for improving health and wellness (Heidenreich, 2013).

Research has shown that patient-centered decision-making – when providers take into account the needs and circumstances (context) of their patients when planning the course of treatment – leads to improved individualized health care outcomes (Weiner et al., 2013). These health outcomes include missed appointments, medication nonadherence, missed laboratory tests and/or scheduled studies, nonadherence to agreed-upon self-care plans, declined recommended preventive care, missed screenings or vaccinations, urgent care visits, diabetes, hypertension, and emergency room visits (Weiner et al., 2013).

Street et al. (2009) note that provider-patient communication could lead to a better physical health for the patient if conversations help to identify the correct diagnosis and appropriate treatment plan, lead to following through with treatment or self-care, or if the

patient's health beliefs are affected. These physical health states include pain and other symptoms, disease markers, functional capacity, and subjective self-ratings of health. Provider-patient communication can also directly have positive psychosocial outcomes if the interaction results in the patient feeling known, validated, hopeful, reassured or comforted, or indirectly from a diagnosis or reinforcing social support.

Fortin et al. (2012) lay out a logical and replicable method, based on empirical evidence, that can be used to increase providers' communication competence. In a randomized, controlled study of 65 postgraduate residents, Smith et al. (1998) found that trained residents (compared to control groups with no training) showed higher scores on self-efficacy and knowledge of the PCI and were rated by coders as using more patient-centered skills. These results are evidence that PCI training was shown to increase healthcare providers' self-efficacy and ability to use patient-centered skills.

Self-Efficacy

One area of study that has seen substantial research is the topic of behavioral change and the psychological processes that lead to different decisions. One explanation is offered by Social Learning Theory (SLT), which proposes that humans learn patterns of behavior from observing others and use those observed behaviors to shape their own, using feedback from the environment to adapt for best results (Bandura, 1977). Bandura presented the idea of motivation-driving behavior, or how individuals estimate the expected result of their behaviors and how those expected outcomes are a driving force for behavioral change. In this process, individuals create expectations for their behaviors and weigh the benefits of reaching those results against the potential consequence of failing.

Bandura (1977) explained that individuals create efficacy expectations, "The conviction that one can successfully execute the behavior required to produce the desired outcomes" (p. 193). It is important to distinguish efficacy expectations from outcome expectations because an individual can think that their behavior will produce an effect but distrust their ability to perform it. Perceived self-efficacy is a judgment of one's capabilities (Bandura, 2006), and these beliefs "influence the course of action people choose to pursue, how much effort they put forth in given endeavors, how long they will persevere in the face of obstacles and failures, their resilience to adversity" among many other decisions (Bandura, 1997) (p. 3).

Besides self-efficacy, other individual factors might influence the outcomes of a training program such as motivation to learn (Salas et al., 2012), achievement motivation (Lee & Mao, 2016; Mathieu, Martineau, & Tannenbaum, 1993), ability to cope and organizational or professional commitment (Saks, 1995), and other attitudes such as behavioral intention (Downey & Zeltmann, 2009) and perceived importance (Bandura, 1986). However, research has convincingly shown that self-efficacy leads to better learning and training programs should be designed to promote self-efficacy (Salas et al., 2012).

Mann (1994) studied the enhancement of physician's preventive practices, highlighting the effect of self-efficacy programs, and concluded that providing opportunities for medical students to practice skills with simulated patients or with each other and to receive feedback on performance builds confidence in the skills needed throughout their practice. Additionally, Wechsler (1983) found that confidence in helping patients change their behavior (with appropriate support) was associated with physicians' interest in learning more about that topic area. Related to these findings, Attarian et al. (1987) found that residents' reported perceptions of self-efficacies for specific counseling behaviors correlated directly with the reported proportions

of time spent on those counseling activities. Further, residents reported avoiding activities for which they felt low levels of confidence. They also reported that the majority of family physicians surveyed said that training in behavior modification, communication skills and prevention would enhance their confidence in their abilities. Wechsler (1983) also recommended that medical-education courses should be designed to increase physicians' confidence in their ability to help patients. This research makes clear the need for a focus on self-efficacy in training programs for medical students.

Self-Efficacy Questionnaire Timing

Previous research regarding self-efficacy has not established the appropriate timing to administer perceived self-efficacy questionnaires. Bandura (2006) said that when asked to report self-efficacy, people should judge their confidence as of the present time – not their "potential capabilities" or "expected future capabilities" – because it is "easy for people to imagine themselves to be fully efficacious" (p. 312-313). When considering the possibility that rating one's self-efficacy can affect their behavior, Bandura suggests that behavior change would be an easy task if all it takes is recording a high level of self-efficacy. Evaluating the results of multiple tests for "reactive effects" of self-efficacy measures, Bandura said that the findings show that people's motivations, affective reactions, and performance are the same regardless of whether they had previously rated their self-efficacy.

The most effective method to measure perceived self-efficacy might be to administer the questionnaire at multiple points in time throughout the training process. Telch et al. (1982) note that "the judgments of level and strength of self-efficacy are made for a variety of activities in situations varying in difficulty," but add that they are "in advance of behavior tests," while also noting that it should not be "immediately prior to each performance task" (p. 695). In many self-

efficacy studies, the level of self-efficacy was measured "following the behavioral pretest, after treatment but before behavioral posttest, and after completing the posttest" (Bandura et al., 1980) (p. 43). Bandura (1986) mentions in the "prototypical" self-efficacy setting, "people judge their efficacy in advance over a wide range of task demands within a meaningful domain of functioning" (p. 362) – indicating that the questionnaire should be administered prior to demonstration of skills. Thus, the literature on self-efficacy is conflicted regarding the timing of when to administer the self-efficacy questionnaire.

However, Bandura (1986) said that self-efficacy judgments influence outcomes by impacting behavior choices, the amount of effort exerted, and perseverance, which seems to suggest that completing the self-efficacy questionnaire first would influence the subsequent performance. Bandura (1977) also said that efficacy expectations "determine how much effort people will expend and how long they will persist in the face of obstacles and aversive experiences" (p. 194). Additionally, Bandura (2006) found that "the stronger the sense of personal efficacy, the greater the perseverance and the higher the likelihood that the chosen activity will be performed successfully" (p. 314). These conclusions all seem to suggest that initial self-efficacy ratings might influence the effort exerted and demonstrated competence of the rater, much like a self-fulfilling prophecy (Eden & Aviram, 1993). But, Bandura et al. (1980) noted that self-efficacy judgments have no effect on later performance, meaning that it should not matter when the self-efficacy rating takes place. Bandura (1986) does warn, however, that much more work is needed in order to gain generalizable knowledge about the impact of perceived self-efficacy on behavior.

Telch et al. (1982) proposed that if self-efficacy judgments are made when social evaluation is a salient factor, the procedure of assessing oneself could raise perceived pressures

for consistency – but no support was found for the hypothesis that implied social demands increase congruence between self-efficacy judgments and action. In their study, Telch and colleagues found that the effects of assessing one's own self-efficacy made people more conservative in their self-appraisals, thus they underestimate their abilities. The authors suggest that to minimize motivational effects, efficacy judgments should be recorded privately and without personal identification.

Taken in sum, research on self-efficacy has yet to determine the best time to administer a perceived self-efficacy questionnaire. One goal of the current study is to address this issue and explore the influence of the timing of the self-efficacy questionnaire on perceptions of self-efficacy and on the relationship between perceived self-efficacy and demonstrated skills.

Self-Efficacy and Duration of Training

Bandura (1986) claimed that perceptions of self-efficacy develop over the course of time via demonstrations of relevant skills – individuals gradually attain skills and experience either by practice or by observing others. Similarly, Gist and Mitchell (1992) define self-efficacy as a dynamic construct – it changes over time as individuals are exposed to new information and experiences, maybe even during the performance of a task. Self-efficacy changes as a result of learning, experience, and feedback – all aspects of a training process.

Gist and Mitchell (1992) also note that ratings of perceived self-efficacy become more routinized and automatic with experience in a task. Early on in a training program, individuals go through a detailed, in-depth analysis of their self-efficacy, but as the familiarity increases, judgments become more automatic. In the case of individuals with high levels of perceived self-efficacy, Gist and Mitchell suggest this can turn into a positive-reinforcing cycle, and performance results from participation in the training program.

Similarly, Mathieu, Martineau, and Tannenbaum (1993) found that successful performance enhances the subsequent developments of self-efficacy, a concept they call a "continuous learning environment" (p. 143). In this study, the authors concluded that initial perceptions of self-efficacy enhance the learning of new skills and performance of those skills, which promote further self-efficacy. Mencl, Tay, Schwoerer, and Drasgow (2012) showed that learning influences trainees' perceptions of the task and suggested that perceptions of self-efficacy will change over the course of a training process. Individuals high in self-efficacy are more confident that they will learn during training and more confident that they will perform when it comes to the demonstration of skills compared to those with low levels of self-efficacy. Additionally, as individuals go through the training process they learn how to understand the task overall, the unique intricacies of the specific task, learn about their own abilities related to task completion, and learn new ways to perform the task differently. In conclusion, Mencl et al. (2012) note that self-efficacy is expected to increase throughout successful training programs and training can be used specifically to enhance self-efficacy.

In sum, previous self-efficacy research has defined demonstration of skills as a means of increasing perceived self-efficacy (Bandura, 1977; 1986; 1997), specifically in a training context (Downey & Zeltmann, 2009; Eden & Aviram, 1993; Gist & Mitchell, 1992; Gist et al., 1989; Gist et al., 1991; Harrison, 2013; Lee & Mao, 2016; Mathieu et al., 1993; Saks, 1995; Salas et al., 2012). Thus, the current study predicts that self-efficacy will increase as the duration of training increases.

Rationale/Hypotheses and Research Question

　　　Timing of questionnaire and self-efficacy. Previous research (Grayson-Sneed, 2015; Smith et al., 1998) has shown that residents trained in the PCI scored higher in self-efficacy and

in demonstrated skills compared to untrained residents. However, when analyzing the direct relationship between self-efficacy and demonstrated skills, no statistically significant relationship was found. One possible reason for the lack of a significant relationship between self-efficacy and demonstrated skills is that the timing of the self-efficacy questionnaire has not been taken into account. The first research question and set of hypotheses for the current study involves timing of the self-efficacy questionnaire and the resulting levels of perceived self-efficacy.

Despite contrary claims, Bandura (2006) said that people's level of motivation and affective reactions are the same regardless of whether they had made previous self-efficacy judgments or not. As evidence of this, Bandura et al. (1980) found that making efficacy judgments had no effect on posttest approach behavior or on fear reduction or fear arousal when comparing self-efficacy scores measured before and after interventions.

Bandura (2006) also claimed "it is easy for people to imagine themselves to be fully efficacious in some hypothetical future" (p. 312-313). In previous research, perceived self-efficacy is often measured before completing the task, then after this self-rating, the subjects attempt to demonstrate relevant skills (Bandura, 1977; Bandura, 2006).

In contrast to Bandura, Telch et al. (1982) suggested that the effects of measuring perceived self-efficacy before demonstration of skills make people more conservative in their self-appraisals. In subsequent studies, they found evidence that posttest measures of self-efficacy are higher, finding that levels of self-efficacy increased over three times between the pretreatment (low social demand – $M = 7.3$, $SD = 5.5$; high social demand – $M = 6.6$, $SD = 4.1$) and the posttreatment measures (low social demand – $M = 24.9$, $SD = 8.8$; high social demand – $M = 23.0$, $SD = 7.7$) regardless of the manipulated social demand level.

Taking both of these contrasting positions into account, one research question is:

RQ1: Does a significant difference exist between the perceived self-efficacy scores of the group of residents who completed the questionnaire before and the group that completed the questionnaire after the patient-centered interview demonstration?

Effect of timing. An alternative objective of the present study is to explore the influence that the timing of the self-efficacy questionnaire has on the relationship between perceived self-efficacy and demonstrated PCI skills. Despite showing that trained residents scored higher in self-efficacy and demonstrated skills than untrained residents (Smith et al., 1998), previous research has failed to find a significant direct correlation between measures of perceived self-efficacy and the demonstration of PCI skills ($r = .14$, $p < .3$) (Grayson-Sneed, 2015). However, the current prediction is that when the timing of the self-efficacy questionnaire is taken into consideration a difference will emerge.

Bandura et al. (1980) addressed the issue of whether making efficacy judgments in itself can affect performance, and concluded that recording initial efficacy judgments had no effect on subsequent performance. Bandura (1997) found that "people's level of motivation, affective reactions, and performance attainments are the same regardless of whether they do or do not make prior self-efficacy judgments" (p. 315). However, in 1977 he claimed, "the most precise index of the relationship is provided by a microanalysis of the congruence between self-efficacy and performance at the level of individual tasks" (p. 206).

Bandura (2006) said, "people who score high on perceived self-efficacy should differ in distinct ways from those who score low" (p. 318-319). Bandura (1977) found that self-efficacy was a uniformly accurate predictor of performance on tasks varying in difficulty" and said that "the greater the increases in self-perceived efficacy, the greater the changes in behavior" (p. 206) which result in "enhancing intensity and persistence of effort" (p. 212) and "more active effort"

(p. 194). Bandura (2006) explained "the stronger the sense of personal efficacy, the greater the perseverance and the higher the likelihood that the chosen activity will be performed successfully" (p. 314).

Additionally, Bandura et al. (1980) found that "self-efficacy was an accurate predictor of performance." The researchers concluded, "if the judgments are made publicly and in an evaluative context before the action is attempted, it might produce public commitment and involvement" (p. 62) which might explain why performance levels are increased.

In previous research, self-efficacy has been used as a predictor of task-related performance (Gist & Mitchell, 1992; Gist et al., 1991; Harrison, Rainer, Hochwarter, & Thompson, 1997; Lee & Bobko, 1994; Mathieu et al., 1993; Mencl et al., 2012, Saks, 1995; Salas et al., 2012). In the PCI context, task-related performance would take the form of demonstrated PCI skills in the interview. Thus, increases in perceived self-efficacy should be linked to increased performance in the demonstration of PCI skills. However, Telch et al. (1982) found "evidence shows that making efficacy judgments does not increase congruence between perceived efficacy and behavior under either high or low social demand for consistency" (p. 699). Bandura (2006) also notes that if recording a level of self-efficacy affected one's behavior, personal change would be "trivially easy", so personal ratings are not indicative of change (p. 315). Therefore, based on these competing predictions, the second research question is:

RQ2: Is there a difference in the relationship between perceived self-efficacy and demonstrated skills between the group that took the self-efficacy questionnaire before and the group that took the questionnaire after giving the interview?

Influence of training duration. Self-efficacy has been defined as a dynamic construct – meaning that it changes over time (Bandura, 1986; Gist & Mitchell, 1992; Gist, Stevens, &

Bavetta, 1991; Mathieu et al., 1993; Mencl et al., 2012). Gist et al. (1991) note that perceptions of self-efficacy can result from personal experience with relevant tasks, development of performance strategies through instruction or modeling demonstrations, or from verbal persuasion – all aspects of a training program. Additionally, Gist and Mitchell (1992) note that training methods can enhance self-efficacy by introducing the trainee to new information and experiences.

Previous research has shown that residents trained in the PCI rate their self-efficacy significantly higher than control groups untrained in the PCI, and that highly trained residents score higher in demonstrated skills compared to untrained residents (Smith et al., 1998). However, previous studies have not considered the impact of the duration of the training program on perceptions of self-efficacy. In other words, the amount of training that a resident had received at the point of making the perceived self-efficacy rating might influence the relationship between self-efficacy and demonstrated skills. For example, a resident who was high in self-efficacy and far along in the training process should have a higher level of demonstrated skills than a resident who was high in self-efficacy but was not trained, or trained less. Thus, a third hypothesis is proposed:

H1: The relationship between the duration of the training program and demonstrated skills is mediated by levels of perceived self-efficacy.

CHAPTER 2: METHOD

Participants and Procedure

The data and participants of interest to test the research questions and hypothesis of this study were from a training program funded by the Health Resources and Services Administration (HRSA) (D58HP23259) to study patient-centered interviewing and the influence of mental health training for healthcare practitioners (see Grayson-Sneed, 2015). The participants were residents being trained in mental health competence ($N = 163$) over the course of a three-year training program. The majority of residents were men ($n = 96$) and of Asian ($n = 71$) or Caucasian ($n = 58$), the rest were African American ($n = 5$), or another race/ethnicity ($n = 29$).

The participants, over the course of their mental health training program, performed three different interviews with patients to demonstrate their growing knowledge in the PCI: a data gathering and relationship building demonstration (which focused on the specific patient-centered skills relevant to the PCI), a behavioral healthcare treatment model demonstration (a narcotic addiction scenario), and an informing/motivating the patient demonstration (a smoking cessation scenario). The present study only took into account the data gathering and relationship building demonstration. The other two interviews include patient-centered skills but are embedded in particular contexts, while the data gathering demonstration is a broader situation that is applicable for most doctor-patient interviews.

Standardized patients ($N = 12$) were trained actors, paid through the HRSA grant. The standardized patients were between 38 and 58 years old, and were mostly Caucasian with the exception of one African American. These actors went through in-person training before data collection and at the time of each interview were given detailed instructions for the case.

The perceived self-efficacy questionnaire measured residents' perceived self-efficacy in mental health knowledge and overall PCI skills (Smith et al., 1998). Confirmatory factor analysis showed that the 20 items load on the following second-order, unidimensional factors: the patient-centered interview; behavioral health treatment model; and smoking cessation (Grayson-Sneed, 2015; Smith et al., 1998). The full 20-item scale is used here as the resident training procedure in the current study included the behavioral health treatment and smoking cessation skills in addition to the patient-centered skills (See Appendix A). This questionnaire was administered once on the day of the demonstrated skills task either directly before or after the PCI.

For each of the three interviews, each resident was given a 15-minute time slot with a standardized patient while being video recorded in simulated examination rooms. Residents and standardized patients were aware that they were being taped and that the footage would be reviewed for research purposes. After each interview, the standardized patient filled out two measures of their satisfaction with the resident: an interview satisfaction questionnaire and a communication assessment tool. As another measure of the residents' competence in the PCI, two undergraduate communication researchers were trained to evaluate the demonstration of PCI skills using a developed PCI coding scheme (see Grayson-Sneed, 2015). This evaluation was coded as a "yes" or "no" on the 33-item PCI scheme and combined to create a total number of demonstrated PCI skills variable. (Appendix B).

Analysis

The first research question was concerned with the timing of the self-efficacy questionnaire and the influence that the timing has on the residents' reported levels of perceived self-efficacy. In order to test this, the resident and standardized patient information records were accessed to record whether each resident completed the self-efficacy questionnaire or the

interview demonstration first. Participants were split into two groups to analyze the influence of the timing of the self-efficacy questionnaire. Approximately half (52%) of the self-efficacy ratings ($n = 85$) were scored before the demonstrated interview and nearly half (48%) of the ratings ($n = 78$) were scored after the demonstrated interview. In order to answer the research question, the researcher performed a *t*-test to compare the means of perceived self-efficacy scores between the group of residents who completed the self-efficacy questionnaire first and the group who completed the PCI demonstration first.

The second research question concerned the influence that the timing of the self-efficacy questionnaire had on the relationship between perceived self-efficacy and demonstrated skills in the PCI. Using the timing variable, a split sample correlation between the level of perceived self-efficacy and the total number of demonstrated PCI skills for each group were run.

The current study predicted that levels of perceived self-efficacy mediate the relationship between the duration of the training program and level of demonstrated skills. Training groups were separated by duration of training program at the point of the self-efficacy rating. There were six different training levels: first year – no training ($n = 97$); second year – no training (control) ($n = 3$); third year – no training (control) ($n = 22$); psychosocial training only ($n = 34$); psychosocial and PCI (2 years) ($n = 4$); psychosocial and PCI (3 years) ($n = 3$). The self-efficacy variable ranged from 1 (not at all confident) to 5 (very confident) and was normally distributed ($M = 3.91$, $SD = .47$). The demonstrated skills variable ranged from 0 (no demonstrated skills) to 23 (out of 33-items) and was normally distributed ($M = 5.22$, $SD = 4.3$). Self-efficacy means, demonstrated skills means, and the correlation between self-efficacy and demonstrated skills for each group are reported in Table 1. To test this hypothesis, a mediation analysis was conducted using Hayes' (2009; 2017) PROCESS macro in SPSS to analyze the indirect and direct effects of

the duration of the training program and levels of perceived self-efficacy on levels of

demonstrated skills.

CHAPTER 3: RESULTS

The first research question concerned the timing of the self-efficacy questionnaire and the impact on perceived self-efficacy scores. An independent-samples t-test was conducted to compare the perceived self-efficacy scores between the group of residents that took the self-efficacy questionnaire first and the group that did the demonstrated interview first. The group that took the self-efficacy questionnaire first ($M = 3.87$, $SD = .49$) reported lower self-efficacy scores than the group that did the demonstrated skills first ($M = 3.95$, $SD = .44$); $t(161) = -1.15$, $p > .05$, however the difference is neither substantial nor statistically significant.

The second research question compared the relationship between self-efficacy and demonstrated skills by the timing of the self-efficacy questionnaire. For the group that completed the self-efficacy questionnaire first, the relationship between self-efficacy and demonstrated skills ($r = .12$, $p > .05$) was stronger than with the group that completed the demonstrated interview first ($r = -.02$, $p > .05$), however neither of these correlations were substantial nor statistically significant.

The third hypothesis predicted that the relationship between the duration of the training program and levels of demonstrated skills is mediated by levels of perceived self-efficacy. The relevant correlations are reported in Table 2. Using Hayes' (2009; 2017) PROCESS macro in SPSS, the model predicting demonstrated skills from duration of the training program and levels of perceived self-efficacy was significant: $F(2, 152) = 26.04$, $p < .001$, R-squared $= .26$. There were significant paths between amount of training and self-efficacy ($b = .078$, $p < .01$, 95% CI [.02, .11]) and between amount of training and demonstrated skills ($b = 1.15$, $p < .01$, 95% CI [.84, 1.48]), but the indirect effect of amount of training on demonstrated skills through self-efficacy is not significant ($b = -.03$, $p > .05$, 95% CI [-.13, .03]). These findings replicate

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previous studies (Grayson-Sneed, 2015; Smith et al., 1998) in that there was a statistically

significant correlation between the duration of the training program and perceived self-efficacy

and between the duration of the training program and demonstrated skills, but no significant

correlation between perceived self-efficacy and demonstrated skills.

CHAPTER 4: DISCUSSION

Overview of Findings

The literature on self-efficacy is yet to provide evidence in order to establish a standard

practice for administering perceived self-efficacy questionnaires (Bandura, 1977; Bandura, 2006;

Bandura et al., 1980; Telch et al., 1982). The current study aimed to analyze the influence of the

timing of a self-efficacy questionnaire by comparing perceived self-efficacy scores between a

group that completed the questionnaire before and a group that completed the questionnaire after

a demonstrated skills task. The data showed that there was no substantial or statistically

significant difference in self-efficacy scores by timing of questionnaire. This finding has

important implications for the role of self-efficacy in training contexts, as many training

programs either intentionally or unknowingly vary the timing of self-efficacy questionnaires.

Instead, the data are consistent with Bandura's (1980; 2006) claims that making self-efficacy

judgments alone has no impact on subsequent performance.

The second research question did not yield a significant result in that neither the group

that completed the self-efficacy questionnaire first nor the group that completed the

demonstrated skills first showed a significant relationship between perceived self-efficacy and

demonstrated skills. After closely analyzing the data, this seems to be caused by the extreme

variation and restriction in range of the perceived self-efficacy variable (See Table 1) which are

discussed in the limitations below. However, this finding again supports Bandura's (1980; 2006)

claims that judging self-efficacy does not impact subsequent demonstration of skills.

The third hypothesis was not supported by the data. Again, this seems to be caused by the

restriction in range of the perceived self-efficacy variable. The paths between duration of training

and perceived self-efficacy and between duration of training and demonstrated skills were

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statistically significant, but the path between perceived self-efficacy and demonstrated skills fell short of significance, replicating findings from previous studies (See Table 2).

Although the relationships involving perceived self-efficacy were not as expected when testing the third hypothesis, the relationship between the duration of the training program and demonstrated skills followed the pattern expected from a training program. Post-hoc analyses of variance were performed to investigate the effect of the variance in duration of the training program on demonstrated skills. After running the ANOVA with the six different training levels, additional analyses were run combining the levels into training groups (See Table 3). The one-way ANOVA with the no training, psychosocial training only, and any PCI training groups showed that there is a statistically significant ($p < .001$) difference between demonstrated skills for the different training duration groups [$F(2, 152) = 38.14$], and contrast comparisons showed that the group consisting of any resident with PCI training is significantly higher in demonstrated skills than the no training and psychosocial training only groups, $t(152) = 4.96, p < .001$. This suggests that receiving any amount of PCI training will result in higher levels of demonstrated skills compared to groups that do not receive any PCI training which confirms the effectiveness of the training program (Smith et al., 1998; Smith et al., 2013).

Additionally, when comparing the duration of the training program based on groups (no training, psychosocial training only, and any PCI training) all of the training levels that showed a negative correlation between self-efficacy and demonstrated skills fall into the same group, the one with any PCI training. This finding warrants further investigation to answer the question as to why only the groups of residents that received any PCI training experience a negative relationship between perceived self-efficacy and demonstrated skills. The data suggest that this might be attributable to the duration of training for the individuals with higher levels of

demonstrated skills as the residents who scored higher in demonstrated skills were in groups that received PCI skills training. The literature shows that as experience with a task increases, judgments about efficacy become more routinized and automatic (Gist & Mitchell, 1992). Earlier reports of self-efficacy may involve a more detailed, in-depth analysis but with experience as the training process goes on, the rating process moves from controlled to automatic. This might influence the relationship between self-efficacy and training; as residents go through the training process, they might not be as careful when rating of their own self-efficacy. Similarly, Mencl et al. (2012) note that as individuals move through a training program they learn about new details of the specific process under study. Learning new information about the process may reveal to the learner that an initial evaluation that the task is easy was incorrect as they learn that the process is more complex than they originally thought. This would result in decreasing self-efficacy scores as the training process advanced and explain the negative relationship between self-efficacy and demonstrated skills for the groups that received PCI training.

Limitations

The major limitation of the current study was that this is a secondary analysis of data that were collected for a larger grant study, and therefore the author had no control over the measures used in the data-gathering procedure. The primary limitation here was the self-efficacy questionnaire used and the resulting distribution of perceived self-efficacy scores. Based on previous research (Gist & Mitchell, 1992; Gist et al., 1991; Harrison, Rainer, Hochwarter, & Thompson, 1997; Lee & Bobko, 1994; Mathieu et al., 1993; Mencl et al., 2012, Saks, 1995; Salas et al., 2012) the expectation was that as training in the PCI increased, so would perceived self-efficacy and demonstrated skills, but this was not necessarily the case. The link between the duration of the training program and demonstrated skills was exemplified, but no significant

relationship with perceived self-efficacy and demonstrated skills was found. This lack of a significant relationship can be attributed to the restriction in range of the perceived self-efficacy variable. Although self-efficacy scores were distributed normally, the distribution was centered at 3.91 on a scale from one to five. Additionally, there is an anomaly in that the control group that received no training for three years ($M = 4.12$, $SD = .42$) scored higher than the average.

Another limitation of the current study is that research on self-efficacy shows that over time, judgments of self-efficacy might become problematic (Gist & Mitchell, 1992), which might limit the validity of repeated self-efficacy ratings throughout the training process. To this point, the post-hoc analyses of the data showed that second self-efficacy ratings for residents that completed the demonstrated interview at two points of the training program were problematic, therefore only time one data entries were included in the analyses.

A final limitation to the current study is in the nature of the training process. Since the data collection for the dataset used in the current study began four years ago at the beginning of a training program, only the residents that began to receive the PCI training immediately made it through the entire training process. This left only a small group ($n = 3$) of residents that made it through all three years of psychosocial and PCI training while every year more residents entered the training process at stage one leaving an extremely large group ($n = 97$) of untrained residents. Ideally, the groups of residents that received high duration levels of training would be as large as the rest of the groups. Taken together, the major limitations of this study (restriction in range of the self-efficacy variable and low numbers of highly trained residents) might account for why perceived self-efficacy ratings did not seem to mediate the relationship between the duration of the training program and levels demonstrated skills. If there was more variance in the self-

efficacy variable and the sample included as many highly trained as untrained residents, we

would expect to see a significant mediation model.

APPENDICES

APPENDIX A

Efficacy Questionnaire

For each statement below, circle the number that best represents your degree of **confidence** with <u>every</u> patient encounter.

I am <u>**confident**</u> that I can:	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
1. Indicate the time available for the interview	1	2	3	4	5
2. Obtain a list of all issues the patient wants to discuss	1	2	3	4	5
3. Use open-ended skills to obtain a description of the patient's physical symptoms	1	2	3	4	5
4. Use open-ended skills to develop a general personal context of the physical symptoms	1	2	3	4	5
5. Use emotion-seeking skills to develop an emotional focus	1	2	3	4	5
6. Respond to emotion by naming, understanding, respecting, and supporting it	1	2	3	4	5
7. Recognize when my own negative emotional reactions to the patient occur	1	2	3	4	5
8. Give bad news, such as a cancer or AIDS diagnosis, to a patient	1	2	3	4	5
9. Determine if a patient is ready to change an adverse health habit, such as smoking	1	2	3	4	5
10. Inform and motivate patients to change adverse health habits, such as smoking	1	2	3	4	5
11. Conduct a complete diagnostic history in a psychiatric patient	1	2	3	4	5

12. Diagnose a patient as somatization (unexplained symptoms)	1	2	3	4	5
13. Distinguish unipolar from bipolar depression	1	2	3	4	5
14. Initiate effective treatment in a newly diagnosed patient with bipolar depression	1	2	3	4	5
15. Diagnose and manage a suicidal patient	1	2	3	4	5
16. Treat a patient with disabling chronic pain where there is no underlying disease explanation for the pain	1	2	3	4	5
17. Identify misuse of alcohol and prescription opiates	1	2	3	4	5
18. Treat misuse of prescription opiates	1	2	3	4	5
19. Know and can utilize community resources, including mental health referral, for managing patients with mental health problems	1	2	3	4	5
20. Work effectively with nurses and other caretakers	1	2	3	4	5

APPENDIX B

Coding Sheet

Setting the Agenda
   1. Uses own *and* patient's last name or other expressed preference (1 = No   2 = Yes)
   2. Indicates time available (1 = No   2 = Yes)
   3. Obtains agenda *and* inquires for additional items (1 = No   2 = Yes)
Physical Story
   4. The resident starts open-endedly focusing on physical agenda item (1 = No   2 = Yes)
   5. Addresses only physical issues volunteered by the patient (1 = No   2 = Yes)
Personal Story
   6. Keeps patient focused open-endedly on personal story(ies) to elaborate them (1 = No   2 = Yes)
   7. Addresses only personal topics volunteered by the patient (1 = No   2 = Yes)
   8. Encourages personal information open-endedly when patients do not volunteer it and patient remains focused on the physical story (1 = No   2 = Yes)
   9. Uses echoing to expand understanding of personal story (1 = No   2 = Yes)
   10. Uses requests to expand understanding of personal story (1 = No   2 = Yes)
   11. Uses summarizing to expand understanding of personal story (1 = No   2 = Yes)
Emotional Story
   12. Keeps patient focused open-endedly on emotional story(ies) to elaborate them (1 = No   2 = Yes)
   13. Addresses only emotional topics volunteered by the patient (1 = No   2 = Yes)
   14. Inquires about emotions by using "how does that make you feel?" question (1 = No   2 = Yes)
   15. Inquires about emotions by using other emotion seeking question (1 = No   2 = Yes)
   16. Uses echoing to expand understanding of emotional story (1 = No   2 = Yes)
   17. Uses requests to expand understanding of emotional story (1 = No   2 = Yes)
   18. Uses summarizing to expand understanding of emotional story (1 = No   2 = Yes)
   19. Uses "naming" statement in response to expression of emotion (1 = No   2 = Yes)
   20. Uses specific "I understand" statement in response to expression of emotion (1 = No   2 = Yes)
   21. Uses other understanding statements in response to expression of emotion (1 = No   2 = Yes)
   22. Uses "praise" statement in response to expression of emotion (1 = No   2 = Yes)
   23. Uses "acknowledge plight" statement in response to expression of emotion (1 = No   2 = Yes)
   24. Uses "direct support [from interviewer]" statement in response to expression of emotion (1 = No   2 = Yes)
   25. Uses "indirect support [from others]" statement in response to expression of emotion (1 = No   2 = Yes)
   26. Uses "joining language" that indicates support to the patient in response to expression of emotion
      (1 = No   2 = Yes)

Indirect Patient-Centered Skills
27. Uses "impact on self" statement (1 = No   2 = Yes)
28. Uses "impact on others" statement (1 = No   2 = Yes)
29. Uses "beliefs/attributions" statement (1 = No   2 = Yes)
30. Uses "self-disclosure" statement (1 = No   2 = Yes)
General Skills
31. Indicates change in direction of questioning at end of interview to disease focus (1 = No   2 = Yes)
32. Interruptions are appropriate or nonexistent (1 = No   2 = Yes)
33. Resident dominates content and direction of interview (1 = No   2 = Yes)

Tables

Table 1

Self-Efficacy and Demonstrated Skills Information by Training Group

Group	n	Self-Efficacy	Demonstrated Skills	r (Self-Efficacy x Dem. Skills)
first year, no training	97	$M = 3.83$, $SD = .44$, range: 2.75 – 5	$M = 3.68$, $SD = 2.04$	$r = -.05$
second year, no training (control)	3	$M = 3.48$, $SD = .63$, range: 3 – 4.20	$M = 2.00$, $SD = 1.0$	$r = .95$
third year, no training (control)	22	$M = 4.12$, $SD = .42$, range: 3.45 – 5	$M = 3.11$, $SD = 1.76$	$r = -.6$
psychosocial training only	34	$M = 3.94$, $SD = .47$, range: 2.7 - 5	$M = 7.26$, $SD = 4.42$	$r = .24$
psychosocial training and PCI (2 years)	4	$M = 4.25$, $SD = .43$, range: 3.85 – 4.65	$M = 10.25$, $SD = 6.29$	$r = -.95$
psychosocial training and PCI (3 years)	3	$M = 4.32$, $SD = .59$, range: 3.95 – 5	$M = 12.00$, $SD = 7.00$	$r = -.84$

Table 2

Correlation Matrix for Duration of Training Program, Perceived Self-Efficacy, and Demonstrated Skills for Only First Data Entries

	Duration of Training	Self-Efficacy	Demonstrated Skills
Duration of Training			
Self-Efficacy	.22**		
Demonstrated Skills	.50**	0.06	

Note. ** Correlation is significant at the .01 level (2-tailed). $N = 16$

Table 3

ANOVA Results by Training Groups

	df Between Groups	*df* Within Groups	*F*-Statistic	*p*-value	Contrast Results
Original Levels	5	149	15.59	< .001	
Groups (ver. 2)	2	152	38.11	< .001	*t*(152) = 4.96, *p*< .001

Note. Original levels compared all six levels of training groups. Groups (ver. 2) included comparisons between: no training (n = 122); psychosocial training only (n = 34), and any PCI training (n = 7).

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