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EVALUATING THE EFFICACY OF SYSTEMATIC PATIENT FEEDBACK IN AN INTEGRATED MENTAL HEALTH AND PRIMARY CARE SETTING

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EVALUATING THE EFFICACY OF SYSTEMATIC PATIENT FEEDBACK IN AN INTEGRATED MENTAL HEALTH AND PRIMARY CARE SETTING

DISSERTATION

A dissertation submitted in partial fulfillment of the

requirements for the degree of Doctor of Philosophy in the

College of Education

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By

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2019

ABSTRACT OF DISSERTATION

EVALUATING THE EFFICACY OF SYSTEMATIC PATIENT FEEDBACK IN AN INTEGRATED MENTAL HEALTH AND PRIMARY CARE SETTING

The implementation of the Affordable Care Act (ACA, 2010) has resulted in efforts to make healthcare more affordable and effective. One strategy for making healthcare more affordable and effective is the integration of behavioral health and primary care. In today's healthcare system, it is estimated that approximately one in three patients seen in a primary care setting meet the criteria for a mental health disorder and another third – while not meeting those criteria – are experiencing psychological symptoms that impair their functioning (Kessler, 2005). Despite the evidence supporting behavioral health services in a primary care setting, treatments tend to be diagnosis specific (Archer et al., 2012; Lemmens, Molema, Versnel, Baan, & deBruin, 2015) and as such do not capture patients' varied presentations. Patient feedback offers a potential strategy to improve the quality of services provided. Patient feedback is the use of measures administered at each session to assess distress and track progress. There is a robust psychotherapy literature demonstrating the effectiveness of using routine progress monitoring in clinical practice but it has not been evaluated in an integrated care setting. Therefore, the purpose of this study was to evaluate the efficacy of patient feedback in this setting. Preliminary results of this ongoing study revealed there was a moderate feedback effect using both the ORS (d = 0.38) and PHQ-9 (d = 0.12) as the outcome measures. Using the ORS as the outcome measure, patients in the feedback condition demonstrated faster treatment gains, which suggests that they improved faster compared to those patients in the TAU condition. Additionally, patients in the feedback condition incurred significantly more reliable change compared to TAU. However, this result was not replicated when the PHQ-9 was used to measure outcome. Overall, the results suggest that PCOMS may be a potentially useful quality improvement strategy.

KEYWORDS: Integrated Healthcare, Patient Outcomes, Quality Improvement, Progress monitoring and feedback, PCOMS

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CHAPTER ONE: INTRODUCTION AND REVIEW OF THE LITERATURE

Currently, the dominant model for explaining health and disease in the United States is known as the biomedical model (McDaniel & deGruy, 2014). This model is reductionistic in that it assumes a separation of mind and body, which excludes "mental" disorders from the concern of medicine unless there is a biological basis (Engel, 1977). Missing from the biomedical model are factors outside of biology that impact health. For example, behavior based lifestyle choices such as tobacco use, sedentary behavior, and poor diet are among the leading causes of death in the United States. Recognition of the impact of these factors has necessitated a shift to a more patient-centered model focused on integrating multiple disciplines to address patients' needs in a more comprehensive manner (Johnson, 2013).

Since the implementation of the Affordable Care Act (ACA, 2010), efforts have begun to make healthcare more affordable and effective. Integrating behavioral health and primary medical care is one strategy to provide more patient-centered care. Part of the rationale behind integrating behavioral health with primary care is the fact primary care has long been the default behavioral health provider. Approximately one in three patients seen in a primary care setting meet criteria for a mental health disorder and another third – while not meeting those criteria – are experiencing psychological symptoms that impair their functioning (Kessler et al., 2005).

Despite the prevalence of mental health concerns, primary care providers are far too often not equipped to adequately address mental health concerns. A study conducted by Kathol, Butler, McAlpine, and Kane (2010) found that primary care providers correctly diagnose less than one third of their patients who have a mental health concern

and of those correctly diagnosed only half receive acceptable treatment. Mental health professionals working in a primary care setting can address these issues by more accurately diagnosing patients who present in primary care with mental health concerns and providing evidence-based interventions to address those concerns.

Healthcare utilization also plays a role in the integration of behavioral health and primary care. First, many people suffering from a mental health disorder receive no treatment or treatment that is inadequate (Kathol et al., 2010). Second, studies have consistently demonstrated that a majority of individuals receive treatment for behavioral health concerns at primary care practices rather than a specialty mental health provider (Regier et al., 1993; Wang et al., 2005). Peterson, Miller, Payne-Murphy, and Phillips (2014) examined four different for patterns of care for people with mental health concerns who visited the following care providers: mental health only, primary care only, dual care (both mental health and primary care), and other provider combinations. Consistent with previous studies (Regier et al., 1993; Wang et al., 2005), their results demonstrated that most patients with mental health conditions were treated solely in a primary care setting. Research has also shown that patients are more likely to visit a primary care provider than a behavioral health provider (National Center for Health Statistics, 2015). This preference may be due to the social stigma associated with seeking mental health services. The integration of behavioral health and primary care offers a strategy to reduce the stigma around behavioral health services by making it a routine part of primary care.

The separation of medical services from behavioral health services is referred to as fragmentation (Stange & Ferrer, 2009). Fragmentation has resulted in a healthcare

system that is financially inefficient, ineffective, and unsustainable. Despite the unprecedented spending on healthcare in the United States, fragmentation results in insufficient care and has contributed to the poor health status of citizens (McDaniel & deGruy, 2014). This is evidenced by the fact that the United States currently ranks 37th compared to all other developed nations on commonly measured health outcomes (Murray & Frenk, 2010).

One of the common reasons that people seek medical services is for the management of chronic illnesses such as diabetes, chronic obstructive pulmonary disease (COPD), asthma, hypertension, and other cardiovascular illnesses (Bojadzievski & Gabbay, 2011). Most Americans die as a result of complications of a chronic illness and 75% of our healthcare costs go toward the treatment of chronic diseases (Centers for Disease Control and Prevention, 2009). As the U.S. population ages, costs will increase accordingly (Lawrence Fisher & Dickinson, 2014).

Chronic illnesses are frequently accompanied by psychosocial and mental health disorders. A study conducted by Barnett et al. (2012) found that 8.3% of all patients and 36.0% of people with multimorbidity were diagnosed with both a physical and mental health disorder. Furthermore, as the number of physical health problems increases, the probability of having a mental health disorder also increases. Research has shown that the presence of a mental health disorder with a medical condition often leads to an exacerbation of disability, poor outcomes, and increased cost (Katon et al., 2005, 2009; Merikangas et al., 2007; Olfson et al., 2014).

Statement of the Problem

Given the current state of primary care and the impact of psychosocial factors on health, there is a clear need for the integration of mental health services within primary care to accurately identify and treat psychological distress, ultimately improving patient outcomes and potentially reducing healthcare costs. Although there is considerable research demonstrating the effectiveness of integrated care models in treating specific disorders such as depression and anxiety (Archer et al., 2012; Lemmens, Molema, Versnel, Baan, & de Bruin, 2015), there is a clear gap in the literature related to strategies that improve the behavioral health care provided to patients. As is the case in other mental health settings, dropouts are a concern as studies have demonstrated that approximately 61% of patients only attend one session (Funderburk et al., 2011).

Patient feedback offers a potential quality improvement strategy for implementing an evidence-based practice that can be used to reduce dropout rates and improve care with patients who present with a variety of comorbid mental health concerns. Patient feedback (often called client feedback, routine outcome monitoring, and progress feedback, among others) is the use of measures administered at each psychotherapy session to assess distress and track treatment progress. There is a robust psychotherapy literature demonstrating the efficacy of using routine progress monitoring in clinical practice (Anker, Duncan, & Sparks, 2009; Lambert & Shimokawa, 2011; Reese, Norsworthy, & Rowlands, 2009). To date, two patient feedback systems have sufficient research support to warrant inclusion on the Substance Abuse and Mental Health Administration's (SAMHSA) National Registry of Evidence-Based Programs and Practices. The two feedback systems that have achieved this status are the Outcome Questionnaire – 45.2 System (OQ-45; Lambert, 2010) and the Partners for Change

Outcome Management System (PCOMS; Duncan, 2012). Both PCOMS and the OQ-45 System have been studied in university counseling centers, inpatient and outpatient hospital settings, and community mental health agencies; however, neither patient feedback system has been studied in an integrated healthcare setting. The typical treatment model in integrated healthcare is brief (approximately 15-30 minutes per session) and focused (approximately 3-6 sessions) evidence-based interventions (Nash, McKay, Vogel, & Masters, 2012). Given that PCOMS measures can be administered in a short time period it may offer a more feasible strategy for use in a busy integrated care system. Therefore, the purpose of this study was to evaluate the use of patient feedback, specifically PCOMS, in an integrated healthcare setting.

Integration of Healthcare

Integrated behavioral health and primary care is defined by the Agency for Healthcare Research and Quality Lexicon for Behavioral Health and Primary Care (Peek, 2013) as:

> "The care that results from a practice team of primary care and behavioral health clinicians working together with patients and families, using a systematic and cost-effective approach to provide patient-centered care for a defined population. This care may address mental health, substance abuse conditions, health behaviors (including their contribution to chronic medical illnesses), life stressors and crises, stress related physical symptoms, or inefficient patterns of healthcare utilization. (p.2)"

The previously mentioned changes in healthcare have resulted in a myriad of integration models (for an in depth look at models, see Collins, 2010). The difference

between the integrated healthcare models is the level of integration. The least integrated model is known as the improved collaboration model. In this model, medical and mental health providers practice in separate locations and have separate billing/ reimbursement procedures. Mental health providers serve in a consultant role, helping with the management of patients who present with complex issues. A second, and more integrated model is the co-located services model. Co-located services offer both primary care and mental health services within the same physical structure; however, these practices operate independently. Patients who are seen in the primary care offices are referred to mental health services if necessary. However, because the practices operate separately, patients must schedule new appointments and endure a second intake process, which places and increased time and resource burden on patients. This burden may result in patients failing to follow through with those appointments.

The most integrated model is known as the primary care behavioral health model (PCBH). The PCBH model is a fully integrated model where behavioral health is a routine part of medical care. During a visit patients are just as likely to see a behavioral health provider (BHP), as they are to see a nurse (Strosahl, 1998). BHPs function as a member of the primary care team and temporarily co-manage patients with the physician once consulted. Within the PCBH system, mental health professionals will often take "warm handoffs" from physicians to provide patients with education, case management, telephone monitoring, and skill coaching (Collins, 2010). In general, BHPs in this setting conduct brief (15 to 30 minute) sessions to educate patients about their condition, discuss self-management strategies, and help them better manage the condition at home. This level of integration is promising due to the level of integration and access to BHPs.

Patients do not have to make a separate appointment to see a BHP because they are on site and available to patients during regularly scheduled medical appointments. Furthermore, the stigma of receiving mental health treatment may be reduced, because BHPs are housed at the same site as the primary healthcare provider.

Support for Integration of Healthcare

Current literature related to behavioral health outcomes in an integrated primary care setting have been largely disease specific (e.g., diabetes, congestive heart failure). A recent meta-review (Martínez-González, Berchtold, Ullman, Busato, & Egger, 2014) examined both systematic reviews and meta-analyses evaluating the impact of integrated care on a variety of outcomes for congestive heart failure (CHF), diabetes, COPD, and asthma. The review demonstrated that the integration of care improves outcomes. Specifically, for patients suffering from CHF the integration of care was shown to reduce mortality, hospital admissions, hospital readmissions, and emergency department (ED) visits. In patients with diabetes, integrated care improves glycemic control, adherence to treatment guidelines, and quality of life. Readmissions were also reduced. Similarly, in patients suffering from COPD and asthma, integrated care was shown to improve adherence to treatment guidelines, reduce the number of hospital readmissions, visits to the ED, and a reduction in length of hospital stay.

Depression and Anxiety. Given that anxiety and depression are two of the most common concerns encountered in primary care, extensive research has been conducted regarding the impact of integrated care on the treatment these disorders. A Cochrane review (Archer et al., 2012) assessed the effectiveness of integrated care for patients suffering from anxiety or depression, using 79 randomized clinical trials (RCTs)

involving 24,308 participants. For adults suffering from depression, their results demonstrated that treatment in an integrated care model resulted in significantly greater improvement in the short-term, medium-term, and long-term. Likewise, the results demonstrated significantly reduced anxiety symptoms among adults suffering from anxiety in an integrated care setting in the short-, medium-, and long-term. Aside from those primary findings, secondary benefits were also found, which included: less medication use, improved mental health, quality of life, and patient satisfaction.

Other studies have demonstrated that the integration of behavioral health and primary care reduces both anxiety and depressive symptoms in patients with diabetes and heart disease (Bogner, Morales, de Vries, & Cappola, 2012; Coventry et al., 2015; Katon et al., 2010) with effect sizes for depression ranging from $d = 0.30$ (Coventry et al., 2015) to $d = 0.67$ (Katon et al., 2010). Regarding health outcomes, integrated care has been shown to improve glycemic control in patients with diabetes (Bogner et al., 2012) as well as improve cholesterol levels and blood pressure in patients with coronary heart disease (Katon et al., 2010). Furthermore, patients treated in an integrated care setting are more likely to rate themselves as better self-managers, have improved quality of life, and have more satisfaction with the care they received (Coventry et al., 2015; Katon et al., 2010).

However, a RCT conducted by Carney, Freedland, Steinmeyer, Rubin, and Ewald (2016) evaluated the efficacy of integrated care for treating 201 patients who screened positive for depression in a cardiology clinic. The results found no significant differences between groups on the BDI-II at 3, 6, or 12-month follow up. They also found no differences in remission rates or hospitalizations. This study used a collaborative care model where a case manager was assigned patients and conducted clinical interviews to

determine a provisional diagnosis. A consulting psychologist or psychiatrist then provided patients with treatment recommendations. Treatment options ranged from antidepressants to psychotherapy.

Reducing Health Disparities. Integrated healthcare models also offer a potential way to reduce racial health disparities by offering care that is more comprehensive. Angstman et al. (2015) conducted a retrospective chart review comparing a usual care group (N = 5,588) to an integrated care group (N = 3,422) on depression outcomes. Of particular interest was whether the collaborative care condition resulted in a decrease in the disparity in treatment outcomes between White patients and patients who were members of a racial/ethnic minority group. The results demonstrated that in the usual treatment group there was a significant difference in treatment outcomes favoring the White patient population. However, the analysis of the integrated care group revealed similar rates of depressive symptoms and remission rates, which suggests that the use of an integrated care model might help to reduce the disparity in treatment outcomes.

Substance Use. Substance use disorders, particularly alcohol use disorders are frequently seen in primary care settings. As a result, research has been conducted evaluating the effectiveness of integrated care at reducing problem drinking. Overall, extant literature suggests that integrated care may be as effective as specialty care at reducing the quantity of drinking as well as the frequency of binge drinking (Oslin et al., 2006). A recent study by Oslin et al. (2014) randomized 183 veterans diagnosed with alcohol dependence to either an integrated alcohol care management program or standard outpatient specialty care. The primary outcome measures were treatment engagement, measured by the number of visits made and number of days of heavy drinking as

measured by the Time Line Follow Back (TLFB). The TLFB is a report of the number of drinks a person has had for the past 60 days. The results showed that the alcohol care management group attended more days (M = 11.31; SD = 6.45) compared to the specialty care group (M = 6.43; SD = 6.45). Also, the alcohol care management group was more likely to refrain from heavy drinking than the specialty care group. These results suggest that treatment in an integrated care setting might be an alternative for patients struggling with their alcohol use. However, these results should be interpreted with caution as the study was conducted in a VA setting and therefore may not generalize to other populations.

Limitations of Integrated Healthcare Literature

The evidence supporting the integration of healthcare is best understood in the context of the limitations of the studies conducted. One of the primary limitations of the literature is the fact that many of the studies are disease specific (e.g., diabetes). Although the RCT design offers control over a variety of confounding variables, it is limited with regard to external validity because it does not accurately reflect the unique comorbidities of patients that present for care in a primary care setting.

A second limitation of the literature is the variability in setting and clinicians. Few studies examined define the level of integration in the healthcare setting. Because there is no control over the level of integration, it is difficult to determine the impact of the level of integration on outcomes. For example, fully integrated care may result in a greater improvement compared to other levels of integration. Additionally, there is variability in who is providing services across the literature. In some studies, registered nurses are administering treatment; in others, it is a team of both nurses and psychiatrists,

in still others it is social workers or other mental health professionals. Although the types of treatments and providers are being reported, there is little consistency across studies. This difference in knowledge, training, and the specific interventions used across the professionals providing services highlights the need to understand the impact of such factors on mental health outcomes.

Patient Feedback

Routine outcome monitoring, also referred to as client or patient feedback, is the process of using outcome measures over the course of treatment to track progress (Lambert, 2010). While research has demonstrated that psychotherapy is effective (Lambert, 2013), approximately 20% of patients drop out (Swift, Greenberg, Whipple, & Kominiak, 2012) and numerous patients do not benefit from therapy (Reese, Duncan, Bohanske, Owen, & Minami, 2014). Patient feedback offers a way for clinicians to identify those patients who are not benefitting from therapy and therefore are at risk for dropping out. Continuous monitoring provides opportunities for clinicians to work with patients to revise goals, alter interventions, and make other necessary adjustments to prevent deterioration or dropout (Duncan & Reese, 2015).

Over the years, several feedback systems have emerged. However, only two systems have sufficient research support, including randomized controlled trials (RCTs), to warrant inclusion on the Substance Abuse and Mental Health Administration's National Registry of Evidence-Based Programs and Practices. The two systems that have achieved this status are the Outcome Questionnaire – 45.2 System (OQ-45; Lambert, 2010) and the Partners for Change Outcome Management System (PCOMS; Duncan, 2012).

The OQ-45 system (Lambert, 2010) is a 45-item self-report measure designed to assess psychological functioning. Each item is measured on a five-point Likert scale ranging from 0 (*never*) to 4 (*almost always*). The questions comprise three domains of functioning: subjective discomfort, interpersonal relationships, and social role performance. Scores can range from 0 – 180 with higher scores reflecting higher levels of distress. The OQ-45 is administered prior to each session and categorizes patients based on score, paying particular attention to patients who are at risk of dropping out. Patients are categorized based on an actuarial algorithm derived from normative data. The data are used to identify those patients who are at risk for poor outcomes. Clinicians are alerted when patients are at risk of poor outcomes so that they can alter treatment according to the patient's needs. Research demonstrates that therapists are poor at identifying those patients who are at risk for poor outcomes (Chapman et al., 2012; Hannan et al., 2005). In particular, the study conducted by Hannan and colleagues (2005) tested therapist accuracy at identifying those patients who were at risk for poor outcomes against the algorithm used by the OQ-45 to identify at risk patients. The results demonstrated that the algorithm outperformed therapists' judgement of those patients at risk for a poor outcome with therapists identifying 1 of the 26 patients while the OQ-45 algorithm identified 20 of the 26 patients. Thus, the use of systematic feedback offers a potential strategy to improve the identification of those patients at risk for poor outcome and offer clinicians an opportunity to modify treatment in a way that prevents drop out and improves outcomes.

The Partners for Change Outcome Management System (Duncan, 2012) was inspired by the OQ-45 but was modified to be more feasible in the context of everyday

clinical practice. It consists of two brief four-item measures (the Outcome Rating Scale and the Session Rating Scale) that are administered at each session and focus on increasing patient engagement throughout therapy. Each measure is completed with the patient and the clinician uses the information from each assessment to facilitate a conversation in session. The Outcome Rating Scale (ORS; Miller & Duncan, 2000) was developed based on the OQ-45 (i.e., the three OQ subscales were modified and comprise the first three items of the ORS) and is administered at the beginning of each session to measure general distress. It consists of four 10-centimeter visual analog scales measuring four domains: individual, interpersonal, social, and overall. One way that PCOMS differs from the OQ-45 system is the use of the Session Rating Scale (SRS; Miller, Duncan, & Johnson, 2002) to measure the working alliance. The SRS is administered at the end of each session and consists of four 10-centimeter visual analog scales measuring the following aspects of the working alliance: relationship, goals and topics, approach or method, and overall. For each measure, the patient is instructed to place a mark on the line, with good estimations on the right and poor estimations on the left. Scores on both the ORS and SRS can range from 0 – 40. Higher scores indicate less distress (ORS) or a better working alliance (SRS).

Effects of Patient Feedback

The benefit of patient feedback has been evaluated in a variety of settings. A meta-analysis conducted by Lambert and Shimokawa (2011) investigated the effects of patient feedback, focusing specifically on PCOMS and the OQ-45 systems. The results of their literature review yielded three RCT studies evaluating PCOMS (Anker, Duncan, & Sparks, 2009; Reese, Norsworthy, & Rowlands, 2009). A study conducted by Reese

and colleagues comprised two different studies conducted at two different sites. The first study was done at a university counseling center and patients were randomized to either a PCOMS based feedback condition or to a treatment-as-usual (TAU) condition where no feedback was used. Reese et al. (2009) reported an effect size of $d = 0.54$ when comparing the feedback group to TAU using pre-post ORS change scores. Additionally, the authors reported that 80% of the clients in the feedback condition achieved reliable change (an improvement of 5 or more points), compared to 54% of the clients receiving TAU.

The second study by Reese and colleagues (2009) was conducted at a graduate training clinic. This study differed from study one in that therapists, rather than clients, were randomly assigned to either a PCOMS based feedback condition or TAU. The results yielded an effect size of $d = 0.49$ when comparing the PCOMS based feedback condition to the TAU condition using pre-post ORS change scores. Similar to the first study, the results showed that 67% of the clients in the feedback condition achieved reliable change compared to 41% in the TAU condition.

The third study PCOMS study included in the meta-analysis by Lambert and Shimokawa (2011) was a RCT by Anker et al. (2009) with clients receiving couples therapy at a community counseling clinic. Couples were randomized to either a feedback condition or a TAU, no feedback condition. The authors reported an effect size of $d = 0.50$ when comparing post treatment ORS scores. Additionally, Anker et al. (2009) reported that 51% of the couples in the feedback condition achieved clinically significant or reliable change, compared to 23% in the TAU condition. This study was unique in that outcome was also measured by marital adjustment. The results regarding marital

adjustment were more moderate, with a reported effect size of $d = 0.29$. Furthermore, at 6-month follow up, those couples in the feedback condition were more likely to be together than couples in the TAU condition.

Lambert and Shimokawa (2011) also analyzed six feedback studies using the OQ feedback system (Harmon et al., 2007; Hawkins, Lambert, Vermeersch, Slade, & Tuttle, 2004; Lambert et al., 2001; Lambert et al., 2002; Slade, Lambert, Harmon, Smart, & Bailey, 2008; Whipple et al., 2003). Each study evaluated the effectiveness of providing feedback using the OQ system to clinicians about each client's improvement and providing warnings about clients who are not progressing and are therefore at risk of dropping out. Each study randomly assigned clients to either a feedback condition or a TAU condition. Consistent with the PCOMS studies, the TAU condition involved no feedback and therapists provided therapy from a variety of theoretical orientations.

The results of the three PCOMS studies were combined and a weighted random effect size was calculated for PCOMS. Weighted random effect sizes were calculated based on the reported effect sizes from the studies evaluating the OQ system. The results demonstrated an effect size of $r = .23$ for the PCOMS system, and an effect size of $r = .25$ for the OQ system among not-on-track clients. Regarding the effect of patient feedback on premature termination, the meta-analyses demonstrated that the number of patients who deteriorate or are at risk of premature termination are cut in half when patient feedback is implemented. Overall, the results of this meta-analysis demonstrate that clinicians should consider the use of these two feedback systems as a way to improve practice outcomes.

Since the publication of the meta-analysis by Lambert and Shimokawa (2011), six additional studies have been published evaluating the use of the OQ system and five have been conducted evaluating PCOMS (Hansen et al., 2015; Reese et al., 2014 Rise, Eriksen, Grimstad, & Steinsbekk, 2016; Schuman et al., 2015; She et al., 2018; Slone et al., 2015). With the exception of two studies (de Jong, van Sluis, Nugter, Heiser, & Spinhoven, 2012; Rise et al., 2016) the results are consistent with Lambert and Shimokawa's (2011) meta-analysis demonstrating the effectiveness of feedback.

In a RCT conducted in the Netherlands by deJong et al. (2012), 413 clients were randomly assigned to either a feedback condition (OQ-45) or TAU. The results demonstrated no significant effect of feedback. This study was unique because it also examined therapist factors such as internal feedback propensity, self-efficacy, and commitment to using the measures. Interestingly, the results showed that therapist factors moderated the effect of feedback. These results demonstrate that feedback is not effective under all circumstances and highlights the importance of taking into consideration therapist factors. However, it should be noted that the deJong et al. (2012) study design deviated from other studies in that the feedback was provided to each clinician at sessions 1, 3, 5, and subsequently every fifth session.

A second study, conducted by Davidsen et al. (2017) found no difference between PCOMS and TAU on eating disorder symptoms, two general distress measures, or attendance. However, a survey of therapists who participated in the study revealed that therapists did not did not find PCOMS useful and did not discuss the feedback with patients in session.

Patient feedback has also been shown to increase the rate of change as well as decrease premature termination. A study conducted by Reese, Toland, Slone, and Norsworthy (2010) evaluated the effect of patient feedback in couples' psychotherapy. In this study, couples were randomized to either a feedback condition or a TAU condition. The results demonstrated that those couples in the feedback condition improved at a faster rate (i.e., in fewer sessions) compared to those couples in the TAU condition.

Limitations of Patient Feedback Literature

One of the primary limitations consistently noted in the feedback literature is the use of one measure as both the feedback and outcome measure. With the exception of a couple of studies (Anker et al., 2009; Davidsen et al., 2017) most of the remaining studies share this limitation. This is concerning because if clinicians are given particular information regarding how the patient is doing and then discuss that information with the client during sessions, it may be that the scores on the instrument are more susceptible to change as a result. Therefore, it is important that studies use other measures to more accurately assess improvement. Likewise, having clients complete the measures at each session might produce testing effects, which are a threat to internal validity (Wampold, 2015). It is also important to note that the effects of feedback appear to be – at least in part – due to therapist factors such as therapists who are enthusiastic about the use of feedback (de Jong et al., 2012; Lutz et al., 2015). As was previously mentioned, de Jong et al. (2012) found that therapist factors such as internal feedback propensity, self-efficacy, and commitment to using the feedback measures impacted the effectiveness of feedback. These findings highlight the need to examine and control for therapist factors

that might impact treatment outcomes and bias the results. In addition to addressing some of the methodological weaknesses identified in the literature, this study is the first to evaluate the use of patient feedback in an integrated healthcare setting.

Implications for Counseling Psychology

As the demand for BHPs in integrated care continues to grow, it is important for counseling psychology to stay current by offering students opportunities to develop the skills necessary to be effective in a primary care environment. This has been reflected in the recently released *Competencies for Psychology in Primary Care* by the American Psychological Association (APA, 2013a) as well as in the website for the Association of Psychology Postdoctoral and Internship Center (APPIC, 2013). Currently, APPIC lists 128 internship sites and 69 postdoctoral training programs offering experience in a primary care setting. A survey mailed to program directors of APA accredited doctoral programs revealed that there are currently 45 programs offering training and supervision in integrated primary care settings (APA, 2018).

The primary care setting is fast-paced and requires a different set of knowledge and skills than specialty mental health care. BHPs in primary care settings need to be able to implement validated screening tools, motivational interviewing, self-management techniques, and focused brief interventions. Furthermore, they must be comfortable consulting with physicians, understand chronic disease models, substance use screening and interventions, and cultural competencies unique to a medical setting.

Mental health professionals in an integrated care setting provide patient care both directly - through in-person encounters - as well as indirectly as a member of the treatment team. To address the various behavioral concerns in primary care, BHPs

screen patients, provide outreach, and implement evidence-based interventions. Regarding interventions, the role of the BHP is to use evidence-based interventions to address psychological concerns, improve health behavior, and help in the management of chronic diseases and comorbidities such as depression and diabetes (Willborn et al., 2016), coronary heart disease (Frasure-Smith & Lespérance, 2010), and chronic pain (Kroenke et al., 2009). In these cases, interventions typically target behavioral aspects that are possibly contributing to the patient's physical health problem. The typical treatment model is to provide brief (approximately 15-30 minute sessions) focused (approximately 3-6 sessions) evidence-based interventions (Nash, McKay, Vogel, & Masters, 2012). In addition to interventions, BHPs provide psychoeducation and home-based practice to capitalize on the patient's strengths and resources to facilitate change.

Behavioral health providers are also involved in patient care through consultation. As consultants, they provide expert guidance to the primary care team regarding patient management issues. A common way that a BHP might consult with a physician is by meeting with the physician in the hallway to answer a question specific to a patient or about particular care issues. BHPs may also be called upon to more effectively manage patients who are high utilizers of healthcare resources. This may be done through the development of group visits of high resource utilizers, disease management protocols, or creation of new office procedures to assess and monitor the care of these patients (Peters & Elster, 2002). Given the training counseling psychologists receive related to clinical work and the emphasis placed on understanding the sociocultural context of patients when delivering treatments, they are uniquely positioned to contribute to integrated healthcare from both a clinical and research perspective. Research related to patient

feedback presents an opportunity for research being conducted by counseling psychologists to be used to improve care in an integrated healthcare setting.

Goals of the Current Study

The goal of this study was to evaluate the efficacy of PCOMS, a patient feedback system, for patients receiving care in an integrated healthcare setting. The study employed a RCT design comparing a feedback condition to TAU. The relationship between mental health concerns and physical health concerns as well as a need for improvement of screening and treatment has been well documented (Barnett et al., 2012; Fisher et al., 2008; Kathol, Butler, McAlpine, & Kane, 2010). Furthermore, changes in healthcare have resulted in a push for the integration of primary care and behavioral health services to address patient concerns in a more patient-centered and comprehensive manner in the hopes of improving outcomes. PCOMS is designed to be a patient-centered quality management system because it seeks to provide patients with agency in treatment by continually checking in with them regarding what concerns are most pressing. In the fast-paced environment of primary care, where the typical treatment model is brief (approximately 15-30 minutes per session) and focused (approximately 3-6 sessions), PCOMS is potentially useful because it is brief and can be administered quickly to patients. Thus, PCOMS, rather than another feedback system, is being evaluated in this setting given its perceived feasibility to potentially mitigate this concern.

Hypotheses Regarding Patient Feedback in Integrated Healthcare

This study evaluated the following five hypotheses regarding the impact of PCOMS on treatment outcome, premature termination, and rate of improvement. Due to

the nested nature of the data, it was necessary to control for therapist effects through the use of hierarchical linear modeling (HLM; Raudenbush & Byrk, 2002).

Hypothesis 1: Patients in the feedback condition will demonstrate more pre – post treatment gains than patients in the TAU condition as measured by the ORS and Patient Health Questionnaire – 9 (PHQ-9; Kroenke & Spitzer, 2002). The PHQ-9 will be the second outcome measure and is a commonly used screener for depression.

Hypothesis 2: Patients in the feedback condition will demonstrate treatment gains faster than those in the TAU condition.

Hypothesis 3: Significantly more patients in the feedback condition will achieve reliable change than patients in the TAU condition based on pre – post scores on both the ORS and PHQ-9.

Hypothesis 4: Significantly more patients in the feedback condition will achieve clinically significant change than patients in the TAU condition based on pre – post scores on both the ORS and PHQ-9.

Hypothesis 5: Patients in the feedback condition will have a significantly lower premature termination rate (defined as not completing treatment above the clinical cut-off scores for the ORS and PHQ-9) compared to patients in the TAU condition.

CHAPTER TWO: METHODS

Participants

Patients. Data were collected on patients who presented for treatment at three FQHCs located in Colorado. Patients were eligible to be involved in the study if they were currently receiving primary care services at one of three identified FQHCs located in Colorado. To be included in the study, patients were required to meet the following inclusion criteria: over the age of 18, have not received behavioral health services in the past three months, and have at least one therapy session following the initial encounter.

A total of 200 patients were enrolled in the study. Six participants were subsequently dropped, however, due to enrollment or protocol administration errors, leaving a total of 194 participants. Patients ranged in age from 18 to 72 with a mean age of 38.7 (*SD* = 13.91). Of these, 27.2% were male (*n* = 37) and 72.8% were female (*n* = 99). The sample primarily identified as White (58.1%, *n* = 79), followed by Hispanic/ Latinx (34.6%, *n* = 47), African American (3.70%, *n* = 5), Asian/ Pacific Islander (1.5%, *n* = 2), Bi-racial (0.7%, *n* = 1), and Other (1.5%, *n* = 2). Of the sample, 83.1% spoke English as their primary language (*n* = 113) while 16.2% spoke Spanish as their primary language (*n* = 22), and 1 participant (0.7%) did not indicate language.

A total of 44 (22.7%) attended only one session and were not included in the analyses. A *t* -test was conducted to determine whether there were differences in pre-ORS and pre-PHQ scores between those patients who attended only one session and those who attended two or more sessions. The results demonstrated that there was no

significant difference in pre-ORS score between the patients who attended one session (M = 19.47, SD = 9.15) and patients who attended two or more sessions (M = 17.75, SD = 8.35), $t(187) = 1.17$, $p = .24$. There also was not a significant difference in pre-PHQ score between the patients who attended one session (M = 9.37, SD = 5.6) and patients who attended two or more sessions (M = 11.44, SD = 6.54), $t(185) = -1.87$, $p = .06$.

Therapists. Data were also collected on clinicians providing clinical care at each of the FQHCs in Colorado. A total of 16 clinicians were enrolled in the study. The therapist ranged in age from 25 to 56 with a mean of 35.50 (SD = 8.47). A majority of the study clinicians were female (87.5%, n = 14) with only two male clinicians taking part in the study. Of the clinicians enrolled in the study 31.3% identified as White (n = 5), 25% identified as African American (n = 4), and 43.8% identified as Hispanic/ Latinx (n = 7). Clinicians were also asked to identify their primary theoretical orientation. Clinicians primarily reported using an integrative approach grounded in Cognitive Behavioral Therapy (68.75%, n = 11), followed by Eclectic (18.75%, n = 3), Brief/ Strategic/Reality (6.3%, n = 1) and Integrative (6.3%, n = 1). Regarding licensure, the clinicians fell into the following categories: student trainee (17.5%, n = 6), licensed social worker (12.5%, n = 2), master's level clinician (25%, n = 4), licensed psychologist (6.3%, n = 1) and postdoctoral fellows (18.8%, n = 3).

Measures

Demographics. Demographic variables were collected from both clients and clinicians. The following patient information was collected from the electronic health record: gender, ethnicity, age, and language. The following clinician information was

collected: gender, ethnicity, age, primary theoretical orientation, years in practice, and licensure.

Outcome Rating Scale. Treatment outcome was measured using the Outcome Rating Scale (ORS; Miller & Duncan, 2000). The ORS is administered at the beginning of each session and is used to measure general distress. It consists of four 10-centimeter lines measuring four domains (individual, interpersonal, social, and overall). The patient is instructed to place a mark on the line, with good estimations marked on the right and poor estimations on the left. Scores on the ORS can range from 0 – 40. The clinical cutoff score of the ORS is 25 and the cutoff for reliable change is 6 points.

Research has consistently demonstrated that the ORS generates reliable and valid scores. Both validation (Bringhurst, Watson, Miller, & Duncan, 2006; Campbell & Hemsley, 2009; Reese, Toland, & Kodet, 2012; Miller, Duncan, Brown, Sparks, & Claud, 2003) and clinical studies (Reese et al., 2009; Slone, Reese, Mathews-Duvall, & Kodet, 2015) have yielded coefficient alphas ranging from .82 to .92 in both individual and group therapy. For the current study, the coefficient alpha was .81. Construct validity was evaluated by Campbell and Hemsley (2009) through correlational analyses between the ORS and the OQ-45 and the Depression Anxiety Stress Scales (DASS). Strong correlations were found between the OQ-45 Symptoms of Distress and the ORS Overall (r = .75) and Individually (r = .74). The ORS Overall and Individually scales were shown to have strong correlations with the Depression (r = .76) and Stress (r = 67) scales of the DASS.

Patient Health Questionnaire – 9. The second outcome measure used was the Patient Health Questionnaire - 9 (PHQ-9; Kroenke & Spitzer, 2002). The PHQ-9 is a

nine-item assessment for depression. Each item is scored on a four point Likert scale ranging from 0 (*not at all*) to 3 (*nearly every day*). Scores on the PHQ-9 can range from 0 to 27, with higher scores indicating higher levels of severity. Cut-offs are set at 5, 10, 15, and 20 for mild, moderate, moderately severe, and severe depression respectively. Studies have demonstrated that the PHQ-9 generates reliable and valid scores, with a Cronbach's alpha ranging from .86 to .89. For the current study, the coefficient alpha was .85. Construct validity has been evaluated by correlational analyses between PHQ-9 scores and the subscales on the Medical Outcomes Study Short Form-20 (SF-20; Carver, Chapman, Thomas, Stadnyk, & Rockwood, 1999). Correlations ranged from .33 on the bodily pain subscale to .73 on the mental health subscale.

Procedure

This study was conducted at three federally qualified health centers located in Colorado Springs. Prior to beginning the study, therapists working as either staff or trainees were approached and asked to participate in the study. Once consented, data were collected on the following variables: gender, ethnicity, age, primary theoretical orientation, and licensure. Therapists participating in the study underwent PCOMS training which consisted of two, 25 minute webinars and an hour-long question and answer session with Barry Duncan, a co-developer of PCOMS. Throughout the study, therapists also had access to online training materials to use as they saw fit. Additionally, BHPs in this study received weekly PCOMS supervision by licensed psychologists trained in PCOMS and PCOMS supervision.

Patients were eligible to participate in the study if they met inclusion criteria and were seen by a therapist. Standard practice at each of the sites is that behavioral health is

consulted if a patient scores in the clinical range, a score of 9 or above, on the PHQ-9. If the patient scored in the clinical range on the PHQ-9, the therapist was consulted and conducted his or her brief intervention. If it was determined that the patient met the inclusion criteria and was going to be seen in individual therapy, the BHP – who is also a member of the research team - asked the patient if he or she was interested in participating in the research study. If interested in the study, the BHP reviewed the consent form with the patient and obtained consent.

Once consented, participants were randomized to either the feedback condition or the treatment as usual condition (TAU) and underwent the standard course of therapy. A randomized block design was used so that therapists served as their own control, with half of their patients being in each treatment condition. Each of the FQHCs uses a brief therapy model as a standard course of therapy, typically consisting of up to six therapy sessions with session lasting approximately 25-30 minutes. In each condition, both the PHQ-9 and ORS were administered at each session. In the feedback condition, the PHQ-9 was administered in hard copy form by the support staff, consistent with standard procedure. Using a tablet with the web based application of PCOMS, Better Outcomes Now (BON), the behavioral health provider administered and discussed the ORS at the beginning of each session and the SRS at the end of each session with the patient which is consistent with PCOMS training. The behavioral health provider did not have access to the information from the PHQ-9.

The feedback process entailed the behavioral health provider administering the ORS to the patient at the beginning of each session. Once the patient had completed the ORS, the behavioral health provider reviewed the patient's responses and scored the

ORS. The information gained from the ORS was then collaboratively discussed with the client and used to direct the course of the session by identifying what aspects of the patient's life were causing them the most distress. At the end of each session, the therapist administered the SRS to check in regarding the patient's view on the working alliance and how well that session went. The provider uses the information gained from the SRS to solicit feedback from the patient about what went well or did not go well throughout the session so the provider can better meet the needs of the patient.

In the TAU condition, both the PHQ-9 and the ORS were administered prior to each session by the support staff. The PHQ-9 was administered in hard copy form prior to the session. The ORS was completed on a tablet using Better Outcomes Now (BON). Behavioral health providers in the TAU condition did not have the information gathered from either the ORS or the PHQ-9. In the TAU condition the SRS was not administered.

Of primary interest for this study is whether the implementation of a patient feedback system (PCOMS) benefitted patient outcome as compared to a treatment as usual (TAU) condition. The feedback condition consisted of the therapists using PCOMS in accordance with the administration manual (Duncan, 2011). In the TAU condition, the ORS was administered at each session, however, the therapists did not have access to any outcome measures over the course of therapy. In both conditions, therapists had the option to work from whatever theoretical orientation they chose. For those patients whose primary language was Spanish, therapeutic services were provided in Spanish either by therapists who were fluent in Spanish or through a call center interpreter service which is consistent with the standard practice at each site.

Power Analysis

An a priori power analysis was conducted using the Optimal Design Software (Spybrook et al., 2011). For hypotheses one, two, and three a power analysis was conducted based on a three-level model, with sessions being nested within patients, nested within therapists. Randomization was assumed to occur at the patient level (Level-2) because it is typically best to randomize at the lowest possible level (Moerbeek, 2005). For the purposes of the growth model, a minimum of three time points is required and therefore was used in the power analysis. The power level was set at .80 and alpha at .05. To date, only one study evaluating PCOMS has been conducted using a longitudinal multi-level design (Reese, Toland, Slone, & Norsworthy, 2010). This study found an intraclass correlation coefficient (ICC) of .02 at the therapist level indicating that 2% of the variability in outcome score could be attributed to therapists. Additionally, Reese et al., (2010) found an effect size of $d = 0.54$. Although this study was conducted in a couple's therapy format, the effect size is similar to those reported in studies evaluating PCOMS in individual therapy (Reese et al., 2009). Therefore, a conservative effect size of 0.50 was used in the power analysis. The analysis revealed that, with a total of 10 BHPs, a total of 270 patients (approximately 27 per therapist) would be needed to detect an effect size of 0.50.

Data Analytic Strategy

Due to the nested structure of the data, hierarchical linear modeling (HLM; Raudenbush & Byrk, 2002) was used to determine whether there were therapist effects as well as to construct a growth model. The use of HLM is necessary when data are naturally nested within structures (e.g., patients nested within therapists). The problem with nested data is that it violates the assumption of independence of observations (Field,

2009). Ignoring the violation of this assumption will result in biased results and an increased likelihood of committing Type I error. In this case, each observation is nested within the patients, which are nested within therapists. This means that a patient's outcome scores (as measured by the ORS and PHQ-9) at each session over the course of therapy are likely to be more correlated with one another than they are with the outcome scores of other patients, thus, time is a Level-1 unit and patients are a Level-2 unit. Likewise, the outcome scores of patients who are being seen by the same therapist are likely to be more correlated with one another than for patients working with another therapist; therefore, the therapist is considered a Level-3 unit.

SPSS version 25 was used to analyze the data. Prior to testing the stated hypotheses, preliminary analyses were conducted on several demographic variables to determine whether randomization was successful. For variables that are continuous, a series of independent *t* tests were conducted to determine between group differences. For categorical data, Chi-square analyses were run to test for any differences between conditions.

To test each of the stated hypotheses, a series of multilevel models were constructed. The first research hypothesis predicted that patients in the feedback condition would demonstrate better outcomes than those patients in the TAU condition as measured by both the ORS and the PHQ-9 after controlling for pre-ORS and pre-PHQ-9 scores. The second research hypothesis predicted that patients in the feedback condition would demonstrate faster treatment gains than those patients in the TAU condition as measured by both the ORS and the PHQ-9. To address these hypotheses, a three-level multilevel growth model was constructed with time (SESSION) being represented at

Level-1, which is nested within patients at Level-2, which are then nested within therapists at Level-3. In this case, the Level-2 predictor was feedback condition (CONDITION), and the Level-1 predictor was the time variable (SESSION). To test for therapist effects, the null model was run first, using ORS as the outcome measure and then with the PHQ-9 as the outcome measure. The benefit of running the null model is that it accounts for the hierarchy of the data and breaks down the variance in outcome into the variance that is attributable to patients and therapists separately. Thus, it serves as a good indicator of whether there is a therapist effect by controlling for pre-treatment functioning at the client level (Ma, Ma, & Bradley, 2008). The proportion of variance accounted for at each level was calculated using the intraclass correlation coefficient (ICC). The constructed multilevel model to explain the variation in outcome score over time was as follows:

$$Y_{tij} = \gamma_{ooo} + \gamma_{100}(\text{SESSION}_{tij}) + \gamma_{001}(\text{CONDITION}_{ij})$$

$$+ \gamma_{101}(\text{CONDITION}_{ij})(\text{SESSION}_{tij}) + u_{ooj} + r_{oij} + e_{tij},$$

where Y_{tij} is the score at session (t) for client (i) working with therapist (j), γ_{ooo} is the intercept reflecting the overall average client outcome score at the start of therapy for those in the TAU condition. The γ_{100} represents the average linear growth rate from session to session for those in the TAU condition. Stated differently, it is the expected change in outcome score for a one session increment. The γ_{001} represents the mean difference between patients in the feedback and TAU conditions at the start of therapy. The γ_{101} represents the average linear slope difference between patients in the feedback and TAU conditions. A positive value would indicate that patients in the feedback condition improved faster on outcome score than patients in the TAU condition. The u_{ooj}

represents the random therapist (Level-3) effect; the r_{oij} represents the random client (Level-2) effect; e_{tij} represents the random client effect (Level-1) or the difference between each client's observed and predicted scores. Two separate and identical models were constructed, one using the ORS as the outcome measure, and the other using the PHQ-9 as the outcome measure.

The third hypothesis predicted that significantly more patients in the feedback condition would achieve reliable change compared to TAU based on pre-post change scores. Reliable change is defined as an increase or decrease in client outcome score that exceeds the measurement error for the instrument being used. In the case of the ORS, the amount of change needed for reliable change is 6 or more points in either direction. In the case of the PHQ-9, improvement of greater than or equal to 50% of the pre-treatment score must be achieved for reliable change (Kroenke, Spitzer, and Williams, 2001). To address this hypothesis, percentages of patients in each condition who achieved reliable change were calculated and Chi-square analyses were conducted to determine whether there was a significant difference in classification across the two treatment conditions.

The fourth hypothesis predicted that significantly more patients in the feedback condition will achieve clinically significant change compared to TAU based on pre-post change scores. Reliable change is defined as an increase or decrease in client outcome score that exceeds the measurement error for the instrument being used. In the case of the ORS, the amount of change needed for reliable change is 6 or more points in either direction. In the case of the PHQ-9, improvement of greater than or equal to 50% of the pre-treatment score must be achieved for reliable change (Kroenke et al., 2001). To address this hypothesis, percentages of patients in each classification were calculated and

Chi-square analyses were conducted to determine whether there was a significant difference in classification across the two treatment conditions.

The fifth hypothesis predicted that patients in the feedback condition will have a lower rate of dropout compared to those patients in the TAU condition. Dropout rate was calculated as the percentage of patients in each condition that did not complete treatment in the non-clinical range ($\geq$25 on the ORS or $\geq$9 on the PHQ-9). Chi-square analyses were conducted to determine if there is a significant difference across treatment groups.

CHAPTER THREE: RESULTS

Preliminary Analyses

To determine whether randomization was successful a series *t* – tests and chi-square analyses were conducted using demographic variables. The results demonstrated that the feedback condition ($M = 38.91$, $SD = 13.66$) and the TAU condition ($M = 38.16$, $SD = 14.10$) did not differ significantly based on age, $t(130) = -.31$, $p = .76$. The results also demonstrated that there was no association between condition and gender, $\chi^2 (1) = .31$, $p = .57$, ethnicity, $\chi^2 (5) = 5.91$, $p = .433$, or language, $\chi^2 (1) = 1.16$, $p = .56$. Thus, it was determined that randomization was successful.

Additionally, a series of *t*-tests were conducted to determine whether the groups differed on baseline scores using the ORS and PHQ-9. The results demonstrated that, with regard to ORS scores, the feedback condition ($M = 15.77$, $SD = 6.97$) and the TAU condition ($M = 17.31$, $SD = 7.68$) did not differ significantly at baseline, $t(130) = .31$, $p = .76$. Similarly, using the PHQ-9, the feedback condition ($M = 13.23$, $SD = 6.46$) and the TAU condition ($M = 11.45$, $SD = 6.34$) did not differ significantly at baseline, $t(114) = -1.50$, $p = .14$. These results suggest that initial levels of distress were equivalent and randomization was successful. Finally, an independent t-test was conducted to determine if patients in the feedback condition attended more sessions compared to TAU. The results demonstrated no significant difference between the feedback condition ($M = 3.77$, $SD = 1.90$) and the TAU condition ($M = 3.77$, $SD = 1.89$) in number of sessions attended, $t(130) = -.98$, $p = .33$.

Hypothesis 1 – Evaluating Efficacy

The first hypothesis posited that patients in the feedback condition would demonstrate better outcomes than those patients in the treatment as usual group. To address this hypothesis, a two-level model was constructed with patients (level 1) being nested within therapists (level 2). First, a null model was constructed with no predictors to determine the amount of variance accounted for at the therapist level. Using the ORS as the outcome measure, the results demonstrated that therapists accounted for 5.3% of the variance in post ORS scores. A second null model was constructed using the PHQ-9 as the outcome variable. The results demonstrated that therapist accounted for 7.8% of the variance in post PHQ-9 scores.

A second model was then constructed using post ORS score as the outcome measure and included the following predictor variables: condition (feedback vs. TAU), patient age, patient gender, pre ORS score, patient ethnicity, and patient language. Ethnicity was dummy coded to categorize patients as either White, or a person of Color. Ethnicity was not further broken down due to the limited number of patients in each category. The results are summarized in Table 1. The results demonstrated that only pre ORS score was a significant predictor of post ORS score. In this case, the results demonstrate that a one point increase in pre ORS score the change in post ORS score was 0.61 points ($\gamma = 0.61$, $p < .001$) after controlling for other patient related predictors. The same model was then constructed using post PHQ-9 as the outcome measure which included the following predictor variables: condition (feedback vs. TAU), patient age, patient gender, pre PHQ-9 score, patient ethnicity, and patient language. The results are summarized in Table 2. The results revealed that only pre PHQ-9 score was a significant

predictor of post PHQ-9 score. The results demonstrated that for every 1 point decrease in pre PHQ-9 score the change in post PHQ-9 score was 0.70 ($\gamma = 0.70$, $p < .001$) after controlling for patient related predictors.

Table 1
Fixed Effect Estimates for Multilevel Models for ORS Scores

	Null model	Patient-therapist model
Variable	Coefficient (SE)	Coefficient (SE)
Fixed effects		
Intercept	22.19 (1.00)***	8.98(2.50)***
Condition		1.70(1.10)
Patient Age		0.04(0.04)
Patient Gender		-0.35(1.18)
Pre ORS		0.61(0.06)***
Patient Ethnicity		-0.007(0.63)
Patient Language		-0.08(0.63)

***p<.001 **p<.01 *p<.05

Table 2
Fixed Effect Estimates for Multilevel Models for PHQ-9 Scores

	Null Model	Patient-therapist Model
Variable	Coefficient (SE)	Coefficient (SE)
Fixed effects		
Intercept	9.66(0.89)***	0.02(1.51)
Condition		0.16(0.63)
Patient Age		0.02(0.02)
Patient Gender		0.31(0.69)
Pre PHQ		0.70(0.05)***
Patient Ethnicity		-0.05(0.38)
Patient Language		0.14(0.38)

***p<.001 **p<.01 *p<.05

The feedback group demonstrated a pre- post improvement of 7.61 ORS points compared to 4.18 in the TAU group. The following formula was used to calculate the effect size, $d = (M_2 - M_1) / SD_{pooled}$. Within group estimates yielded moderate effect sizes (Cohen, 1988), suggesting that treatment was effective in both groups (see Table 3). The between treatment condition effect was $d = 0.38$, a small-medium effect for feedback. The feedback group demonstrated better pre- post improvement of 3.46 PHQ-9 points compared to 2.77 in the TAU conditions. Within group estimates yielded small-moderate effect sizes (see Table 4) and the between condition effect was $d = 0.12$, a small effect for feedback.

Table 3
Effect Sizes for ORS

	Feedback Condition (n = 84)		TAU Condition (n = 86)	
	M	SD	M	SD
Pre ORS	16.07	6.86	17.17	7.49
Post ORS	22.10	9.52	20.23	7.95
Effect size (d)		.38		

Table 4
Effect Sizes for PHQ

	Feedback Condition (n = 76)		TAU Condition (n = 82)	
	M	SD	M	SD
Pre PHQ	11.87	6.29	11.23	6.29
Post PHQ	9.63	6.35	9.12	5.89
Effect size (d)		.12		

Hypothesis 2 – Rate of Change

ORS. The second hypothesis predicted that patients in the feedback condition would demonstrate faster treatment gains than patients in the TAU condition. For the first set of analyses, ORS scores were used as the outcome measure. To test this hypothesis, a three-level model was constructed. First, a null model was constructed with no predictors to determine the amount of variance accounted for at each level. The results of the null model are summarized in Table 5. The results demonstrate that the amount of variability in ORS score between therapists was less than 1%, approximately 3.7% of the variability in ORS scores was between patients, and 96.3% of the variability was within patients.

Building on the null model, the time variable (session) was then added. The fixed effects are summarized in Table 5. Of note, initial status or average baseline ORS score for patients was 18.48. Over the study period, ORS scores increased by 1.70 points per session. Next, it is important to consider the nature of the deviations of individual growth

trajectories from the mean growth trajectory. The Wald Z test statistic provides a test of homogeneity or, stated differently, that there is no true variation in individual growth parameters. Since the variation cannot be below 0, the Wald Z test statistic was conducted as a one-tailed test. At the patient level, the Wald Z score was 3.29, one-tailed, $p < .001$ suggesting we should reject the null hypothesis of no significant variations in patients' initial status. Regarding the difference in growth rates, at the therapist level, the results suggest that growth rates did not vary across therapists. Because the covariance parameter estimate equaled 0.0, a Wald Z statistic could not be computed. At the patient level, there was no statistically significant differences in growth rates between (Wald $Z = 0.78$, $p = .43$).

At the patient level, the coefficients suggest that condition (Feedback vs. TAU) is not a significant predictor of ORS score ($\gamma = -1.79$, $p = .134$). Regarding growth rates, the adjusted growth in ORS score was 1.19. Condition was significant and positively related to within patient growth in ORS score ($\beta = 0.90$, $p = .039$). The results provide evidence that, holding all other variables in the model constant, being in the feedback condition was related to a 0.90 point greater increase per session in ORS score over the course of the study period compared to patients in the treatment as usual group.

Table 5
Fixed Effect Estimates for ORS Growth Model

Variable	Null Model Coefficient (SE)	Session model Coefficient (SE)	Session-patient model Coefficient (SE)
Fixed effects			
Intercept	20.33 (0.54)***	18.48(.59)***	18.51(2.17)***
Session		1.69(0.25)***	1.19(0.37)**
Condition			-1.79(1.19)
Patient Age			0.03(0.04)
Patient Gender			-0.71(1.20)
Patient Ethnicity			0.35(0.60)
Patient Language			-0.46(0.60)
Session*Condition			0.90(0.49)

***p<.001 **p<.01 *p<.05

PHQ. For the second set of analyses, the PHQ was used as the outcome variable. First, a null model was constructed with no predictors to partition the variance into the within-individual and between-individual components. The results of the null model are summarized in Table 3.2. The results suggest that approximately 2.20% of the variability in PHQ scores is between therapists, approximately 59.0% of the variability in PHQ scores is between patients, and 38.9% of the variability is within patients.

Building on the null model, the time variable, (session), was added. The fixed effects are summarized in Table 6. Of note, initial status or average baseline PHQ score for patients was 10.54. Over the study period, PHQ scores decreased by 0.81 points per session. Next, it is important to consider the nature of the deviations of individual growth trajectories from the mean growth trajectory. The Wald Z test statistic provides a test of

homogeneity or, stated differently, that there is no true variation in individual growth parameters. Since the variation cannot be below 0, the Wald Z test statistic was conducted as a one-tailed test. For initial status, at the therapist level, the Wald Z score was 0.53, one-tailed, $p = .26$. At the patient level, the Wald Z score was 6.431, one-tailed, $p < .001$ suggesting we should reject the null hypothesis of no significant variations in patients' initial status. Regarding the difference in growth rates, at the therapist level, the results suggest that growth rates do not vary across therapists (Wald Z = .57, one-tailed, $p = .28$). At the patient level, the results suggest that growth rates do not vary across patients (Wald Z = .56, $p = .29$).

At the patient level, the coefficients suggest that none of the predictors entered into the model are significant in explaining PHQ scores (see Table 6). Regarding growth rates, condition was not positively related to growth in PHQ score (see Table 3.2). Regarding the variance components, the results demonstrate that initial PHQ scores still vary across patients (Wald Z = 6.38, one-tailed, $p < .001$). Furthermore, after the addition of patient level variables, there is no evidence to suggest that growth rates of PHQ scores vary across patients (Wald Z = .65, one-tailed, $p = .26$).

Table 6
Fixed Effect Estimates for PHQ-9 Growth Model

Variables	Null Model Coefficient (SE)	Session model Coefficient (SE)	Session-patient model Coefficient (SE)
Fixed effects			
Intercept	9.75(0.44)***	10.54(0.45)***	11.41(1.60)***
Session		-.81(0.15)***	-.86(0.21)***
Condition			.69(0.84)
Patient Age			-.05(0.03)
Patient Gender			1.61(0.89)
Patient Ethnicity			-.13(0.44)
Patient Language			.21(0.44)
Session*Condition			.09(0.30)

***p<.001 **p<.01 *p<.05

Hypothesis 3 – Reliable Change

The third hypothesis posited that more patients would achieve reliable change in the group that received patient feedback compared to those patients who received TAU based on pre-post change scores. To test this hypothesis, patients were identified as having achieved reliable change for both the ORS (6 or more points) and the PHQ-9 (50% or improvement). Chi-square analyses were conducted to determine if there were a significant difference in the number of patients who achieved reliable change between the feedback and TAU groups. As can be seen in Table 7, when the ORS is used as the outcome measure, 38.0% of patients in the feedback condition achieved reliable change, compared to 21.3% in the TAU condition. The chi-square analysis demonstrated that there was a significant association between treatment condition and whether the patient

achieved reliable change, χ^2 (1) = 6.28, p = .01 (see Table 7). Using the PHQ-9 as the outcome measure, 35.7% of patients in the feedback condition achieved reliable change compared to 25.0% in the TAU condition. The results demonstrated no significant association between treatment condition and if the patient achieved reliable change, χ^2 (1) = 2.40, p = .12 (see Table 8).

Table 7
Percentage of Clients Who Achieved Reliable Change in Feedback and TAU Conditions on the ORS (N = 186)

	Feedback Condition (n = 92)		TAU Condition (n = 94)	
Reliable Change	*n*	%	*n*	%
Yes	35	38.0	22	21.3
No	54	62.0	73	78.7

Table 8
Percentage of Clients Who Achieved Reliable Change in Feedback and TAU Conditions on the PHQ (N = 176)

	Feedback Condition (n = 84)		TAU Condition (n = 92)	
Reliable Change	*n*	%	*n*	%
Yes	30	35.7	23	25.0
No	54	64.3	69	75.0

Hypothesis 4 – Clinically Significant Change

The fourth hypothesis posited that more patients would achieve clinically significant change in the group that received patient feedback compared patients who received TAU based on pre-post change scores. To test this hypothesis, patients were identified as having achieved clinically significant change for both the ORS and PHQ-9.

Chi-square analyses were conducted to determine if there were a significant difference in the number of patients who achieved clinically significant change between the feedback and TAU groups. As can be seen in Table 9, when using the ORS as the outcome measure, 33.3% of patients in the feedback condition achieved clinically significant change compared to 20.6% in the TAU condition. The results demonstrated that there was not a significant association between treatment condition and whether the patient achieved clinically significant change, χ^2 (1) = 2.68, p = .10 (see Table 9). As can be seen in Table 5.2, when using the PHQ-9 as the outcome measure, 19.0% of patients in the feedback condition achieved clinically significant change compared to 14.1% in the TAU condition. Again, the results demonstrated that there was not a significant association between treatment condition and if the patient achieved clinically significant change, χ^2 (1) = .77, p = .38 (see Table 10).

Table 9
Percentage of Clients Who Achieved Clinically Significant Change in Feedback and TAU Conditions on the ORS (N =188)

	Feedback Condition (n = 92)		TAU Condition (n = 96)	
Clinically Significant Change	*n*	%	*n*	%
Yes	31	33.3	20	20.6
No	61	67.7	76	79.4

Table 10
Percentage of Clients Who Achieved Clinically Significant Change in Feedback and TAU Conditions on the PHQ (N = 176)

	Feedback Condition (n = 84)		TAU Condition (n = 92)	
Clinically Significant Change	*n*	%	*n*	%
Yes	16	19.0	13	14.1
No	68	81.0	79	85.9

Hypothesis 5 – Premature Termination

The fifth hypothesis stated that patients in the feedback condition would have a significantly lower rate of premature termination when compared to patients in the TAU condition. For the purposes of this study, a patient was determined to terminate prematurely if the patient did not have an ORS or PHQ-9 score above their respective clinical cut-offs (above 25 on the ORS and below 9 on the PHQ-9) at their last session of treatment. Chi-square analyses were conducted to determine if there was a significant difference in premature termination rate between the feedback condition and the TAU condition. It is important to note that those patients who attended only one session of therapy were included in this analysis. In total, 46 patients attended only one session, which resulted in a total of 190 patients being included this analysis. Using the ORS as the outcome measure, 55.1% of patients in the feedback condition terminated prematurely compared to 65.1% in the TAU condition (see Table 11). The results of the chi-square analysis demonstrated that there was not a significant difference in premature termination rate between the feedback and TAU conditions, $\chi^2(1) = 1.37$, $p = .24$ (see

Table 11). As can be seen in Table 12, when the PHQ-9 was used as the outcome measure, 45.9% of patients in the feedback condition terminated prematurely compared to 39.2% in the TAU condition. The results of the chi-square analysis again revealed no significant difference in premature termination rate between the feedback and TAU conditions, χ^2 (1) = .835, p = .361 (see Table 12).

Table 11
Percentage of Clients Who Terminated Prematurely in Feedback and TAU Conditions on the ORS (N = 190)

	Feedback Condition (n = 93)		TAU Condition (n = 97)	
Premature Termination	*n*	%	*n*	%
Yes	51	55.1	63	65.1
No	42	44.9	34	34.9

Table 12
Percentage of Clients Who Terminated Prematurely in Feedback and TAU Conditions on the PHQ (N = 182)

	Feedback Condition (n = 85)		TAU Condition (n = 97)	
Premature Termination	*n*	%	*n*	%
Yes	39	45.9	38	39.2
No	46	54.1	59	60.8

CHAPTER FOUR: DISCUSSION AND CONCLUSIONS

The purpose of this study was to evaluate the efficacy of PCOMS, a systematic patient feedback system, in an integrated primary care and mental health system. This study was unique in that it is the first study to evaluate systematic patient feedback in an integrated primary care and mental health setting. Of primary interest to this study was whether the use of a patient feedback system, specifically PCOMS, was efficacious as a quality improvement strategy.

For the first hypothesis, the results did not find that condition (feedback vs. TAU) was a significant predictor of post ORS scores. Using both the ORS and the PHQ-9 as outcome measures, the results demonstrated that pre-treatment score was the best predictor of post treatment score. This finding is consistent with findings of previous studies (Reese et al., 2010; She et al., 2018) and suggests that patients who enter treatment with less distress tend to achieve better outcomes. This makes sense given that those patients who have a higher initial status may have access to more resources, have better coping skills, or have greater insight into their difficulties making them more likely to succeed in treatment.

Although the results were not significant the effect sizes were similar to other studies that evaluated the efficacy of PCOMS (Anker et al., 2009; Reese et al., 2009; Schuman et al., 2014; Slone et al., 2015). There are numerous possible explanations for why the results did not achieve significance. First, the results of this study are preliminary and data collection is currently ongoing. As a result, the study is

underpowered, which could have contributed to the results not yielding significant differences.

Another potential reason for these findings is the relatively small number of sessions attended by patients in a primary care setting. The average number of sessions attended by patients in this study was 3.77 which is less that reported in previous studies where a feedback significant feedback effect was found (She et al., 2018). It is possible that the limited number of sessions attended and shorter length of sessions did not provide an adequate dose of feedback to yield a feedback effect. Finally, feedback has previously been shown to be effective in more traditional mental health settings. Given that the results are not significant, it is possible that feedback offers less benefit than it does in other settings due to the fast-paced, problem focused, and time-limited nature of the primary care setting.

Interestingly, when the PHQ was used as the outcome measure, the effect size was much smaller compared to the ORS ($d = 0.12$ vs. $d = 0.38$). These results are consistent with the only other study that used a second outcome measure (Anker et al., 2009). Anker and colleagues evaluated the use of patient feedback in couples counseling and used a measure of marital adjustment as a second outcome measure. There results yielded an effect size of $d = 0.50$ for the feedback condition using the ORS and a smaller effect size of $d = 0.29$ when the marital adjustment outcome was used. One criticism of the patient feedback literature is that studies do not include a second outcome measure to evaluate efficacy. This is thought to be a limitation because the improvement in ORS scores in previous studies may be a product of clinicians using the ORS measure to change/ tailor treatment to the patient's needs, thus making it more sensitive to change

than other measures. While the results of this study suggest this may be the case, it is also possible that the process of patient feedback (e.g., talking to patients about their ORS scores) is what leads to an improvement in outcomes because the patient has agency to identify specific areas of concern and make those concerns the focus of treatment.

Another possible explanation for this finding is the nature of the PHQ-9. The PHQ-9 was designed as a screener to be used specifically for depressive symptoms. However, the patients in the study sample experienced a variety of mental health disorders and unique comorbidities. Given that not all patients were specifically being treated for depression, it is possible the measure was not sensitive to the improvements made in therapy. Conversely, the ORS measures general distress and well-being and therefore may more accurately capture the change in general distress of well-being when compared to the PHQ-9. It may be that patients were still having depression symptoms but experiencing improvements in their overall levels of distress.

One unique aspect of this study was that data were collected at each therapy session, which allowed for rate of change to be determined. The results demonstrate that, using the ORS as the outcome measure, those patients in the feedback condition improved at a faster rate when compared to patients in the TAU condition ($p = .039$). Faster rates of improvement have been found in other studies (Reese et al., 2010; She et al., 2018). However, the rate of improvement in the present study is modest compared to studies by Reese et al., (2010) and She et al., (2018), who demonstrated that patients in the feedback condition had an average rate of improvement 1.50 and 1.86 points higher that the TAU condition, respectively. However, when the PHQ-9 was used as the outcome measure, there was no feedback effect on rate of improvement.

For the third hypothesis, the results demonstrated there was a statistically significant difference in the number of patients that achieved reliable change when using the ORS as the outcome measure with 38.0% of the patients in the feedback condition achieving reliable change compared to 21.3% in the TAU condition. This finding is consistent with other research (Anker et al., 2009) and provides some evidence that patients in the feedback condition are improving faster compared to patients in the TAU condition. However, when the PHQ-9 was used as the outcome measure, the results did not achieve significance with 35.7% of patients in the feedback condition achieving reliable change compared to 25.0% in the TAU condition.

The fourth hypothesis posited that more patients in the feedback condition would achieve clinically significant change compared to patients in the TAU condition. The results demonstrated that there was not a statistically significant difference between the feedback and TAU using both the ORS and PHQ-9 as outcome measures. Using the ORS as the outcome measure, 33.3% of patients achieved clinically significant change compared to 20.6% in the TAU condition. Additionally, 19.0% of patients in the feedback condition achieved clinically significant change compared to 14.1% in the TAU condition. This finding differs from previous studies (Anker et al., 2009; Slone et al., 2015; Reese et al., 2009), which have demonstrated that a higher percentage of patients in the feedback condition achieve clinically significant change when compared to TAU. This finding may be due to the primary care setting having shorter sessions (25-30 minutes), meeting with patients less frequently, and having a smaller number of sessions attended by patients.

For the fifth hypothesis, the results did not support feedback reducing the number of premature terminations. There was no significant difference in premature termination rate using both the ORS and the PHQ-9 as outcome measures. Using the ORS as the outcome measure the results demonstrated that 55.1% of patients terminated prematurely compared to 65.1% in the TAU condition. Furthermore, when the PHQ-9 was used as the outcome measure 45.9% of patients in the feedback condition terminated prematurely compared to 39.2% in the TAU condition. This finding is consistent with a recent study conducted by She et al., (2018) who also found that feedback did not reduce the premature termination rate.

Limitations

The results of this study are best understood in the context of five study limitations. First, the relatively small sample size is a limitation of this study. An a priori power analysis was conducted to determine the number of clinicians and patients required to detect an effect size of .50. The results of the power analysis demonstrated that with 10 clinicians, 270 patients would be required. Although 16 clinicians participated in the study, only 200 patients were recruited and participated in the study. Furthermore, there was considerable variability in the number of patients seen at each site and by each clinician, with the number of patients seen by each clinician ranging from 1 to 48, thus the results of this study should be interpreted with some caution.

A second limitation comes as a result of a strength of this study, specifically, the use of an adherence measure. While the use of an adherence measure increases clinician fidelity to the PCOMS protocol, the adherence measure was not utilized consistently across each of the three sites. Two of the sites completed the adherence measures every

three months, which is consistent with the protocol. However, a third site did not administer the adherence measure every three months and the study clinicians at that site rated their adherence after a 7-month period. This calls into question how well the clinicians at that site were adhering to the protocol. Additionally, if there were concerns related to adherence at that site, the concerns would not have been addressed, which might impact the outcomes of the clinicians at that site. This limitation is likely mitigated to some extent by the fact that monthly supervision was provided to each of the study clinicians to discuss patient issues and encourage adherence to the PCOMS protocol.

A third limitation is the use of brief, self-report measures. The use of brief, self-report measures may result in information that does not fully reflect the patient's current level of functioning compared to other, lengthier measures. These measures were not used for this study due to the time constraints and fast paced environment of primary care.

A fourth limitation was the use of the PHQ-9 as a secondary outcome measure. The PHQ-9 was designed to be a screening instrument for depressive symptoms. This study did not collect data on presenting concerns and as such it is unknown which patients were suffering from depressive symptoms and which patients were suffering from another mental health disorder such as anxiety. Thus, the use of an outcome measure designed to assess for depressive symptoms may not have accurately assessed level of distress or improvement over the course of treatment. The PHQ-9 was chosen as the secondary outcome measure because is commonly used in a primary care setting and was currently being used at each of the sites participating in the study. Although found to generate reliable and valid scores in primary care settings, its use to monitor treatment

benefit has not been evaluated. For example, one difference between the ORS and PHQ-9 is that the ORS asks a patient to reflect on the past week, whereas the PHQ-9 asks a patient to reflect on the past 2 weeks. It is possible that this phrasing alone could impact the amount of change reported by patients given that the time period between sessions was generally 1 week.

A fifth limitation of this study was the amount of missing data, particularly missing observations between pre- and post- outcome scores. Given the amount of missing observations, the results of the growth model analyses in particular should be interpreted with caution. Furthermore, data were not able to be collected regarding the reason for missed sessions or premature termination. It is possible that patients dropped out of therapy that may not have been considered premature termination. For example, patients might have dropped out of therapy because their circumstances improved or they felt they no longer needed it during the time between sessions. Additionally, there may have been practical reasons for patients discontinuing therapy such as transportation issues and other priorities such as employment or childcare.

Implications and Future Recommendations

This study was the first to evaluate the use of systematic patient feedback within an integrated primary care and mental health setting. Overall, this study is that it provides some evidence that patient feedback may offer a potential quality improvement strategy within an integrated primary care and mental health settings. Specifically, that the use of feedback may help patients improve faster. Furthermore, more patients in the feedback condition were shown to achieve reliable change when compared to patients in the TAU condition, providing some evidence that client feedback can result in faster

improvement. Although a significant feedback effect was not found, the results warrant further exploration to further determine whether patient feedback improves mental health outcomes in a primary care setting. The primary care setting is unique in the sense that it is fast-paced and patients are seen less frequently and sessions are shorter in duration. These factors make it challenging to both conduct research and accurately evaluate outcomes. However, the results of this study are a reflection of the nature of the primary care setting and provide some evidence that patient feedback offers a potential strategy to improving patient outcomes while honoring the unique challenges faced in a primary care setting.

Future studies with larger and more diverse samples are needed. Additionally, while the study implemented a second outcome measure, future studies should use secondary measures that are either specific to the patient's presenting concern (e.g. anxiety or depression) or are a more general measure of distress. Finally, the literature offers very few answers related to why patient feedback works. Future studies should strive to isolate the aspects of patient feedback that make it effective to increase the understand of the feedback process.

Conclusions

The efficacy of patient feedback has been demonstrated in individual, couple, and group psychotherapy and is now considered an evidence-based practice with both the OQ-45 system and PCOMS being recognized by the SAMSHA National Registry of Evidence-based Programs and Practices. This study represents the first study to date that evaluated the efficacy of patient feedback, specifically PCOMS, in an integrated primary care and mental health setting. Although the findings of this study did not replicate the

positive findings of other feedback studies, the results of this study suggest that PCOMS offers some benefit as a quality improvement strategy within this setting. The hope is that this study provides a foundation for further research to be conducted related to the use of patient feedback in an integrated primary care and mental health setting.

APPENDICIES

Appendix A

Outcome Rating Scale (ORS)

Name _____Age (Yrs.): ___ Gender: M / F
Session # ____ Date: _____
Who is filling out this form? Please check one: Self_____ Other_____
If other, what is your relationship to this person? _____

Looking back over the last week, including today, help us understand how you have been feeling by rating how well you have been doing in the following areas of your life, where marks to the left represent low levels and marks to the right indicate high levels. *If you are filling out this form for another person, please fill out according to how you think he or she is doing.*

Individually
(Personal well-being)

I----------I

Interpersonally
(Family, close relationships)

I----------I

Socially
(Work, school, friendships)

I----------I

Overall
(General sense of well-being)

I----------I

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Appendix B

PATIENT HEALTH QUESTIONNAIRE (PHQ-9)

NAME:_____ DATE:_____

Over the last *2 weeks,* how often have you been bothered by any of the following problems? *(use "✓" to indicate your answer)*	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite — being so figety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead, or of hurting yourself	0	1	2	3
		add columns	+	+
(Healthcare professional: For interpretation of TOTAL, please refer to accompanying scoring card).		TOTAL:		

10. If you checked off *any problems,* how *difficult* have these problems made it for you to do your work, take care of things at home, or get along with other people?	Not difficult at all _____ Somewhat difficult _____ Very difficult _____ Extremely difficult _____

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Appendix C

Patient Demographics

Participant ID_____ **Therapist ID** _____
Site ID _____

Condition
___Feedback
___TAU

Age _____

Gender
___Male ___Female to male transgender
___Female ___Male to female transgender
___Other

Ethnicity
___White
___Asian or Pacific Islander
___Latino/ a
___Native American
___ African American/ Black
___Multiracial

Patient Language _____

Appendix D

Therapist Demographics

Therapist ID _____ **Site ID** _____

Gender
___Male
___Female

Ethnicity
___White
___Asian or Pacific Islander
___Latino/ a
___Native American
___ African American/ Black
___Multiracial

Age _____

Primary theoretical orientation _____

Licensure _____

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Reese, R. J., Toland, M. D., & Kodet, J. (2012, August). *Validity of a psychotherapy outcome measure: The Outcome Rating Scale*. Poster presented at the annual meeting of the American Psychological Association, Orlando, FL.

Reese, R. J., Toland, M. D., Slone, N. C., & Norsworthy, L. A. (2010). Effect of client feedback on couple psychotherapy outcomes. *Psychotherapy: Theory, Research, Practice, Training, 47*(4), 616-630. doi:10.1037/a0021182

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Wang, P. S., Lane, M., Olfson, M., Pincus, H. A., Wells, K. B., & Kessler, R. C. (2005). Twelve-month use of mental health services in the united states: Results from the national comorbidity survey replication. *Archives Of General Psychiatry, 62*(6), 629-640.

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Willborn, R. J., Barnacle, M., Maack, B., Petry, N., Werremeyer, A., & Strand, M. A. (2016). Use of the 9-item patient health questionnaire for depression assessment in primary care patients with type 2 diabetes. Journal Of Psychosocial Nursing And Mental Health Services, 54(1), 56-63. doi:10.3928/02793695-20151109-01

Alexander J. Lengerich, M.S., Ed.S.

Vita

EDUCATION

2014 – 2019 **Ph.D in Counseling Psychology**

University of Kentucky, Lexington, KY (APA-accredited)

Dissertation Title: *Evaluating the Effectiveness of Patient Feedback in an Integrated Healthcare Setting*

Committee Chair: Robert J. Reese, Ph. D

Dissertation proposal accepted: March, 2017

Anticipated graduation: August, 2019

2014 - 2016 **Education Specialist in Counseling Psychology**

University of Kentucky, Lexington, KY

Degree awarded: May, 2016

2012 - 2014 **Master of Science in Counseling Psychology**

University of Kentucky, Lexington, KY

Degree awarded: May, 2014

2011 **Non-Degree Seeking Graduate Student**

Ohio State University

2006-2010 **Bachelor of Arts in Psychology**

Miami University, Oxford, OH

Degree awarded, May, 2010

PREDOCTORAL INTERNSHIP

07/ 2018 – 07/2019 **James A. Haley Veterans' Hospital (Tampa, FL)**
Psychology Intern, Doctoral

SUPERVISED CLINICAL AND SUPERVISION EXPERIENCE

08/ 2016 – 07/2017 07/ 2018 – 07/2019	**Kentucky Correctional Institution for Women (KCIW), Kentucky Department of Corrections (Pewee Valley, KY)** *Psychology Practicum Student, Doctoral*
08/2015 –05/2016	**University of Kentucky Counseling Center (Lexington, KY)** *Psychology Practicum Student, Doctoral*
01/2016 – 05/2016	**University of Kentucky Counseling Psychology Program (Lexington, KY)** *Supervisor of Masters Students, Doctoral*
01/2015 – 05/2015	**Bluegrass.org Comprehensive Services (Frankfort, KY)** *Psychology Practicum Student, Doctoral*
08/2013 – 05/2014	**University of Kentucky Chandler Medical Center, Trauma Service (Lexington, KY)** *Psychology Practicum Student, Masters*
10/2013 – 12/2013	**University of Kentucky Counseling Psychology Program (Lexington, KY)** *Group Co-leader, Masters*

ADDITIONAL CLINICAL EXPERIENCE

02/2018 – 07/2018	**Rogers Memorial Hospital (Tampa, FL)** *PRN Behavioral Specialist*
08/2014 – 05/2015	**University of Kentucky Office of Student Conduct/ Community of Concern (Lexington, KY)** *Graduate Assistant, Doctoral*
07/2013 – 12/2013	**University of Kentucky Dean of Students Office (Lexington, KY)** *COACH/Drug Workshop Facilitator*
12/2010 – 09/2012	**North Central Mental Health Services, Alcohol, Drug, and Mental Health Team (Columbus, OH)** *Case Manager*

RESEARCH EXPERIENCE

05/2015 – 07/2018 **Fellow/Research Consultant,** Baptist Health Lexington, Lexington, KY

RESEARCH ACTIVITIES

PEER-REVIEWED JOURNAL PUBLICATIONS

Winner-Stoltz, R., **Lengerich, A. J.**, Hench, A. J., O'Malley, J., Kjelland, K., Eal, M. (2018). Staff nurse perceptions of
open pod and single family room NICU designs on work environment and patient care. *Advances in Neonatal Care, 18*(3), 189-198.

Fultz, A., Walker, M., **Lengerich, A. J.,** Bugajski, A.A. (2018). Job satisfaction of medical imaging technologists: A look at work environment, communication, and leadership. *Radiologic Technology 89(6), 536-540*

Davies, C. C., **Lengerich, A. J.**, Bugajski, A., & Brockopp, D. (2018). Detecting change in activity using the patient-specific functional scale with breast cancer survivors. *Rehabilitation Oncology 36(2), 117-122*.

Reese, R.J., Duncan, B., Kodet, J., Brown, H., Meiller, C., Farook, M., **Lengerich, A. J.**, Vasilj, I., Hong, S., & Bohanske, R. (2017). Patient feedback as a quality improvement strategy in an acute care, inpatient unit: An investigation of outcome and readmission rates. *Psychological Services*, doi:10.1037/ser0000163

Bugajski, A., **Lengerich, A. J.**, Marchese, M., Hall, B., Yackzan, S., Davies, C., & Brockopp, D. (2017). The importance of factors related to nurse retention: Using the Baptist Health Nurse Retention Questionnaire®, Part 2. *Journal of Nursing Administration,* 47(6), 308-312.

Lengerich, A. J., Bugajski, A., Marchese, M., Hall, B., Yackzan, S., Davies, C., Brockopp, D. (2017). The Baptist Health Nurse Retention Questionnaire: A methodological study, Part 1. (2017). *Journal of Nursing Administratio*n, 47(5), 289-293.

Melton, L**., Lengerich, A. J.**, Collins, M., Mckeehan, R., Griggs, P., Payton, I., Davies, T., Johnson, B., & Bugajski, D. (2017). Evaluation of huddles: A multi-site study. *The Healthcare Manager, 36(3) 282-287. doi: 10.1097/HCM.0000000000000171*

Bragg, L., Bugajski, A., **Lengerich, A. J.**, Brockopp, D., Caldwell, R., Houle, L., Thompson, R., Chula, R., & Keith, C. (2016). How do patients perceive hourly rounding? *Nursing Management, 47*(11), 11-13.

Bugajski, A., **Lengerich, A. J.**, McCowan, D., Merritt, S., Moe, K., Hall, B., & ...Brockopp, D. (2016). The Baptist Health High-Risk Falls Assessment: One assessment fits all. *Journal of Nursing Care Quality, 32* (2), 1-6.

Reese, R. J., Mecham, M. R., Vasilj, I., **Lengerich, A. J.**, Brown, H. M., Simpson, N. B., & Newsome, B. D. (2016). The effects of telepsychology format on empathic accuracy and the therapeutic alliance: An analogue counseling session. *Counselling and Psychotherapy Research*, *16*, 256-265.

Davies, C. C., Brockopp, D., Moe, K., Wheeler, P., Abner, J., & **Lengerich, A. J.** (2016). Exploring the lived experience experience of women immediately following mastectomy: A phenomenological study. *Cancer Nursing (Epub ahead of print)*.

Hahn, J., **Lengerich, A. J.**, Byrd, R., Hench, J., Ford, C., Byrd, S., & Stoltz, R. (2016). Neonatal abstinence syndrome: The experience of infant massage. *Creative Nursing*, *22* (1), 45-50.

MANUSCRIPTS SUBMITTED AND IN PREPARATION

Farook, M.W., Hong, S., Brown, H.M., **Lengerich, A. J.**, Reese, R.J. (in preparation). Client's experiences of providing feedback in psychotherapy.

Groppo-Lawless, S., **Lengerich, A. J.,** Bugajski, A.A. (in preparation). Development of a nursing dysphagia screen. *American Journal of Speech Language Pathology.*

Lengerich, A. J., Brockopp, D., Moe, K., Schreiber, J., Yackzan, S., Abner, J., Hatch, J., McKinney, E., Bugajski, A.A. (in preparation). Comparing women's well-being pre- and post- diagnosis of breast cancer: A prospective cohort study. *Psychology of Women Quarterly.*

Workman, C., Ogle, K. C., Wilder, K., Brockopp, D., **Lengerich, A. J.** (in preparation). Predicting discharge destination for elective hip and knee replacements using a multidisciplinary post-operative clinical scoring tool. *Physical Therapy.*

GRANTS (FUNDED)

Co-Investigator (2016)

The Effect of Essential Oils on Anxiety Among Radiation Oncology Patients. (Principal Investigator: Smith J.; Co-Investigators: Weaver C., Beckman A., Hayne M., Thompson B., Smither M., **Lengerich A. J.,** Bugajski A.) $5,000. Study in progress.

Principal Investigator (2015)

Evaluating the Impact of Sleep Surface on Sleep Quality, Pain, and Well-being Among Chronic Pain Patients (Principal Investigator: **Lengerich, A. J.,** Co-Investigators: Bugajski, D., Brockopp, D.) $87, 810.00

(NON-FUNDED)

Co-Investigator (2015)

Community Based Transitions of Care for Venous Thromboembolism (Principal Investigator: Altpeter, T., Co-Investigators: **Lengerich, A. J.,** Piercy, E., Ruggles, R., Brockopp, D.) Pfizer, Bristol – Meyers $449, 510.00

PRESENTATIONS

PEER-REVIEWED

Lengerich, A. J., Bugajski, A.A. (2017, September). *Understanding factors related to nurse retention*. Lecture presented at the annual Transforming Practice Through Publication Research Symposium, Baptist Health Lexington, Lexington, KY.

Farook, M. W., Brown, H. M., Hong, S., Clemons, J. M., **Lengerich, A. J.,** Meiller, C. E., Vasilj, I., Reese, R. J. (2017, August). *Clients' experiences of providing feedback in psychotherapy: A qualitative study*. Poster presented at the annual meeting of the American Psychological Association, Washington, DC.

Farook, M. W., Brown, H. M., Hong, S., Clemons, J. M., **Lengerich, A. J.,** Meiller, C. E., Vasilj, I., Reese, R. J. (2016, August). *Clients' experiences of providing treatment outcome and alliance feedback in therapy*. Poster presented at the annual meeting of the American Psychological Association, Denver, CO.

Meiller, C. E., Brown, H. M., Vasilj, I., **Lengerich, A. J.,** Hong, S., Farook, M. W., Clemons, J. M., Reese, R. J., Hatfield, D. R. (2016, August). *The use of outcome measurements by psychologists in clinical practice: An update.* Poster presented at the annual meeting of the American Psychological Association, Denver, CO.

Vasilj, I., Farook, M. W., Hong, S., Brown, H. M., **Lengerich, A. J.,** Meiller, C. E., Reese, R. J., Bohanske, R. T., Duncan, B. L. (2016, August). *Client feedback in an inpatient setting: Fidelity, outcome, and readmission rates.* Poster presented at the annual meeting of the American Psychological Association, Denver, CO.

Farook, M. W., Hong, S., Brown, H. M., **Lengerich, A. J.,** Meiller, C., Vasilj, I., Bohahske, R. T., Duncan, B. L., Reese, R. J. (2016, August). *Client feedback in an acute care, inpatient setting: Compliance improves outcomes.* Poster presented at the annual meeting of the American Psychological Association, Denver, CO.

Lengerich, A. J., Kirkpatrick, B., Brown, H. M., Hopkins, N., Sobel, D., Kieffer, K. M., Reese, R. J. (2016, August). *Evaluating the use of the problem management framework across theoretical orientation.* Poster presented at the annual meeting of the American Psychological Association, Denver, CO.

Workman, C., Ogle, K. C., Wilder, K., Brockopp, D., **Lengerich, A. J.** (2016, May). *Predicting discharge destination for elective hip and knee replacements using a multidisciplinary post-operative clinical scoring tool.* Lecture presentation at the annual meeting of the National Association of Orthopedic Nurses, Lake Buena Vista, Florida.

Workman, C., Ogle, K. C., Wilder, K., Brockopp, D., **Lengerich, A. J.** (2015, November). *Predicting appropriate discharge destination for elective hip and knee replacement using a multidisciplinary clinical scoring tool.* Lecture presentation at the fifth annual orthopedic research symposium: Comprehensive Care of the Complex Orthopedic Patient, Baptist Health Lexington, Lexington, KY.

Lengerich, A. J., Kodet, J. D., Brown, H. M., Meiller, C., Vasilj, I., Bohanske, R. T., Duncan, B. L., Reese, R. J. (2015, August). *Client feedback, outcome, and recidivism in an acute care, inpatient setting.* Poster presented at the annual meeting of the American Psychological Association, Toronto, CA.

Reese R. J., Mecham M. R., Vasilj I., Simpson N. B., **Lengerich A. J.**, Brown H. M., Cornett H. L. (2014, August). *The effects of telepsychology format on the therapeutic alliance and empathic accuracy.* Poster presented at the annual meeting of the American Psychological Association, Washington, DC.

Newsome B. D., Simpson N. B., Mecham M. R., Vasilj I., **Lengerich A. J.**, Hart J. M., Reese R. J. (2013, August). *Evaluating empathic accuracy and the therapeutic alliance in different telepsychology formats.* Poster presented at the annual meeting of the American Psychological Association, Honolulu, HI.

INVITED

Lengerich, A. J., (2014, October 23). *Counseling health psychology.* Counseling Psychology Program, University of Kentucky, Lexington, KY.

Butz, A., Glover, R. L., Hu, S., **Lengerich, A. J.,** Li, C. (2014, April 14). *Appalachian populations*. Counseling Psychology Program, University of Kentucky, Lexington, KY.

Lengerich, A. J., (2014, April 26). *Amphetamines.* University of Kentucky Chandler Medical Center, Trauma Services, Lexington, KY.

Lengerich, A. J., (2013, October 16). *Motivational interviewing and stages of change.*

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TEACHING EXPERIENCE

01/2017 – 05/2017	**Lab Facilitator** College of Health Sciences University of Kentucky, Lexington, KY
09/2015 10/2016	**Ally Development Workshop,** Department of Education, School, and Counseling Psychology, University of Kentucky