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DEVELOPMENT OF A TOOL TO ASSESS REASONS FOR TREATMENT  
NONADHERENCE IN PRIMARY CARE SETTINGS

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Dissertation

presented in partial fulfillment of the requirements  
for the degree of

Doctor of Philosophy  
in Clinical Psychology

The University of Montana  
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## Development of a Tool to Assess Reasons for Treatment Nonadherence in Primary Care Settings

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Decades of research demonstrate that people's behavior has a tremendous influence on their overall health (e.g., DSHHS, 2014; Kokkinos, 2012; Segerstrom & Miller, 2004; Willet et al., 2006). Nonadherence to clinical recommendations is a common obstacle in healthcare (DiMatteo, 2004b), which is associated with worse health outcomes (DiMatteo, Giordani, Lepper, & Croghan, 2002). Behavioral health professionals (BHPs) are often involved in assessing and addressing nonadherence; however, there is a lack of standardization in how it is approached. Relatedly, there is no extant tool designed to help primary care BHPs efficiently identify barrier to adherence across diverse treatment targets. Such a tool may help BHPs and patients to more effectively identify and address adherence barriers, which could improve intervention efforts and health outcomes. The purpose of this study was to create, explore the feasibility of, and refine such a tool, which we called the Barrier Identification Tool (BIT). The main research questions of this project were: 1) What are behavioral health professionals' reactions to using the BIT in an integrated primary care setting?, and 2) What feedback do these providers have regarding the BIT that could lead to its change or improvement? The BIT was adapted from the Missing Links Analysis, a Dialectical Behavior Therapy (DBT) tool designed to help therapists and patients address nonadherence and craft appropriate interventions (Linehan, 2015). 14 primary care BHPs completed the study, which consisted of participation in an orientation to the BIT, using the tool for 5-6 weeks, and completing a semi-structured interview and three surveys (Demographics and Professional Experience Survey, Quantitative Questions for BIT Feasibility Study, and Integrated Practice Assessment Tool). 11 of these individuals were included in final data analysis due to reaching saturation. Qualitative data was analyzed using a generic qualitative approach incorporating qualitative content analysis (conventional) and elements of phenomenology. On the whole, qualitative and quantitative data suggests that using the BIT in integrated primary care settings is feasible and providers seemed to find it useful. Participants reported being able to use the tool in a number of ways for various patient concerns with positive results (e.g., improved communication with patients, more thorough assessment, reported patient changes). Participants also reported some challenges using the BIT, such as its formal language and readability. Feedback on the tool was incorporated to create revised versions of the BIT in an effort to improve the effectiveness of the original tool. Implications, limitations, and directions for future research are discussed.

## TABLE OF CONTENTS

Abstract .....	ii
Introduction .....	1
Influence of Behavior on Health .....	1
Health Psychologists and Primary Care Psychology .....	3
Definitions/Conceptualizations .....	9
Compliance/Noncompliance .....	9
Adherence/Nonadherence .....	10
Nonadherence to Healthcare Advice .....	11
Model of Health Behavior Change .....	15
Health Belief Model (HBM) .....	15
Self-Determination Theory (SDT) .....	16
Theory of Planned Behavior (TPB) .....	19
Transtheoretical Model (TTM) .....	20
Information-Motivation-Strategy Model (IMS) .....	24
Intervention Approaches for Nonadherence .....	26
Integrated Primary Care and Nonadherence .....	29
Assessing for Nonadherence .....	31
Dialectical Behavior Therapy and Assessment of Nonadherence .....	35
The Current Study .....	37
Research Questions .....	41
Methods .....	45
Participants .....	45
Research Team .....	44
Materials .....	44
Procedure .....	46
Establishing Trustworthiness .....	48
Member Checking .....	48
Results and Discussion .....	49
Analysis .....	50
Trustworthiness .....	56
Qualitative Findings .....	57
Member Check Findings .....	90
Enhancing Trustworthiness .....	95
Discussion .....	96
Implications of Study Result on Health Behavior Change .....	100
Limitations .....	107
Future Directions .....	109
References .....	110
Appendices .....	128
Appendix A .....	128
Appendix B .....	130
Appendix C .....	133
Appendix D .....	134
Appendix E .....	137

Appendix F.....	138
Appendix G.....	139
Appendix H.....	142
Appendix I .....	148

## Development of a Tool to Assess Reasons for Treatment Nonadherence in Primary Care Settings

It is well established that people's behavior has a tremendous impact on their health. Nevertheless, modifying unhealthy behaviors continues to be a significant challenge in the field of healthcare. Since health psychology's emergence in the 1970s, psychologists in medical settings have used their knowledge of behavior change to help patients address health problems. This work has been guided by an array of health behavior change models, which have been applied to diverse problems ranging from anxiety to insomnia to weight loss. Regardless of the intervention being carried out by healthcare workers, nonadherence to clinical recommendations is a common obstacle. It is both prevalent and linked to poorer health outcomes. Behavioral health professionals (BHPs), including health psychologists, are often involved in the assessment of nonadherence; they attempt to identify and address the underlying factors that contribute to it. While nonadherence issues are complex and often require multifaceted intervention approaches, a number of brief, targeted interventions have been found effective in improving adherence rates. Nevertheless, these interventions are not consistently implemented. Despite the importance of addressing nonadherence, there is a lack of standardization in how it is approached. In particular, there is no assessment tool designed to help BHPs quickly identify reasons for nonadherence. Developing such a tool may allow healthcare workers and patients to more effectively assess for and identify obstacles to adherence, which could lead to more effective, targeted interventions. The purpose of the current study was to create and assess the feasibility of such a tool.

### **Influence of Behavior on Health**

Decades of research demonstrate that behavior exerts a strong influence on health via a range of lifestyle factors including tobacco and alcohol use, physical activity and diet, and stress. Moreover, successful medical treatment of common conditions (e.g., hypertension, diabetes,

hyperlipidemia, insomnia) requires significant behavioral involvement from the patient, ranging from adherence to medication regimens to the implementation of behavioral changes, such as those mentioned above. Social context further impacts individual health behaviors through social norms, education on health risks and prevention, providing or preventing opportunities to engage in behaviors, offering or not offering support, and adding or removing stress from the individual (Institute of Medicine Committee on Health and Behavior, 2001). In sum, effective healthcare often requires patients to make and maintain difficult behavioral changes.

There are many examples of links between lifestyle/behavioral factors and health that have been empirically supported in the literature. Discussing them all is beyond the scope of this paper; however, several widely studied examples will be described here. A great deal of research has clarified that cigarette smoking increases the risk of heart disease and various cancers (e.g., lung, larynx, esophagus, pharynx, mouth, and bladder), while reducing general health (DSHHS, 2014). Importantly, heart disease and cancer are the top two leading causes of death in the United States (Murphy, Xu, & Kochanek, 2017). Meanwhile, alcohol use accounts for approximately 88,000 deaths each year (Stahre, Roeber, Kanny, & Brewer, 2014) and is associated with cirrhosis, another top ten cause of death in the United States (Murphy, Xu, & Kochanek, 2017). Moreover, alcohol is a factor in both unintentional injuries (e.g., traffic accidents, drownings, burns, and falls), as well as violent behaviors, including homicide, suicide, and domestic violence (WHO, 2007).

Concerning physical activity and diet, evidence demonstrates that people who are physically active have a lower mortality rate compared to those who are inactive (Kokkinos, 2012). Dietary factors are associated with four of the ten leading causes of death (Willet et al., 2006). Individuals who are obese are at greater risk of mortality and morbidity for a range of

health issues, such as hypertension, sleep apnea, respiratory problems, and dyslipidemia (NHLBI, 2013).

With regards to stress, studies suggest that it detrimentally impacts health in myriad ways. When experienced chronically, stress impairs the immune system (Segerstrom & Miller, 2004) and contributes to various health issues, including coronary artery disease, gastrointestinal distress, cancer, and hypertension (Spruill, 2010; Vitetta, Anton, Cortizo, & Sali, 2005). Stress is also linked to the onset and maintenance of mental health issues, such as depression (Hammen, 2005), anxiety, and post-traumatic stress disorder (PTSD; American Psychiatric Association, 2013). Additionally, individuals living in more stressful conditions engage in detrimental health behaviors (e.g., smoking, substance use) at higher rates compared with those who live in less stressful environments (Schneiderman, Ironson, & Seigel, 2005). Not only are the effects of stress harmful and diverse, but they are also pervasive. In a recent survey by the American Psychological Association, approximately one quarter of adult Americans reported that stress has a strong or very strong impact on their mental or physical health (APA, 2015).

### **Health Psychologists and Primary Care Psychology**

A subset of psychologists, clinical health psychologists, specialize in addressing health behaviors. They work towards the “promotion and maintenance of health, the prevention and treatment of illness, and the identification of etiologic and diagnostic correlates of health, illness and related dysfunctions” (Matarazzo, 1980, p. 815). These aims may be achieved in various ways. For instance, clinical health psychologists may present information to the general public on behavioral health issues (e.g., insomnia, stress, smoking, etc.), including causal and maintenance factors, as well as resources to help address them. They may also educate other healthcare providers on behavioral health issues, what clinical health psychologists



can offer patients (e.g., Cognitive Behavior Therapy [CBT] for insomnia, CBT for chronic pain, relaxation strategy training), brief behavioral interventions (e.g., stimulus control, pacing, relaxation strategies), use of screening tools (e.g., Insomnia Severity Index, GAD-7, PHQ-9), and communication techniques. Clinical health psychologists are also uniquely capable of contributing to research projects within healthcare systems, given their training in both research and clinical work.

Additionally, health psychologists provide clinical services in various healthcare settings, including primary care (Gatchel & Oordt, 2003). They may offer advice and support to other providers who are treating behavioral health problems or they may provide clinical services directly to patients. Regarding the provision of support to other providers, clinical health psychologists may assist with assessment, diagnosis, treatment decisions, and referrals. When working directly with patients, clinical health psychologists often collaborate with patients to set behavior change goals, provide skills training to help patients achieve those goals, and implement ongoing assessment and support to enhance patients' abilities to reach their goals.

There are various models of primary care psychology. These include 1) Psychologists as Primary Care Provider Model (Dobmeyer, Rowan, Etherage, & Wilson, 2003; Gatchel & Oordt, 2003), 2) Staff Adviser Model (Dobmeyer et al., 2003; Gatchel & Oordt, 2003), and 3) Primary Care Behavioral Health Model (Gatchel & Oordt, 2003; Strosahl, 1998; Strosahl, 2005). Each of these models will be described briefly.

In the Psychologist as Primary Care Provider Model (Dobmeyer et al., 2003; Gatchel & Oordt, 2003), psychologists work as independent providers within the primary care clinic. They collaborate with medical providers to coordinate patient care but are primarily responsible for the patient's behavioral / mental health care. As a result, patients must provide an additional

informed consent to be treated by the psychologist. Despite this symbol that the psychologist is not a fully integrated member of the primary care team, approximately 90% of patients follow through on psychology referrals in the Psychologist as Primary Care Provider Model (Gatchel & Oordt, 2003). In this context, psychologists provide individual and group therapy with standards of care identical to that of stand-alone outpatient mental health clinics. A primary concern with this model is that if the psychologist is referred all patients with behavioral health issues, they will be unlikely to meet the large demand (Gatchel & Oordt, 2003). Following is a case example illustrating the role of the psychologist in the Psychologist as Primary Care Provider Model.

A 60-year-old woman complains to her primary care provider (PCP) that she has been sleeping poorly since the death of her husband approximately two years ago. She has undergone grief counseling and feels that she is coping well, but her sleep problems persist. She was prescribed hypnotic medications in the wake of her husband's death to address acute sleeplessness, but she reports that the medication did not seem to help, and she discontinued its use. Further, the patient states that she would prefer a non-pharmacological treatment. After a brief evaluation, her PCP diagnoses her with primary insomnia and recommends that she schedule an appointment with the primary care psychologist at the reception desk. Upon visiting the psychologist, she is provided with a thorough assessment of her insomnia, after which they agree to carry out a 6-week Cognitive Behavioral Therapy for Insomnia (CBT-I) protocol. The psychologist communicates their treatment plan and the PCP agrees to follow up with the woman about the quality of her sleep after the full course of CBT-I is delivered. Should the woman's sleep difficulties return, the PCP will refer her back to the psychologist for further treatment.

In the Staff Adviser Model (Dobmeyer et al., 2003; Gatchel & Oordt, 2003), psychologists work as expert consultants to medical providers within the primary care setting. They support medical providers by providing expert advice on the diagnosis and treatment of behavioral health concerns. Within the Staff Adviser Model, psychologists have no independent contact with patients (Gatchel & Oordt, 2003). Instead, they meet together with the medical professional and patient to assess the situation, and then provide input to the medical provider. For example:

A PCP requests assistance from the staff psychologist in treating a 35-year-old man who is nonadherent in taking his blood pressure medication and has a history of depression. The PCP reports that he has informed the patient of the importance of taking his medication during prior visits, but the patient continues to report taking less than 50% of his prescribed doses, even after a recent hypertensive emergency that brought him to the ED. The psychologist interviews the man with the PCP present and then they leave the room to discuss the case. The psychologist provides her biopsychosocial conceptualization of the factors impacting the patient's nonadherence and then makes a few specific suggestions: refer the patient for treatment of depression, identify a social support who is willing to check in with him about his medication adherence between visits, and have him post a medication tracking chart in a part of his apartment where it will be seen regularly. The physician will implement the plan and continue to serve as the patient's primary provider.

In the Primary Care Behavioral Health Model (PCBH; Gatchel & Oordt, 2003; Strosahl, 1998; Strosahl, 2005), psychologists (and other behavioral health experts) provide general consultation services for behavioral health concerns and develop chronic condition programs.

Regarding general consultations, psychologists typically meet with patients referred by their PCP for one to three visits, which last 15-30 minutes each. In these consultations, the psychologist provides a brief assessment of the presenting concern and deploys targeted interventions that often include education and goal setting to support behavior change. The psychologist utilizes interventions that have been found to be effective in other settings, as the PCBH model provides a framework for delivering interventions, rather than creating novel interventions (Reiter, Dobmeyer, & Hunter, 2017). As a consultant, the psychologist's responsibility is to address the presenting concern or referral questions that has been provided by the patient's PCP, helping the PCP meet the patient's overall treatment needs (Gatchel & Oordt, 2003; Strosahl, 2005). For example:

A 65-year-old woman is seeing her PCP who has recommended that she improve her diet and exercise to better manage her diabetes and lower her risk of heart disease. She was previously referred to a dietician, but she has been unsuccessful in implementing the recommended lifestyle changes and expresses a lack of confidence in her ability to do so. The PCP introduces her to the clinic's behavioral health consultant (BHC) through a "warm hand off" and moves on to her next patient. The BHC is able to help the woman identify how making lifestyle changes aligns with her values, identify some small changes to make that the patient feels able to carry out, and they plan to follow up in two weeks to assess progress and make further adjustments to her lifestyle change plans. The BHC updates the PCP on their visit, and the health behavior change consult chart note becomes a part of the patient's medical record, which can be seen by the patient's entire medical team.

In addition to conducting clinical visits, psychologists working in the PCBH Model establish programs (also known as pathways) to address common behavioral health issues and chronic conditions, in an ongoing manner, with evidence-based protocols (Strosahl, 2005). Pathways are “a map of the process involved in managing a common clinical condition or situation... [that] detail what to do, when to do it, by whom the action should be undertaken and where the task should be performed” (Bryan, Homes, & Postlethwaite, 2002). Established pathways may include details such as how assessment or screening will take place, who will be referred, who will take the referrals, what interventions will be used, and how outcomes will be measured to ensure the pathway is functioning well and to inform adjustments. To warrant establishment of a pathway, conditions must have a high impact on the primary care population (in terms of frequency or intensity); there must be empirically supported treatments available (either behavioral health or psychopharmacological); and development of the pathway must be feasible for the organization (Geyman, 1998). Some examples of common pathways targets are diabetes, chronic pain, depression, and panic disorder.

In contrast to the Staff Adviser Model or Outpatient Mental Health Model, the PCBH Model adopts a population health perspective on the management of behavioral health concerns. This means that briefly addressing the behavioral health concerns of the entire patient population is prioritized above the complete amelioration of behavioral health concerns for a small subset of patients (Gatchel & Oordt, 2003; Robinson & Reiter, 2016; Strosahl, 2005). In other words, a BHC in the PCBH model will work with a patient in a time limited manner (e.g., 2-3 sessions), hoping to see an improvement in their condition, but not necessarily with the expectation that their condition will be completely resolved. In contrast, a psychologist working in Outpatient

Mental Health may work with a patient for months to years, with the end goal of completely alleviating the patient's symptoms and meeting the entirety of their treatment goals if possible.

## **Definitions/Conceptualizations**

### ***Compliance/Noncompliance***

Thinking about patients' lack of adherence to provider recommendations and its effect on treatment outcomes dates back to the father of Western Medicine, Hippocrates, who once said that the physician should "keep a watch... on the faults of the patients, which often make them lie about the taking of things prescribed. For through not taking disagreeable drinks, purgative or other, they sometimes die" (as cited in Brown & Bussel, 2011). Awareness of this healthcare concern extends to the present era, when the term noncompliance has been used to describe a failure or refusal to comply with provider recommendations (Vermeire, Hearnshaw, Royen, & Denekens, 2001).

Compliance was first defined in the literature as "the extent to which the patient's behaviour (in terms of taking medications, following diets or executing other lifestyle changes) coincides with the clinical prescription" (Sackett & Haynes, 1976; as cited by Vrijens et al., 2012). A patient might have been labeled noncompliant if they did not follow a provider's recommendations; for instance, by missing doses of their medication, failing to increase their weekly exercise, or neglecting to cut back on unhealthy eating habits. Over the years, the term noncompliance developed a negative connotation because it implies a "rigid hierarchical relationship between physician and patient" (Klesinger, 2003, p. 18) and assigns responsibility for follow through with treatment recommendations to the patient. Lutfey and Wishner (1999) nicely captured objections to the noncompliance literature, saying it is "flawed in its focus on patient behavior as the source of 'noncompliance'... it neglects the roles that practitioners, the

American medical system, and patient-practitioner interaction play in medical definitions of ‘compliance’” (p. 635). Historically, responsibility for the noncompliance issue was attributed to the patient (WHO, 2003). When a patient did not take medication, the person might be labeled noncompliant and no further questions raised. A provider might not inquire about whether they could afford the medication, find out if they have trouble remembering to take it, wonder whether the provider left out some important detail, or assess for any of the other factors that contribute to noncompliance. Over time, blame for noncompliance began to shift from patient to provider, before the current, more balanced view of noncompliance as a systemic issue (WHO, 2003).

### *Adherence/Nonadherence*

Due to blame and negative connotations of the term “noncompliance,” there have been efforts to replace the term with “nonadherence” in recent decades (Meichenbaum & Turk, 1987; WHO, 2003). The World Health Organization defines adherence as “the extent to which a person’s behaviour – taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider” (WHO, 2003). The definition for adherence largely resembles the aforementioned compliance definition, except for the noteworthy change in language regarding the provider-patient relationship. Whereas the compliance definition referred to the patient’s behavior “coincid[ing] with the clinical prescription,” the adherence definition refers to the patient’s behavior “correspond[ing] with the agreed recommendations from a health care provider.” The compliance definition language communicates a hierarchical relationship where the provider prescribes behavior that the patient should follow. In contrast, the adherence definition language communicates that the patient is to follow clinical recommendations that they have agreed on with the provider, acknowledging a

more collaborative provider-patient relationship (Martin, Haskard-Zolnieriek, & DiMatteo, 2010). Extending beyond this definition of adherence, the concept now recognizes various factors that influence patient behavior, including social and economic determinants, as well as provider behaviors (WHO, 2003).

### **Nonadherence to Healthcare Advice**

Nonadherence to behavioral health recommendations is an enormous problem. Even in circumstances where individuals seek healthcare services and the appropriate intervention is prescribed, it is common for patients to follow recommendations incompletely, which contributes to suboptimal outcomes. This nonadherence represents a fundamental challenge to implementation efforts and has been the focus of much empirical investigation.

Research demonstrates that nonadherence is extremely common. For instance, a quantitative review of 569 studies showed that approximately one in four individuals does not adhere to treatment recommendations (DiMatteo, 2004b). This review included studies of 17 conditions, ranging from diabetes to cardiovascular diseases to sleep disorders. In addition to the overall nonadherence rate, the data show that adherence is higher when treatments are simpler, like taking medication, as opposed to implementing novel health behaviors. The review by DiMatteo (2004b) showed lower rates of adherence for conditions with more complex treatment regimens, such as diabetes, pulmonary conditions, and sleep disorders, relative to conditions such as GI disorders and arthritis. Although medication taking may be relatively more straightforward than lifestyle changes, in the case of chronic diseases, medication regimens often become more challenging and medication adherence is estimated at just 50% (Geest & Sabaté, 2003). Other research supports this link between complexity and adherence, showing that treatment interventions that are complex or involve lifestyle changes, such as diet or exercise



interventions, have nonadherence rates as high as 70% (Martin, Williams, Haskard, & DiMatteo, 2005).

The pervasiveness of the nonadherence problem is accompanied by equally concerning data on its associated health outcomes, which include greater rates of hospitalization, the spread of infections, and even death. Regarding overall treatment outcomes, meta-analysis shows that the odds of good health outcomes for adherent patients are almost three times greater than for nonadherent patients (DiMatteo, Giordani, Lepper, & Croghan, 2002). This finding is based on 63 studies of various patient populations, disease conditions, and treatments. Notably, positive outcomes for adherence were greater when interventions were based on behavioral change (e.g., dietary change or exercises) as opposed to medication. The authors postulated that this may have to do with the powerful effects of improved health behaviors, relative to the mixed effects of certain medications. In addition to more poor health outcomes, nonadherence is associated with greater hospitalization. Multiple large-scale studies of patients with conditions such as diabetes, hypertension, heart failure, and COPD demonstrate that lower adherence is associated with significantly greater risk of hospitalization (Sokol, McGuian, Verbrugge, & Epstein, 2005; Ho et al., 2006; Sun, Ye, Lee, Dupclay, & Plauschinat, 2008; Stuart et al., 2010). Not only can nonadherence exacerbate people's conditions, but it can contribute to new illnesses. When individuals do not complete their prescribed medication regimen it can lead to the development of antibiotic resistant bacterial infections, which puts the entire population at greater risk (Raviglione, Gupta, Dye, & Espinal, 2001). Finally, nonadherence can lead to death. In the case of cardiovascular disease, it is estimated that medication nonadherence contributes to approximately 125,000 deaths each year (Smith 1989; WHO, 2003).

In addition to negative health outcomes, there are also substantial financial costs associated with nonadherence in the United States. Estimates suggest that nonadherence-related costs total as much as 300 billion dollars each year (DiMatteo, 2004b; IMS Institute for Healthcare Informatics, 2013; Osterberg & Blaschke, 2005; Viswanathan et al., 2012). These costs capture both hospital admissions linked to poor medication adherence (Osterberg & Blaschke, 2005) and the expense of direct healthcare services involving recommendations that patients do not follow (IMS Institute for Healthcare Informatics; DiMatteo, 2012). These figures focus predominantly on medication related nonadherence; thus, the total cost of nonadherence when considering recommendations such as lifestyle changes and other behavioral health interventions is likely even higher. Cumulatively, these data make it clear that improving adherence rates within the healthcare system is vital.

### **Models of Health Behavior Change**

A number of models have been proposed over the past decades that may be used to explain nonadherence and guide intervention. The following models will be reviewed: Health Belief Model (HBM; Rosenstock, 1974; Rosenstock et al., 1998), Self-Determination Theory (SDT; Deci & Ryan, 1985), Theory of Planned Behavior (TPB; Ajzen, 1991), Transtheoretical Model (TTM; Prochaska, DiClemente, & Norcross, 1992), and Information-Motivation-Strategy Model (IMS; Martin, Haskard-Zolnierrek, & DiMatteo, 2010).

#### ***Health Belief Model (HBM)***

The HBM proposes that a person's willingness to engage in health behaviors to avoid disease can be explained by a constellation of their beliefs: 1) that they are susceptible to the disease, 2) that the disease would exert at least a moderately severe impact on some part of their health, 3) that taking action would reduce their susceptibility to the disease or the severity of its

consequences, 4) that there are no significant barriers (e.g., financial, convenience, pain, embarrassment) to taking action, and 5) that they are able to carry out the needed behavior(s) to influence health outcomes, (Rosenstock, 1974; Rosenstock, Strecher, & Becker, 1998). It also posits that: 6) a cue to action must occur for a health behavior to be carried out. The cue may be internal, such as feeling sick, or it may be external, such as receiving an e-mail reminder about scheduling an annual check-up from one's PCP (Rosenstock, 1974). In accordance with the HBM, person A would be maximally willing to engage in efforts to avoid heart disease if the following were true: They recognize that their poor diet and low activity levels put them at risk. They think that if they develop heart disease, it might kill them, or at the very least impair aspects of their life that they enjoy. They feel confident that starting to exercise and eat a healthier diet could help prevent the development of heart disease. They have the time, access to a gym, are able to afford healthy foods, and see no barrier that would interfere with their lifestyle changes. Finally, they recently watched a news special that detailed the public health risks of heart disease and featured someone with heart disease with whom they shared several characteristics.

The HBM suggests that someone who has fewer of these beliefs may be unwilling to change their health behavior. For instance, person B may share all of the same health beliefs as person A, except they believe that they are unable to change their diet or exercise habits. They may have tried unsuccessfully to change these health behaviors in the past and now feel defeated, in spite of recognizing the severity of their situation. The HBM suggests that by identifying and changing a person's maladaptive health beliefs, providers may help them move from inaction to the pursuit of health behavior change.

Considerable empirical study has focused on the HBM's first four elements: susceptibility, belief, severity, and barriers. As a whole, research shows that certain elements appear to be more predictive of health behavior than others. For instance, a review by Janz and Becker (1984) demonstrated that barriers, benefits, and susceptibility are associated with positive health behaviors, while severity is not. Further, it identified perceived barriers as the most predictive element of the HBM. It should be noted that Janz and Becker utilized statistical significance rather than effect sizes to make their comparisons, which is not the conventional approach to meta-analysis. Harrison and colleagues' meta-analysis (1992) demonstrated that all four elements were related to better health behaviors. At the same time, the effect sizes found in this analysis- were generally weak and the authors were cautious about drawing conclusions about the predictive ability of the HBM model.

A more recent meta-analysis by Carpenter (2010) examined the ability of the HBM to longitudinally predict health behaviors. It found that benefits and barriers were consistently the strongest predictors of health behaviors, while severity was a weak predictor. In other words, when people believe that a) acting will mitigate the negative consequences of a health issue, and b) there are no significant barriers preventing them from acting, they are more likely to engage in health behavior change. Conversely, a person's belief about how negatively a health condition will impact them is less predictive of their health behavior. The authors raise a possibility first put forth by Janz and Becker (1984), that severity and susceptibility may be mediated by perceived threat, which could explain the consistently lower effects found for these elements of the HBM model.

Finally, Jones and colleagues (2014), performed a systematic review of HBM-based interventions aimed at improving medication adherence. They found that most interventions

resulted in significant adherence improvements, showing moderate to large effect sizes. In contrast to prior findings, they concluded that the effectiveness of these interventions could not be attributed to the HBM targets addressed. This was in part because many interventions only utilized part of the HBM model, and many constructs of the HBM model are shared with other social-cognitive models (e.g., the Theory of Planned Behavior; Ajzen, 1991).

### ***Self-Determination Theory (SDT)***

Self-Determination Theory (SDT) is a framework that explores how people's innate psychological needs and growth orientations impact their intrinsic and extrinsic motivation. SDT also investigates how motivation gives rise to behavior, both health-related and otherwise.

In SDT, motivation is divided into its intrinsic and extrinsic variants. Intrinsic motivation refers to doing an activity for its inherent satisfaction, while extrinsic motivation refers to the carrying out of an action to attain a secondary outcome. For instance, a student who is extrinsically motivated to do their math homework may complete it because they want to get into a good college. Alternatively, an intrinsically motivated student may complete their math homework because they find doing their math homework satisfying in and of itself. Ryan and Deci (2000) further describe intrinsic motivation as humans' "inherent tendency to seek out novelty and challenges, to extend and exercise one's capacities, to explore, and to learn" (p. 70). In essence, they characterize it as a humanistic tendency for positive personal development. In addition to having these characteristics, intrinsically motivated behaviors are thought to be more persistent, in part because circumstantial changes would likely affect extrinsic motivation (Ryan & Deci, 2000). For instance, if the student from the prior example who wanted to attend a good college decided to go to trade school or realized they would not be able to afford college, then

their homework completing behavior would be more likely to drop off relative to a student who was intrinsically motivated to complete their homework.

Although extrinsically motivated behaviors can be susceptible to external influence and control, this is not always the case. SDT describes four types of extrinsic motivation that differ in their locus of causality and associated regulatory processes (Ryan & Deci, 2000). On one end of the continuum is external regulation, in which locus of control is completely external, autonomy is low, and the individual's motivation is driven by external rewards and punishments. On the other end of the continuum is integrated regulation, in which the locus of control is completely internal, autonomy is high, and forms of regulation have been assimilated into the self. Although actions driven by integrated regulation share several similarities with intrinsic motivation, they differ because they are carried out to achieve an outcome other than inherent satisfaction. For instance, a person who attends college simply because they enjoy learning is driven by intrinsic motivation; whereas, someone who attends college because they highly value the financial stability and prestige of white-collar work is driven by integrated regulation. Introjected regulation and identified regulation fall between external regulation and integrated regulation in terms of their perceived locus of causality and relevant regulatory processes. Introjected regulation is characterized by a somewhat external locus of control, low to medium autonomy, and internal rewards and punishments. Meanwhile, identified regulation is characterized by a somewhat internal locus of control, medium to high autonomy, and conscious valuing of certain actions. A recent meta-analysis including 486 separate samples provides empirical support for this continuum structure of motivation (Howard, Gagné, & Bureau, 2017).

SDT theory identifies three psychological needs that support self-determined extrinsic and intrinsic motivation: autonomy, relatedness, and competence. Within the framework of SDT,

autonomy refers to being in control of one's behavior, relatedness describes the feeling that one belongs or is connected to others, and competence is the ability to carry out desired behaviors (Deci & Ryan, 1985; Ryan & Deci 2000). SDT theory and research demonstrates that meeting these needs of autonomy, relatedness, and competence supports intrinsic motivation and the integration of external motivation (Ryan & Deci, 2000).

Meta-analysis shows that more autonomous extrinsic motivation and higher levels of autonomy, competence, and relatedness are associated with better outcomes in healthcare contexts (Ng et al., 2012). In their meta-analysis, Ng and colleagues (2012) analyzed 184 independent data sets that examined SDT constructs within a healthcare context. They found that the three psychological needs (autonomy, competence, and relatedness), in addition to autonomous self-regulation (intrinsic motivation, integrated regulation, and identified regulation), predicted moderate to strong levels of positive health behaviors such as abstinence from tobacco use, physical activity, and medication adherence.

Another meta-analysis by Gillison and colleagues (2019) examined the impact of SDT-based health interventions on psychological needs satisfaction and autonomous motivation. The meta-analysis examined 74 studies conducted across five decades, approximately 80% of which were randomized controlled trials (RCTs). SDT-based intervention had large effect sizes for perceived autonomy support and autonomy, medium effect sizes for competence and motivation, and a small effect size for relatedness. Further, the authors concluded that combination interventions are more impactful than individual strategies. This meta-analysis, along with the previously mentioned meta-analysis by Ng and colleagues (2012) support the notion that SDT interventions increase relevant variables (i.e., autonomy, competence, relatedness, and motivation), and those variables predict healthy behaviors.

### ***Theory of Planned Behavior (TPB)***

The Theory of Planned Behavior (TPB) posits that behavioral intentions can be predicted via attitudes towards the behavior, subjective norms, and perceived behavioral control (Ajzen, 1991). Further, these behavioral intentions contribute to behavioral enaction (Ajzen, 1991). The core constructs of TPB can be understood in the following ways. Attitudes towards the behavior refer to an individual's favorable or unfavorable appraisals of an action. Subjective norms are the perceived social pressures to engage or not engage in a given behavior. Perceived behavioral control refers to the perceived ease or difficulty of carrying out a behavior. These perceptions are thought to be based on past experiences and expected obstacles.

TPB posits that when attitudes towards the behavior are positive, subjective norms support a behavior, and perceived behavioral control is high, intentions to perform an action should be high, and behavioral enaction is more likely. In contrast, when attitudes towards a behavior are negative, subjective norms condemn a behavior, and perceived behavioral control is low, then intentions to perform the behavior are likely to be low and behavioral enaction is less likely. For example, if someone views exercise positively and finds it enjoyable, their friends and family value physical activity, and the individual perceives that they are easily able to exercise, TPB suggests that they are likely to have a high intention to exercise and be more likely to exercise. In contrast, if their friends and family disparage physical activity, they have little interest in exercise, or they perceive many obstacles to exercising, or some combination thereof, then TPB suggest they would have few if any intentions to exercise and would be less likely to do so. Importantly, TPB posits that the predictive value of each variable changes across contexts, such that in one situation perceived behavioral control may have the largest impact on behavioral intention, while in another situation, subjective norms may be the most heavily weighted. For



instance, when it comes to tobacco use, subjective norms may carry more weight, while maintaining a healthy diet may be more impacted by attitude toward the behavior.

Meta analyses support the utility of the TPB for predicting behavior and developing behavior change interventions. A meta-analysis of 185 independent studies found support for the efficacy of the TPB (Armitage & Conner, 2001). It demonstrates that the TPB predicts intentions and behavior with medium to large effect sizes (Armitage & Conner, 2001). A more recent meta-analysis examined behavior change interventions based on TPB and found a mean effect size of .50 for changes in behavior (Steinmetz, Knappstein, Ajzen, Schmidt, & Kabst, 2016).

### ***Transtheoretical Model (TTM)***

The Transtheoretical Model (TTM) proposes that health behavior change can be understood via stages of change, processes of change, self-efficacy, decisional balance, and temptations (Prochaska, DiClemente, & Norcross, 1992; Prochaska & DiClemente, 1982; Prochaska & Velicer, 1997). The TTM was initially developed to explain behavior change with regards to overcoming addiction but has since been applied across behavioral health conditions and treatment targets (Norcross, Krebs, & Prochaska, 2011; Prochaska, DiClemente, & Norcross, 1992). Central to the TTM are the five stages of change: precontemplation, contemplation, preparation, action, and maintenance. Each stage represents a qualitatively distinct period of time during which certain tasks must be completed in order to progress to the next stage (Norcross, Krebs, & Prochaska, 2011). The stages of change are conceptualized as a spiral pattern, rather than a linear progression because it is common for individuals to return to earlier stages of change as they pursue behavior change.

During precontemplation, there is little to no insight about the problem behavior and there is no intention to change the given behavior. In other words, people neither see the

problem, nor have any plans to change (Norcross, Krebs, & Prochaska, 2011; Prochaska, DiClemente, & Norcross, 1992). In contemplation, individuals are aware that there is a problem behavior and are considering taking action. However, there is no commitment to take action at this point. People in the contemplation stage experience ambivalence as they weigh the benefits of change with its costs (i.e., the effort it will take and the losses that will accompany it). For individuals to move through this stage of change, they must resolve their ambivalence (Norcross, Krebs, & Prochaska, 2011; Prochaska, DiClemente, & Norcross, 1992).

Individuals in the preparation stage intend to make behavioral changes in the next month. They may also be making small behavioral changes at present, but these changes do not make a substantial impact on their overall behavioral health problem. For instance, a patient may have planned to quit smoking a month from now and they have already cut back on a few cigarettes per day, but they continue to smoke more than a pack a day (Norcross, Krebs, & Prochaska, 2011; Prochaska, DiClemente, & Norcross, 1992).

During the action stage, individuals have changed their behavior for a period of one day to 6 months and have invested significant time and energy. The action stage is often viewed by people as equivalent to change; however, this view overlooks the important work required to prepare for and maintain change (Norcross, Krebs, & Prochaska, 2011; Prochaska, DiClemente, & Norcross, 1992). Finally, during the maintenance stage, individuals work to prevent relapse. At this time, they engage in fewer change oriented behaviors. The maintenance stage can last from six months up to a lifetime (Prochaska, DiClemente, & Norcross, 1992; Prochaska & Velicer, 1997).

In addition to the stages of change, the TTM describes 10 processes of change that people use to progress through the stages of change (Prochaska & Velicer, 1997). While there are many

discrete interventions that are used to facilitate change, it is thought that these interventions can be grouped into approximately ten categories according to the process of change they impact. *Consciousness raising* refers to the process of increasing awareness of the etiology, consequences, and treatments for a behavioral issue. Interventions that raise consciousness include education, confrontation, bibliotherapy, and feedback. *Dramatic relief* involves short-term increases in emotion followed by alleviation of the evoked emotion. Interventions targeting dramatic relief include role playing, grieving, and media campaigns. *Self-reevaluation* involves cognitive and affective consideration of one's self-image with and without a health behavior. Values clarification and imagery may be used to aid this change process. *Environmental reevaluation* involves cognitive and affective processing of the impact of one's health behaviors on one's social environment. Empathy training, family interventions, and documentary may facilitate this type of processing. *Self-liberation* includes the belief that one can change and commitments to act on that belief. Examples of this include setting a quit date for smoking or making verbal or written commitments. *Social liberation* refers to an increase in available alternates to the current behavior. Examples include smoke free zones, access to contraception, and the availability of affordable and healthy foods.

*Counterconditioning* involves the learning or awareness of healthy behaviors that can be substituted for problem behaviors. These might include learning relaxation strategies to counter stress or using nicotine replacement therapies instead of cigarettes. *Stimulus control* involves the removal of cues or opportunities for unhealthy behavior and addition of cues or opportunities for healthy behavior. Interventions of this sort might have you begin keeping your cigarettes in the trunk of your car or have you park a few minutes' walk from your place of work. *Contingency Management* involves the use of rewards or punishments that are dispensed in response to

particular actions. For example, someone trying to abstain from drugs who tests negative for them may be rewarded with a cash prize, while someone who is making efforts to eat healthier may reward themselves with concert tickets if they eat vegetables twice a day for two weeks in a row. Finally, *helping relationships* can be described as having open and trusting relationships with caring others who support behavior change. People may achieve this through therapeutic relationships, close friends, family, or peer support groups.

The TTM constructs of decisional balance, self-efficacy, and temptation are also pivotal ingredients in the change process. Decisional balance describes how individuals weigh the pros and cons for changing a behavior as they progress through the stages of change. In precontemplation, cons outweigh the pros, in contemplation there is a relatively even balance between pros and cons, and in the preparation, action, and maintenance stages, pros are thought to outweigh cons (Prochaska et al., 1994). Self-efficacy is integrated from Bandura's theory (Bandura, 1977) and refers to people's confidence that they can manage high risk situations without relapse (Prochaska & Velicer, 1997). Similar to decisional balance, self-efficacy is theorized to change as people move through the stages of change, such that individuals become more confident that they will be able to cope effectively with situations that threaten relapse. Relatedly, temptation refers to the intensity of urges to engage in certain behaviors when experiencing difficult situations (Prochaska & Velicer, 1997). During early stages of change individuals are thought to experience greater temptation than during later stages.

A meta-analysis of the transtheoretical model demonstrates that stages of change are reliable predictors of psychotherapy outcomes (Norcross, Krebs, & Prochaska, 2011). Individual's progress in therapy was found to be a function of their pre-therapy stage of change. Interventions tended to be more successful for those who began the intervention in a later stage

of change. Related to this finding, there is evidence that matching interventions to patients' stage of change enhances treatment outcomes. This has been shown for interventions targeting various health behaviors, including smoking, diet, physical activity, and mammography screening (Dijkstra, Conjin, & de Vries, 2006; Prochaska et al., 2005). Meta-analysis has provided additional support that stage-matched interventions enhance treatment outcomes for smoking cessation, increasing physical activity, eating a healthy diet, and engaging in regular mammography screening (Krebs, Prochaska, & Rossi, 2010).

### ***Information-Motivation-Strategy Model (IMS)***

Finally, the Information-Motivation-Strategy Model (IMS; Martin, Haskard-Zolnieriek, & DiMatteo, 2010) is a heuristic model that incorporates components of the previous models. Its elements were first introduced in the early 1980s (DiMatteo & Nicola, 1982), prior to the existence of the meta-analyses on adherence that now support it. The IMS Model takes into account patient and provider variables, including those that are intrapsychic, social, and environmental. It posits that for someone to carry out a health behavior they "must 1) know what change is necessary (information); 2) have the desire to change (motivation); and 3) have the necessary tools to achieve and then maintain the change (strategy) (Martin, Haskard-Zolnieriek, & DiMatteo, 2010).

The information component of the IMS model includes the patient's knowledge of how to adhere and the effective provider-patient communication that makes it possible (DiMatteo, Haskard-Zolnieriek, & Martin, 2012). Thus, in addition to a patient's understanding and recall of a treatment recommendation, the information component also includes the patient's perception of whether their provider understands their health concern, and the quality of rapport between patient and provider. The motivation component of the model incorporates myriad factors that

may impact a patient's motivation to follow treatment recommendations, including the: a) patient's belief that treatment will work, b) patient's belief that they can carry out treatment, c) extent to which treatment is in line with the patient's values, d) extent that the patient believes a health condition is causing harm. The strategy component of the IMS model refers to the skills and strategies that enable adherence to treatment recommendations and support the ability to overcome potential barriers (e.g., forgetting, lack of emotional or physical support, busy schedule, cost, etc.) along the way.

The IMS Model suggests that when a patient knows what to do, is motivated, and has the skills or strategies to follow treatment recommendations, then they will be likely to adhere. Conversely, if the patient does not understand the treatment recommendation, has low motivation, and lacks the necessary skills or strategies to carry out the recommendations, then adherence is likely to be low. Adherence is expected to be high in the case of a patient asked to lower salt intake to help manage their hypertension if they have knowledge of hypertension and its relationship with salt intake, feel motivated to change their behavior (e.g., they value their health and think the behavior change will lower their blood pressure), and have skills and strategies at their disposal that will make consuming less salt feasible. Meanwhile, if a patient with hypertension who has been recommended to lower their salt intake does not understand the link between salt and hypertension, feels low motivation (e.g., they don't think hypertension is likely to cause and serious health consequences), and is not sure how to change their current diet, then it is unlikely they will adhere to the treatment recommendation.

The IMS model has received considerable empirical support from large scale studies. Regarding the information component of the model, studies demonstrate that many individuals do not understand the health information they receive (Nielsen-Bohlman, Panzer, & Kindig,

2004) and the majority of those who do fail to recall essential aspects of it later (Kravitz et al., 1993; Sherbourne, Hays, Ordway, DiMatteo, & Kravitz, 1992). The motivation component of the IMS model is supported by studies showing that shared decision making between provider and patient is associated with better adherence and health outcomes (DiMatteo, Reiter, & Gambone, 1994; Arbutnott & Sharpe, 2009). Additionally, patients' beliefs about their susceptibility to a detrimental health condition, its severity, effectiveness of treatment, and self-efficacy, which are linked to motivation, are associated with greater adherence (DiMatteo, Haskard, & Williams, 2007; Munro et al., 2007; Náfrádi, Nakamoto, & Schulz, 2017).

The strategy component of the IMS model is supported by evidence showing that the provision of skills and strategies to patients and providers leads to improved health behaviors. A meta-synthesis of health behavior change meta-analyses demonstrated that interventions are efficacious across a broad array of health behaviors, including eating, stress management, addictive behaviors, and physical activities (Johnson, Scott-Sheldon, & Carey, 2010). Research also shows that individually tailored, multi-faceted interventions are more effective (e.g., DiMatteo, Haskard-Zolnierok, & Martin, 2012; McDonald, Garg, & Haynes, 2002; van Dulmen et al., 2007). Furthermore, research shows that treatment complexity contributes to nonadherence (Ammassari et al., 2002), while treatment simplification improves adherence (Iskedjian et al., 2002; Morningstar, Sketris, Kephart, & Sclar, 2002).

### **Intervention Approaches for Nonadherence**

The literature suggests that multifaceted interventions work better to address nonadherence than single interventions (Kahana, Drotar, & Frazier, 2008; McDonald, Garg, & Haynes, 2002; Renders et al., 2001). This is attributed to the complexity and diversity of reasons

for nonadherence. Several common transdiagnostic nonadherence issues and relevant interventions will be reviewed categorically, according to the organization of the IMS Model.

Generally speaking, people need to understand the nature of their health issues and the treatment rationale to invest in the health behavior changes they are asked to carry out.

Relatedly, nonadherence may be the result of numerous types of information issues, including poor comprehension, low retention, omissions, and/or failure to check for understanding.

Regarding poor comprehension, many individuals do not understand the health information that they receive (Nielsen-Bohlman, Panzer, & Kindig, 2004). This naturally limits the likelihood that health information will be utilized in the intended manner. Even for those individuals who do understand the health information provided to them, the majority fail to remember important components of it (Kravitz et al., 1993; Sherbourne et al., 1992). While there is evidence that healthcare outcomes are better when providers assess patients' recall, this simple intervention is often neglected (Kravitz et al., 1993; Schillinger et al., 2003). Regarding information omissions, studies demonstrate that providers regularly leave out critical medication instructions (Tarn et al., 2006). Together, these findings underscore the importance of providing opportunities for patients to ask questions and have patients teach back healthcare information to ensure that all important elements were understood. Additionally, these data highlight the importance of providing written information or handouts that review critical treatment elements.

Motivational problems may also lead to nonadherence issues. Patient motivation may decrease when providers make treatment decisions unilaterally, patients maintain health beliefs that minimize the problem or their ability to cope, or subjective norms are incongruent with treatment recommendations. Research shows that shared decision making between provider and



patient is associated with better adherence and health outcomes (DiMatteo, Reiter, & Gambone, 1994; Arbuthnott & Sharpe, 2009).

Consistent with aspects of the Health Belief Model (HBM), patients' beliefs about their susceptibility to a detrimental health condition, its severity, effectiveness of treatment, and self-efficacy are associated with greater adherence (DiMatteo, Haskard, & Williams, 2007; Munro et al., 2007; Náfrádi, Nakamoto, & Schulz, 2017). These findings underscore the important role of providers in assessing for this range of health beliefs in patients, as well as the beliefs and support of important people in their lives (Ammassari et al., 2002; DiMatteo, 2004a; Lanouette, Folsom, Sciolla, & Jester, 2009), and then use motivational enhancement techniques, such as those described by motivational interviewing (Miller & Rollnick, 2013), to address them.

A lack of effective strategies or skills is another aspect that can contribute to the nonadherence of patients. Common treatment strategies to address adherence obstacles include locating financial or physical support, memory aids, scheduling, simplification of treatment, and regular assessment. While financial concerns are sometimes considered separate from skills or strategies, they are included under the strategy component of the IMS Model. Regarding financial or physical support, patient nonadherence is commonly contributed to by an inability to pay for treatment or attend treatment (DiMatteo, Hays, & Sherbourne, 1992; Williams, Haskard, & DiMatteo, 2007). Thus, it is important for providers to consider these factors and work with patient to identify sources of financial assistance and available means of transportation. Even when patients intend to take their medication or engage in another treatment behavior, they may compromise this intention through forgetting or being unable to find time in their busy lives (DiMatteo, Haskard-Zolnierrek, & Martin, 2012). In these cases, providers may work with patients to identify memory aids that will work for them, such as setting alarms, posting

reminders in places they frequent, or pairing the treatment behavior with a daily habit (e.g., meal times). Similarly, providers may help patients review their weekly schedule and incorporate treatment behaviors in a nonintrusive manner, while honoring their values and priorities.

Another well documented contributor to nonadherence is treatment complexity (Ammassari et al., 2002). Research demonstrates that simplifying the treatment approach can lead to improved adherence (Iskedjian et al., 2002; Morningstar, Sketris, Kephart, & Sclar, 2002). Additionally, regular assessment of adherence can help providers to identify nonadherence and lead to a productive dialogue about how to address adherence barriers (DiMatteo, Haskard-Zolnieriek, & Martin, 2012). Finally, some research suggests that measuring adherence can lead to increased adherence in and of itself (Rosenberg, Lussier, & Beaudoin, 1997).

### **Integrated Primary Care and Nonadherence**

Behavioral health professionals (BHP) working in primary care encounter nonadherence on a regular basis. In some cases, a PCP may refer a patient to a BHP explicitly to address nonadherence. For instance, a patient who regularly misses doses of their medication might be referred to a BHP to help identify the particular obstacles they are encountering and develop a tailored plan to help improve their adherence rate. In other cases, addressing nonadherence comes up as a routine part of helping patients enact behavioral changes. BHPs facilitate patient adherence to the PCP's treatment plan, as well as adherence to the plan they have developed with the patient (Reiter, Dobbmeyer, & Hunter, 2018). These plans may include the full range of targets that behavioral health consults address, such as smoking cessation, weight loss, stress management, medication adherence, sleep disturbance, anxiety management, depression management, chronic pain, and alcohol misuse (Reiter, Dobbmeyer, & Hunter, 2018). Typically,

these treatment plans include action steps the patient agreed to carry out during the previous visit. Subsequent meetings often start with the BHP checking in with the patient about how progress towards their plan is going, including any obstacles encountered. If adherence related issues are noted, then the BHP will work together with the patient to come up with a plan for overcoming them. This may include the teaching of new skills or strategies to help facilitate the patient's progress.

The following example describes what this process may look like in practice: A BHP is referred a patient who has depression from their PCP. Upon meeting the patient, the BHP learns that the patient was recommended to increase their activity to help improve their symptoms of low mood; however, the patient reveals that they have not changed their activity levels and further, they do not understand how that is going to make a difference. The BHP would conduct an assessment to understand all possible factors that have interfered with adherence. They may then intervene accordingly, for example, by providing education on behavioral activation and addressing other factors as needed. Together the BHP and patient would develop an updated treatment plan and may schedule a follow up appointment to support its implementation, as well as provide support and troubleshoot further adherence issues that arise.

While some agencies have general guidelines on how a BHP should address non-adherence, its assessment and treatment typically occur in an organic, semi-structured or unstructured manner, as in the previous example (also see AFMOA, 2011 or Mountainview Consulting Group, 2013). BHPs may be encouraged to ask about beliefs that may affect the patient's adherence, inquire whether they have trouble remembering to take medications, and provide behavioral strategies to address adherence barriers. In other instances, there may not be any specific guidelines on how to assess for or address nonadherence. Given the complexity of

adherence-related issues, flexibility in one's treatment approach is important. At the same time, a more systematic approach to non-adherence could increase the likelihood that providers will thoroughly assess for a broad range of potential factors, increasing the likelihood that they identify and intervene on those that are most crucial.

### **Assessing for Nonadherence**

Key responsibilities for BHPs include assessing the extent to which patients' have adhered to their treatment goals, and relatedly, what obstacles they may have encountered. It is important to distinguish assessment of the *extent* to which adherence has occurred from assessment of *reasons* for non-adherence. From a clinical perspective, the former indicates that an intervention to address nonadherence may be warranted, while the latter provides detail about what such an intervention should target. Assessing for either of these adherence variants can be complex, given that patients may have difficulty remembering their goals, struggle to accurately report their progress, or be motivated to represent themselves in a favorable manner. In some cases, patients may be well aware of factors that contribute to their nonadherence (e.g., financial costs), while other times it may be less obvious (e.g., low motivation due to the patient's exclusion from treatment-related decision making).

The extent of adherence may be assessed in a variety of ways, including self-report, pill count, provider report, report by close others, and physiological or biomedical monitoring (Martin et al., 2005; Van Dulmen et al., 2007). Patient self-report is usually the most practical and widely used approach (Atreja, Bellam, & Levy, 2005). Although self-report tends to overestimate adherence rates relative to other forms of assessment, data shows that it does predict clinical outcomes (Stirratt et al., 2015).

While routine screening and assessment for certain high-risk clinical issues is becoming more common within primary care settings (e.g., screening for depression and domestic violence) and are supported by the recommendations of national health organizations, this is not the case for the assessment and treatment of adherence related issues. For instance, the U.S. Preventive Forces Task Force currently recommends that clinicians in primary care settings screen for issues such as high blood pressure, tobacco use, and depression (USPFTF, 2019). Further, these recommendations have been endorsed by professional organizations that support the provision of quality healthcare by providers, including the American Academy of Family Physicians (AAFP). Despite the prevalence of transdiagnostic adherence issues and the reality that many providers are unaware of how well their patients adhere to treatment recommendations (Martin et al., 2005), there are currently no officially sanctioned recommendations to make assessment for treatment adherence a part of usual care. Nevertheless, there is a substantial endorsement for the effective management of treatment non-adherence within the literature (e.g., Atreja, 2005; DiMatteo, 2012; Institute of Medicine, 2001), which includes advocacy for regular assessment of adherence using self-report approaches. These factors make the development and implementation of effective adherence assessment measures a useful research pursuit.

While a variety of adherence measures have been developed, there does not appear to be an extant tool that helps providers in integrated primary care (IPC) settings identify the extent of and barriers to adherence for diverse treatment recommendations. Available adherence measures typically focus on adherence for a specific behavior, such as medication use or CBT homework completion. These measures may be differentiated by their identification of extent of adherence, barriers to adherence, or some combination of both. For example, the Morisky Medication Adherence Scale (MMAS-4; Morisky, Green, & Levine, 1986) is one of the most commonly

used medication adherence measures in the research literature (Lam & Fresco, 2015; Nguyen, Caze, & Cottrell, 2013). It focuses solely on adherence to medication, collects information on extent of adherence, and consists of four yes-no questions (e.g., Do you ever forget to take your prescription drugs?; Do you sometimes stop taking your drugs when you feel better?) that ask about common barriers to adherence (i.e., forgetfulness, carelessness, feeling better, or feeling worse). Based on this information, the administrator can derive a score that indicates the extent of an individual's adherence. Unsurprising given the diversity of barriers, the scale has low ( $\alpha=.61$ ) internal consistency (Morisky et al., 1986). More recently, the MMAS-4 was updated by Morisky and colleagues (2008) to an 8-item version. The additional questions on the MMAS-8 elicit more adherence relevant information (e.g., "Did you take all your medication yesterday?"; "Do you ever feel hassled about sticking to your treatment plan?") and the MMAS-8 has improved internal consistency ( $\alpha=.83$ ). Despite these enhancements, the primary author stated that the MMAS-4 has been used more effectively by providers to identify adherence issues and make recommendations to ameliorate them (Morisky & DiMatteo, 2011), perhaps due to the high premium placed on brevity in the medical system.

Another adherence measure that focuses on a constrained behavior set is the Homework Compliance Scale (HCS), alternately called the Assignment Compliance Rating Scale (ACRS), which measures extent of adherence to CBT homework (Primakoff, Epstein, & Covi, 1986). It is a widely used measure of homework compliance in CBT and consists of a single question that asks how much homework was completed by the patient and provides six response options (e.g., 1 = "the patient did not attempt the assigned homework;" 2 = "the patient attempted the assigned homework, but was unable to execute it for reasons such as lack of ability or extenuating circumstances;" 4 = "the patient did a portion of the assigned homework" and elicits a

percentage completion estimate of 25%, 50%, or 75%; 6 = “the patient did more of the assigned homework than was requested”). The measure has demonstrated high interrater reliability with rater agreement occurring more than 88% of the time (Bryant, Simons, & Thase, 1999). Of note, various single question measures that elicit likert-style responding are commonly used to assess homework completion in CBT (Kazantzis, Brownfield, Usatoff, & Flighty, 2017). Similar to the HCS, these measures identify the extent of adherence, without assessing for barriers.

To address the need to assess for barriers to adherence in CBT, Callan and colleagues (2012) developed a bidimensional instrument to identify barriers to CBT homework completion in a depressed patient sample. The Barriers Scale (BS) consists of 65 items that identify patient factors (e.g., “I didn’t really think homework was very important”) and therapy/task factors (e.g., “My therapist didn’t really explain how CBT works very well”), which may contribute to nonadherence. The two-domain structure was identified through factor analysis. Patient factors consist of items related to procrastination, mood state, and patient beliefs, while therapy/task factors include items regarding therapist skill, therapist qualities, and the nature of CBT assignments. The researchers found that the patient subscale was able to classify patients with low and high adherence (75 to 79%), while the entire scale correlated significantly with compliance (.32 to .46) as measured by the ACRS (Callan et al., 2012).

Previously, Kazantzis and colleagues (2004) developed a briefer measure of CBT homework adherence called the Homework Rating Scale (HRS). It contains 12 likert style questions that measure extent of adherence and barriers to adherence, which include patient, provider, and task variables (e.g., “How much of the assignment were you able to do?”; “how much involvement did you have in planning the assignment?”; “how well did you understand the reason for doing the assignment?”).

Although most current adherence tools focus exclusively on a given behavior type (e.g., medication or CBT homework completion), there are a few notable exceptions. One of these is the General Adherence Scale (GAS; DiMatteo et al., 1992). The GAS is a five question, likert-style, measure of the extent of adherence, which may be used across treatment targets. It is unidimensional targets adherence to a doctor's recommendations (e.g., "I had a hard time doing what the doctor suggested I do"; "Generally speaking, how often during the past 4 weeks were you able to do what the doctor told you?").

While each of the prior measures has utility in assessing for the extent of and/or barriers to adherence, none is especially well suited in its current form to identifying and addressing adherence in IPC settings. Elements of several of these measures may be useful in identifying non-adherence, recognizing barriers, and providing guidance on how to address them.

### **Dialectical Behavior Therapy and Assessment of Nonadherence**

Dialectical Behavior Therapy (DBT) is a CBT treatment approach for complex, multi-problem, emotionally dysregulated individuals. These individuals often experience chronic suicidality and carry the diagnosis of borderline personality disorder (Linehan, 1993). DBT has undergone extensive study across the past three decades and is supported by numerous randomized controlled trials (Kliem, S., Kröger, C., & Kosfelder, 2010).

Psychoeducation and skills training are core components of DBT. The treatment focuses on helping people build skills to tolerate distress, manage emotions, be more mindful, and increase interpersonal effectiveness. To support the learning and practice of these skills, there is assigned homework each week. Importantly, research demonstrates that the more homework a patient does, the more likely they are to benefit from treatment (Kazantzis, Whittington, & Dattilio, 2010).



Given the extreme emotion dysregulation and psychosocial stressors faced by individuals in DBT, nonadherence is ubiquitous in the population it is designed to help. During the development of DBT, it appeared that clinicians sometimes did not know how to respond to nonadherence in a way that was likely to increase adherence. Part of this was likely due to the complexity of the barriers their patients faced. Due to the importance of DBT clients completing homework and skills practice, DBT as a whole focuses significant attention on nonadherence. DBT includes a hierarchy of treatment “targets” or areas of focus. The highest is life threatening behavior, and the second is “therapy interfering behavior,” much of which is equivalent to nonadherence (Chapman, Rosenthal, & Linehan, 2016). This means that DBT clinicians are weekly thinking about the occurrence of nonadherence (and other therapy interfering behaviors) and directly addressing those behaviors.

The Missing Links Analysis (MLA; Linehan, 2015) was developed as a guide for providers and clients to collaboratively address nonadherence and craft appropriate interventions. It is used in group skills training and in individual therapy when nonadherence arises with regard to homework or treatment recommendations. The MLA is a brief, flexible, and interactive tool, making it ideal for adaptation to a primary care setting. Additionally, it maps on well to the IMS Model (Martin, Haskard-Zolnierrek, & DiMatteo, 2010).

The MLA is a semi-structured interview that helps providers and their clients identify barriers to the use of effective behaviors and homework completion. It consists of four yes-no questions that identify initial categories of barriers. These four general categories are: 1) did the client understand what they were to do; 2) was the client willing/motivated to do the homework/plan; 3) did the client remember to do the homework/plan; and 4) if the client understood, was motivated and remembered, what other barriers got in the client’s way? If the

client identifies any one of the four categories as a problem, the clinician follows up to explore in more detail. For example, if the client appears to have understood the assignment, but reports that they really did not want to do it, the therapist may intervene by working on building motivation. If the client reports that they understood and wanted to do the assignment, but forgot about it, the therapist would likely engage in problem solving around ways to remember to do the homework (e.g., reminders in one's phone).

### **The Current Study**

There is currently no extant tool to help behavioral health professionals (BHPs) systematically identify common barriers to diverse behavior change goals. A tool that helps providers systematically query the patient about categories of possible reasons for nonadherence could help BHPs address nonadherence more effectively, and therefore, support the health of patients.

Existing measures are inappropriate for identifying nonadherence in integrated primary care (IPC) settings due to their structure, specificity, and length. Existing measures tend to be highly structured and elicit closed-ended responses from patients in regard to a list of barriers (e.g., HRS, Kazantzis, Deane, & Ronan, 2004; MMAS-8; Morisky, Ang, Krousel-Wood, & Ward). Given the complexity of nonadherence, a semi-structured tool that encourages an interactive exchange of information between patient and provider to clarify the issue and help determine an appropriate course of action could be helpful.

The majority of available adherence measures focus on specific behaviors, such as medication taking or CBT homework completion. Given the wide variety of behaviors that are targets for change in treatment plans, it would be inefficient to use a separate tool to address each behavior. A tool that can be used flexibly, across behavior types would be ideal for IPC settings.

In IPC settings, it is paramount to balance efficiency with effectiveness. In practice, this translates to the quick collection of key data before making treatment decisions. Current nonadherence tools tend to be either too long (e.g., BS, Callan et al., 2012), making them burdensome for the time constraints of the treatment setting, or they are too short and capture an incomplete picture of adherence relevant barriers (e.g., MMAS-4; Morisky, Green, & Levine, 1986).

The MLA may be a useful tool for adaptation to an IPC setting because it is interactive and flexible, and it was developed to address nonadherence in a highly nonadherent population. Given that it was developed for a psychotherapy setting, some adaptation for a behavioral health setting is likely necessary. Open ended questions about adherence barriers, such as those on the MLA (e.g., “what got in the way of doing what was needed?”) may be only partially effective at identifying barriers to nonadherence due to their reliance on patient insight or information and cognitive demand. The Question Appraisal System (QAS), a checklist originally developed for the Center for Disease Control to identify problematic survey questions, asserts that items which can be interpreted in multiple ways or that make assumptions about respondents should be avoided (Willis, 2005). Patients in IBH settings may have myriad interpretations of “what got in the way” and it is reasonable to assume that many do not have extensive knowledge about factors that impact adherence behaviors. While valuable content may be gained through the use of open-ended questions, following up with closed-ended questions that inquire about specific content areas in a reasonably exhaustive manner can ensure that respondents consider a variety of typical factors (Schwarz & Oyserman, 2001). Adding more explicit questions may also be more likely to yield accurate responding in cases when individuals have low motivation to engage in the treatment process. Responding to survey questions is cognitively demanding (Clark & Clark,

1977) and respondents may choose to put forth less effort in instances where they have low motivation or less ability to answer the question(s) (Krosnick, 1991). More specific questioning may lower the cognitive demand of responding and increase the likelihood that someone will put forth the effort to optimally answer the questions asked.

Because the MLA was designed specifically for DBT, the language throughout is somewhat incongruous with an IPC setting. The tool refers to “things you needed or hoped to do” and “what was needed or expected” as the adherence targets, rather than using “treatment plan” or other similar language. The introduction describes the MLA as a way to identify what got in the way of doing what was needed, so that the individual can then problem solve. The MLA would benefit from a more thorough explanation of its purpose if it were to be used as a stand-alone tool in an IBH setting. Introductory language that normalizes adherence issues would also be likely to improve its effectiveness. Normalizing nonadherence is likely to validate the patient’s experience and mitigate the likelihood of misreporting, which may occur due to a patient’s concern of embarrassing themselves or experiencing repercussions due to their nonadherence (Tourangeau & Yan, 2007). While a thorough explanation of the tool and validation are likely included when the MLA is used as part of DBT, a stand-alone tool would benefit from this information being explicit.

An initial adaptation of the MLA called the Barriers Identification Tool (BIT) was created for use in this study. Language throughout the MLA was altered to reflect the revised purpose and context in which it will be used. This includes an introduction in which the provider normalizes nonadherence and engages the client in the process of identifying barriers to adherence. Additional items were added to ensure that the tool explicitly captures the variety of barriers that may impact adherence to health behavior change efforts (see “Methods”). When

available, items were incorporated from existing tools. For scaled questions, responses less than “7” may warrant intervention. This is suggested because “7” lies between “somewhat” (5) and “completely” (10); scores less than this amount indicate that an individual is self-reporting a moderate to low amount of a variable that is positively related to adherence.

The primary purposes of the current study are to assess the feasibility of the BIT, and to incorporate feedback from providers who have used it. To make the research process more efficient, feasibility studies and pilot studies are conducted to assess whether and how to conduct an intervention study (Dobkin, 2009; Gitlin, 2013). Feasibility studies focus on examining whether an intervention (or intervention study) may be carried out, while pilot studies may be thought of as miniature versions of the main study that focuses on whether components of the main study, such as recruitment, treatment, and follow-up assessment will function well (NIHR, 2012). Since a novel tool is being developed, conducting a feasibility study is an appropriate first step (Bowen et al., 2009). Feasibility studies focus greater attention on process, tend to be iterative in nature, and are aimed at the overarching question, “Can it work?” (Bowen et al., 2009; Dobkin, 2009; Orsmond & Cohn, 2015). Before measuring the outcomes of a novel tool for systematically identifying nonadherence, it is important to refine the tool, learn how best to implement it, and determine whether providers are willing to use it within the context of an IPC setting.

## ***Research Questions***

The main research questions for this project were: 1) What are behavioral health professionals' reactions to using the BIT in an integrated primary care setting? and 2) What feedback do these providers have regarding the BIT that could lead to its change or improvement?

## **Methods**

### **Participants**

BHPs who work in IPC settings and have a master's degree or higher in the fields of social work, counseling, or clinical/counseling psychology were recruited to take part in this study. Efforts were made to achieve maximum variation by recruiting BHPs from various training backgrounds, differing experience levels, and a range of work settings with different levels of behavioral health integration. Where possible, participants were chosen who represent diverse identities with regards to age, gender identity, and ethnicity.

Participants were recruited by contacting management (e.g., via e-mail) in IPC settings across Montana and requesting permission to recruit providers. Ten sites participated in the study: one large, two medium, and one medium satellite medical clinic in a city in western Montana of approximately 50 to 100 thousand people; one small satellite clinic in a rural community in western Montana of approximately 2,000 people; one medium satellite clinic in a city in southwest Montana of approximately 50 to 100 thousand people; one small clinic in a rural community in western Montana of approximately 5,000 people; one small satellite clinic in a city in central Montana of approximately 50 to 100 thousand people; one medium satellite clinic in a city in central Montana of approximately 50 to 100 thousand people; and one medium satellite clinic in a town in western Montana of approximately 10 to 20 thousand people.

While in a couple instances management chose to have all of their providers attend an orientation to the tool, participation in the data collection phase of the study was opted into via e-mail on an individual basis. Who chose to participate was kept confidential to ensure that participating in data collection was voluntary and to protect against the possibility of coercion to participate or repercussions for non-participation. Providers were given a thank you in the form of a \$30 gift card for participating in the study.

Because the study utilized identical interview questions and formats for each participant, and each participant was working as a BHP, we attempted to recruit 15 participants. When conducting qualitative research, metathemes are often present by the sixth interview, and saturation is often reached by the twelfth interview in instances where interview content and structure remain consistent, and participants are relatively homogenous (e.g., they share the same job role) (Guest, Bunce, & Johnson, 2006). Ultimately, 16 participants were recruited and 14 of them completed the study. Due to reaching saturation, 11 participants were included in the qualitative analyses.

These participants' ages ranged from 31 to 68 ( $M = 44.5$ ,  $SD = 14.0$ ). Seven participants identified as cisgender females, while four identified as cisgender males. Participants identified as White ( $n=7$ ), Hispanic/Latino ( $n=2$ ), Native American ( $n=1$ ), and Native American and White ( $n=1$ ). Five participants had a Master of Social Work degree, three participants had a Ph.D. in Clinical or Counseling Psychology, and four participants had a Psy.D. in Clinical or Counseling Psychology. Participants' received training in IPC and health psychology through certifications ( $n=4$ ), graduate or professional programs ( $n=5$ ), on-the-job training ( $n=2$ ), post-doc / residency ( $n=2$ ), and workshop or other training ( $n=3$ ). All providers reported that they were embedded in a medical clinic. They also reported an average clinic integration level of 4.4 ( $SD=1.1$ ), where 0 is

minimal collaboration and 6 is full collaboration in an integrated practice (see Tables 1 & 2).

Clinic integration levels were identified through completion of the Integrated Practice

Assessment Tool (IPAT; Waxmonsky, Auxier, Heath & Wise Romero, 2016), a face valid

measure of practice integration.

Table 1.

*Demographics, Training Backgrounds, & Clinic Embeddedness: 11 Participants*

Variable	Frequency	Percent
Current Gender Identity		
Female	7	63.6%
Male	4	36.4%
Sex Assigned at Birth		
Female	7	63.6%
Male	4	36.4%
Race/Ethnicity		
White	7	63.6%
Hispanic/Latino	2	18.2%
Native American	1	9.1%
Native American & White	1	9.1%
Professional Training		
Master of Social Work	5	-
Ph.D. in Clinical or Counseling Psychology	3	-
Psy.D. in Clinical or Counseling Psychology	4	-
IBH & Health Psychology Training		
Certification	4	-
Graduate or Professional Program	5	-
On-the-job	2	-
Post-Doctoral fellowship / Residency	2	-
Workshop or Other Training	3	-
Embedded in Clinic		
Yes	11	100%
No	0	0%



Table 2.  
*Age, Clinical Experience, & Clinic Integration*

	Min.	Max.	Mdn	M	SD
Age	31	68	39.5	44.5	14.0
Years Clinical Experience	2	20	9.0	8.5	4.7
Years PCMH Experience	.5	7	2.0	3.0	1.8
Level of Integration (IPAT)	3	6	4	4.4	1.1

## Research Team

The research team consisted of the primary investigator (this writer) and four undergraduate research assistants. The primary investigator had previous experience with IPC via practicum experiences in two different medical clinics, in addition to completing coursework and a certification in IPC. After the data collection was finished, he completed rotations in primary care and geriatric primary care settings while on predoctoral internship. He plans to pursue a career in IPC and will be completing a post-doctoral residency in IPC following internship. The primary investigator previously worked with two of the study participants in a clinical setting and had limited or no prior contact with other study participants. The research assistants were four advanced undergraduate assistants with interest in clinical work and this area of research.

## Materials

A demographic survey that includes questions about age, sex/gender, race/ethnicity, years of experience as a BHP, and training background (see Appendix A) was administered to participating providers after they were introduced to the BIT.

A modified version of the Missing Links Analysis (MLA), called the Barriers Identification Tool (BIT), that is tailored for identifying barriers to treatment in an IPC setting was utilized in the study (see Appendix B). To develop the first iteration of the BIT, a

comprehensive list of factors that impact health behavior change was compiled from the health behavior change models (Health Belief Model [HBM; Rosenstock, 1974; Rosenstock et al., 1998], Self-Determination Theory [SDT; Deci & Ryan, 1985], Theory of Planned Behavior [TPB; Ajezen, 1991], Transtheoretical Model [TTM; Prochaska, DiClemente, & Norcross, 1992], and Information-Motivation-Strategy Model [IMS; Martin, Haskard-Zolnierrek, & DiMatteo, 2010]) in the reviewed literature. Common barriers to adherence cited in the research literature were then added to this list. Next, questions from commonly used adherence measures that correspond to these factors and barriers (e.g., Homework Rating Scale, Kazantzis, Deane, & Ronan, 2004; The Barriers Scale, Callan et al., 2012) were identified, modified, and incorporated into the MLA (Linehan, 2015). Then, additional items were located in questionnaires/questions designed to measure aspects of health behavior change models (e.g., Importance/Confidence Rulers; Miller & Rollnick, 2013, p. 174-175). For model components and barriers to treatment for which suitable items were not identified in an existing measure, novel questions were created. Afterwards, the BIT was introduced to two primary care BHPs who provided feedback on its format and content. This writer and his advisor reviewed the feedback and discussed it. Revisions were then made to the BIT to incorporate the feedback. This included modifying the language of the tool to enhance its clarity and readability, adding questions to identify additional barriers, and changing the tool's numerical response scale to provide it with a midpoint.

A brief quantitative measure was used to identify to what extent participating providers utilized the BIT, how long it took, and with what types of adherence issues they used it (see Appendix C). It was administered after the interview.

A measure of behavioral health integration within a primary care setting, called the Integrated Practice Assessment Tool (IPAT; see Appendix D), was administered to providers

(Waxmonsky, Auxier, Heath & Wise Romero, 2016). The instrument is a frequently used, face valid measure of practice integration. It was used to characterize the settings within which the behavioral health providers work. It was beyond the scope of this project to include level of integration as a variable for the purpose of comparing the feedback of participants based on the level of integration of their settings, but it could be examined in the future.

A semi-structured interview (see Appendix E) was used to assess the participants' experiences using the BIT broadly. More specifically, the interview explored the practicality and acceptability of utilizing this tool in primary care, as well as what modifications could make it more usable. Questions were modeled on the paper "Guiding Questions for a Feasibility Study" by Orsmond and Cohn (2015) and created with reference to the definitions of acceptability and practicality provided by Bowen and colleagues (2009). Bowen and colleagues (2009) define acceptability as "how the intended individual recipients – both targeted individuals and those involved in implementing programs – react to the intervention" (p. 3), while practicality is defined as "the extent to which an intervention can be delivered when resources, time commitment, or some combination thereof are constrained in some way" (p. 3). The questions were further shaped in consultation with this writer's advisor and a member of the dissertation committee who has qualitative research expertise.

## **Procedure**

The study took part in two phases, which were carried out in March through June of 2020. In phase I, 16 providers from ten treatment settings were introduced to the revised tool (BIT; see Appendix G for Outline of Provider Orientation to BIT). Introductions were conducted in a staggered manner to align them with the interview and analysis protocol, which was carried out in rounds (described below). Providers were asked to utilize it over a five to six-week period,

when it seemed applicable. The primary author provided reminder e-mails to providers once per week during Phase I to remind them to utilize the BIT.

In Phase II, providers participated in individual interviews (Appendix D) that explored participants' experiences using the BIT, as well as the practicality and acceptability of the BIT. The interviews also elicited feedback for changing or improving the tool. Interviews and data analysis were carried out in rounds to allow novel sub-questions that emerged during the inquiry process to be incorporated into subsequent rounds of interviews (Agee, 2009). Each round consisted of the interviews and analysis of three to five participants. Participants were analyzed until saturation occurred. Round one consisted of four interviews, round two consisted of five interviews, and round three consisted of five interviews. After round one, additional interview questions were added to gather more information on how providers administered the BIT and their views on how they administered it. Also, an existing question was expanded on to more explicitly elicit feedback on the BIT's cover page. After round two, an additional question was added to elicit information on providers' experiences using the BIT with particular patient populations. Questions were also added to elicit providers' opinions on some of the modifications suggested by study participants from previous rounds (see Appendix F)

Analysis of Phase II data ceased when saturation was met. Saunders and colleagues (2018) have identified four primary types of saturation: 1) theoretical saturation, which "relates to the development of theoretical categories," 2) inductive thematic saturation, which "relates to the emergence of new codes or themes," 3) a priori thematic saturation, which "relates to the degree to which identified codes or themes are exemplified in the data," and 4) data saturation, which "relates to the degree to which new data was expressed in previous data" (p. 1897). Given that this study involved inductive qualitative analysis and did not involve theory building,

inductive thematic saturation and data saturation appeared most relevant and informed our criteria for reaching saturation. Saturation was operationalized as having occurred when two consecutive interviews were analyzed in which no new codes or themes emerged. Since interviews were being completed in rounds, reaching saturation also corresponded to participant disclosures in the final interview that was qualitatively analyzed and subsequent interviews sounding redundant with prior interviews. As stated previously, this criteria was satisfied after the 11<sup>th</sup> interview was analyzed.

All interviews were conducted by the principal investigator, audio recorded, and initially transcribed using transcription software. The transcriptions were reviewed and corrected by undergraduate research assistants to ensure that they were accurate and complete.

### **Establishing Trustworthiness**

Four criteria that constitute trustworthiness in a qualitative study are credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). The five strategies used to address these criteria were member checking, triangulation, generation of thick, rich description, reflexive journaling, and inquiry auditing.

#### ***Member Checking***

Member checks were used to build credibility that the code structure generated from the qualitative analysis accurately captured the experiences of each research participant. Member checks occurred after the coding team completed its analysis of the data. The primary investigator contacted each participant whose data was included in the analysis and requested that they participate in a discussion of the results. If participants did not respond, they were contacted one additional time to provide them the opportunity to participate. Six out of 11 participant engaged in the member check. Of the five participants who did not participate, three

did not respond to requests for participation, one said they did not have enough time to participate, and one agreed to participate but was then unable to be contacted to schedule a time.

Individuals who participated in the member check were e-mailed the BIT Study Concept Map and a list of code definitions prior to the member check. They were asked to review the documents as they pleased. The member check conversations were conducted individually and recorded to ensure accuracy of feedback. The primary investigator shared a summary of the code structure and offered to provide specific quotations for any sub-categories that participants were interested in. Participants were then asked the following questions:

- Is there anything about the diagram or description that is especially resonating with you?
- Is there anything I got wrong?
- Is there anything that needs to be added?
- Is there anything that needs to be changed or removed?
- What are your overall impressions?

## **Results & Discussion**

The 11 providers whose data was analyzed in the study used the BIT an average of 4.5 times ( $SD=3.9$ ) with an average of 3.5 patients ( $SD=2.3$ ). One provider did not use the BIT at all. Providers reported that using the BIT took 9.5 minutes on average ( $SD = 4.4$ ). Providers endorsed using it with a variety of behavioral health concerns, ranging from depression to smoking cessation to parent training (see Table 4 for a complete list).

Providers were asked to rate how likely they were to use the BIT in the future and how useful they found it on an 11-point scale (0=Not at all; 5 = Somewhat; 10 = Completely). They reported an average likelihood to use the BIT in the future of 8.2 ( $SD=1.5$ ) and rated its average usefulness as 8.6 ( $SD=1.4$ ).

Table 3.  
*BIT Utilization & Clinic Integration*

	Min.	Max.	Mdn	M	SD
# of BIT Uses	0	12	3	4.5	3.9
# of Patients	0	9	9.0	3.5	2.3
Average Use Duration	4	15	9	9.5	4.4
Likelihood of future use (0-10)	5	10	8	8.2	1.5
Usefulness (0-10)	5	10	9	8.6	1.4
Level of Integration (IPAT)	3	6	4	4.4	1.1

Table 4.  
*Client Issues*

Variable	Frequency	Percent of Providers
Patient Issues		
ADHD	1	10%
Anxiety or Panic	7	70%
Chronic Pain	2	20%
Depression	6	60%
Diet	5	50%
Exercise	6	60%
Insomnia	2	20%
Medication Adherence	3	30%
Parent Training	1	10%
Smoking Cessation	2	20%
Substance Abuse	1	10%
Toilet training	1	10%

## Analysis

The concept of a generic qualitative approach refers to qualitative research approaches that do not fit well within one of the traditional qualitative paradigms (Bradshaw, Atkinson, & Doody, 2017). These generic approaches are indicated when research questions do not align well with one established qualitative approach. This study's focus on understanding both providers' experiences using the BIT and eliciting their feedback about the content of the tool was not exactly congruent with any of the established qualitative paradigms. Thus, a generic approach incorporating elements of phenomenology and utilizing content analysis as a data analytic strategy was chosen. Use of a generic qualitative approach is supported by Maxwell (2013), who

cautions qualitative researchers against conforming to traditional qualitative paradigms when they are not well suited to one's research questions, and instead suggests using the research questions to guide methodology.

Elements of a phenomenological approach were used. Phenomenology aims to "describe the common meaning for several individuals of their lived experiences of a concept or phenomenon" (Creswell, 2013, p. 76). In this study, elements of phenomenology were applied by describing the experiences of a group of individuals, the BHPs, with regards to a primary phenomenon, use of the BIT. By encouraging providers to utilize the tool as they saw fit, the present study sought to understand their experiences of the BIT in an open-ended manner, allowing for them to interact with the tool in myriad ways, or not at all. Phenomenology also informed the approach to interviewing that was utilized. The interviews began with broad, open-ended questions, that focused largely on the providers' experiences with the BIT.

In terms of distinguishing a generic qualitative approach from phenomenology, the established paradigm that seems most adjacent to the aims of the present study, Percy and colleagues (2015) write that, "if the researcher is interested more in the actual outer-world content of their questions (the actual opinions themselves, the life experiences themselves, the participants' reflections themselves) and less on the inner organization and structure of the participants' experiencing processes, then phenomenology would not be appropriate, but a more generic qualitative analysis would be..." Given that this study examined participants' experiences insofar as they related to providing feedback on the BIT and the feasibility of its implementation, in addition to participants' inner processes, a generic qualitative approach that incorporates elements of phenomenology seemed applicable.



This generic qualitative approach also utilized qualitative content analysis to analyze the interview data. Qualitative content analysis is “a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns” (Hsieh & Shannon, 2005, p. 1278). This approach focuses on identifying categories in the data, rather than building theory (Cho & Lee, 2014). It goes beyond the simple counting of words to classify text into categories that represent common meanings (Weber, 1990). There are three general approaches to qualitative content analysis, all of which are used to “interpret meaning from the content of text data” (Hsieh & Shannon, 2005, p. 1277). They are: 1) conventional content analysis, in which categories are derived directly from the text, 2) directed content analysis, which uses theory or relevant research to guide the creation of initial codes, and 3) summative content analysis, in which content is counted and compared, and then the underlying context is interpreted (Hsieh & Shannon, 2005). This study aimed to identify categories in the data with respect to the experiences of providers using the BIT and providers’ feedback on the format and content of the BIT. Thus, conventional content analysis seemed appropriate.

Conventional content analysis, also known as inductive content analysis, is indicated for coding when there are not previous studies examining a phenomenon (Elo & Kyngas, 2008). This is because it derives the categories and category names directly from the data, rather than relying on preconceived ideas (Kondracki, Wellman, & Amundson, 2002). Because this is the first study focused on the BIT’s development, a conventional content analysis approach seemed warranted.

In conjunction with a conventional content analysis approach, frequencies were calculated for codes generated from providers experiences of the BIT and feedback on it. The

number of participants who expressed each code and the number of instances each code appeared are provided along with the qualitative results. Frequencies can be used to establish internal generalizability, which suggests that findings are representative of the set of individuals being studied (Maxwell, 2010).

Analysis of the interviews was carried out by the principal investigator (PI) and four undergraduate research assistants (RAs) who were trained in the qualitative methods used for the study. The principal investigator conducted the training, which included education on qualitative methods and coding, practicing coding on a sample, and receiving feedback on their coding. Education on qualitative methods and coding consisted of reading and discussing articles on qualitative methods, including generic qualitative methods and their relationship to phenomenology. It also included reading and discussing articles on qualitative content analysis that focused on defining the analytic approach and providing instruction on how to carry out conventional content analysis. To facilitate the hands-on training, a faux participant who met inclusion criteria for the study was introduced to the BIT, utilized it in a mock patient encounter, and then was interviewed about his experience using the BIT. A transcription of the interview was used for the research assistants to practice coding and receive feedback on their coding. Coding was carried out in NVivo, a qualitative research software that research assistants were trained to use.

All interviews were coded by one RA and the PI. First, the PI and RAs read the available transcripts multiple times to become immersed in the data and get a sense of them in their entirety (Graneheim & Lundman, 2004). Next, open coding was carried out. In open coding, notes and headings are written in the margins of the text to capture prominent ideas or points (Elo & Kyngas, 2008). The annotate function of NVivo was used for this purpose. Each coder

carried out this process independently. Once this researcher and the coder assigned to a given interview completed their annotations, they met to collaboratively review their annotations and code the interview.

In instances where the primary investigator and a coder had discrepant ideas on how to code a piece of text, they would talk through their differing perspectives and attempt to find a shared understanding on which they could both agree. If the coders were unable to arrive at a consensus, they would bring the coding question to the entire coding team to discuss. If the coding team could collaboratively arrive at a decision on how to respond to the coding question, the content would be coded accordingly. If not, the coding question would be taken to the inquiry auditor for further discussion.

Throughout the process, content was coded descriptively and higher order organization was applied to these codes as was deemed appropriate. Specifically, higher order subcategories, properties, and dimensions were considered as means to best represent the data (Corbin & Strauss, 2008).

Inductive coding is an iterative process, which means that the identification of meaning units and coding occurs in a cyclical manner. As the work progresses, researchers repeatedly revisit the data and the already analyzed text to ensure each component of analysis accurately represents the source data (Erlingsson & Brysiewicz, 2017). While the codes and categories developed from the first interviews were applied to the text from subsequent interviews, the researchers continued to look for new categories and groupings. When new categories were discovered, they were incorporated into the existing framework using the steps described above. A codebook was created to catalogue the development and refinement of code names and definitions throughout the coding process. It was also used to facilitate code assignment.

At the ends of each round of interviews, the full coding team met to discuss coding questions that had arisen during that round of interviews. They also discussed whether any adjustments should be made to the interview protocol that might enhance the team's ability to answer the project's research questions. Questions that the team agreed upon were added to the interview protocol for subsequent rounds (see Appendix F). Consultation was carried out in an ongoing manner with Dr. Kirsten Murray, our qualitative research consultant, as methodological questions arose.

During the round one coder meeting, the codebook was reviewed as a team. Research team members proposed and discussed various structural and definitional changes. When there was agreement that a change should be made, it was then carried out. On the advice of our qualitative research consultant, this process was streamlined during the round two and three team meetings by having only this researcher propose structural and definitional changes to the codebook. Similar to the round one meetings, these proposed changes were discussed by the team. Those that were agreed on by the coding team were adopted. Additional meetings were held after the round three meeting to discuss proposed definitional and structural changes to the codebook, as well as final coding questions. This last round of proposals and questions was put forth by all members of the coding team. Similar to prior meetings, these proposals were discussed by the group and those that were agreed upon were incorporated into the codebook. At this time, there were two coding question raised about which the coding team was unable to arrive at a unified decision. They were discussed with the inquiry auditor and resolutions were reached.

## **Trustworthiness**

Trustworthiness is a measure of the value of qualitative research that consists of four criteria: 1) credibility, or how well respondents' views align with researchers representations of them, 2) transferability, or providing enough information so readers may determine whether the findings apply to other populations, 3) dependability, or having a reliable, logical, and clearly documented qualitative design that would consistently produce the same results if the study were repeated with the same respondents in the same context, and 4) confirmability, or establishing that findings and interpretations in your results accurately represent the data (Lincoln & Guba, 1985).

Credibility was supported through use of a member check and triangulation. Member checks involve eliciting respondent feedback on collected data or interpretations to verify their accuracy and completeness (Lincoln & Guba, 1985). Final results of the analyses were presented to six respondents. They were encouraged to identify any errors, clarify ideas, and address misinterpretations.

Triangulation was also used to enhance the credibility of findings by reducing bias in the coding process (Golafshani, 2003). As previously described, triangulation was integrated into data analysis. The researchers met to compare their annotations and collaboratively code the interviews. In cases where discrepancies existed about which code(s) applied to a given statement, how to define a code, or in what way to organize the codebook, the PI and RA worked toward consensus. If no consensus could be reached between the PI and RA, then they consulted with the coding team. If still no decision could be made on how to code a piece of text, then the inquiry auditor would be consulted.

To enable readers to make assessments about transferability, thick descriptions of the methodology, data, and interpretations are provided. Providing rich information will allow readers to decide whether or not the findings may be applied to their context of interest. Ultimately, determinations about whether findings are relevant to other settings must be made by readers (Lincoln & Guba, 1985).

Dependability was established through the use of a reflexive journal and inquiry auditor. Regular meetings with an inquiry auditor provided the opportunity to process potential biases and determine that the analysis process and results were grounded in the data (Lincoln & Guba, 1985).

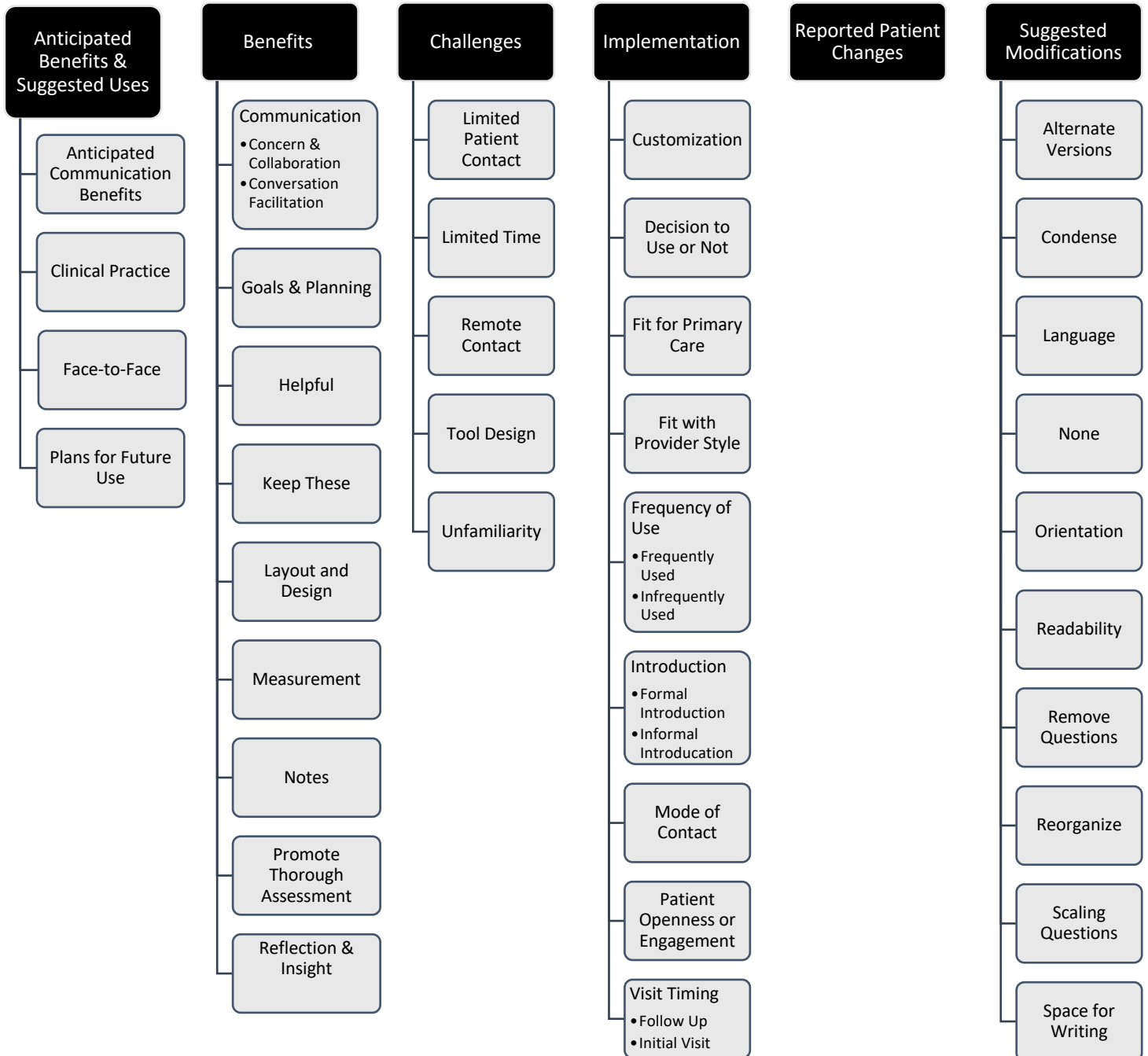
A reflexive journal was kept during data collection and analysis to provide an audit trail that helped maintain transparency and contribute to dependability and confirmability. It includes information on the physical and mental processes (e.g., ideas, insights, and thoughts on bias) involved in participant selection, methodological decisions and ideas, and logistical planning. The journal was reviewed approximately monthly by the inquiry auditor. Feedback was considered and appropriately integrated.

### **Qualitative Findings**

Qualitative analysis yielded six **categories: anticipated benefits & suggested uses, benefits, challenges, implementation, reported patient changes, and suggested modifications**. These categories further consisted of 37 **sub-categories**, six **properties**, and two **dimensions**, which are depicted in **Figure 1** and will be explored below. Quotations were lightly edited to improve readability (e.g., by removing repeated words and filler language, such as “you know” or “like”).

Figure 1. Conceptual Map of Qualitative Participant Feedback on the Barrier

# Identification Tool



### **Anticipated benefits and suggested uses.**

The first category, **anticipated benefits and suggested uses** (11 participants, 53 references), is defined as potential benefits of the BIT and ways it might be utilized. Across interviews, participants speculated about how the BIT might be beneficial and identified ways in which it could be used. **Anticipated benefits and suggested uses** contains four sub-categories: **anticipated communication benefits, clinical practice, face-to-face, and plans for future use.**

**Anticipated communication benefits** (4 participants, 5 references), is defined as ways that providers anticipate the BIT may enhance communication in clinical practice. Most providers described ways in which the BIT may help them communicate better with patients, while one provider discussed how it may help them communicate about nonadherence with other providers. The following quotes from Participants Five and Three exemplify this sub-category:

P5: It could help facilitate those kinds of conversations. I think psychologists from day one have always battled motivation and patient motivation. So, why not try to facilitate that in explicit, collaborative kind of way? I think that's a good idea and it's probably what, certainly I think, a lot of good psychologists already do. But as I said before, it doesn't hurt to have a tool in your tool belt to pull on to try to really facilitate that, or make it more explicit than you may have before.

Participant three highlighted how the BIT may enhance communication with other providers, saying, “I think asking these is actually a really good way to give feedback to the ED staff.” She went on to highlight an example of this: “... I can give that immediate feedback. ‘Hey, so-and-so isn't taking the medication at the same time every day because they have a swing shift two times a week.’”

The second sub-category is called **clinical practice** (10 participants, 23 references). It is defined as instances where the provider describes how the BIT could be used as a tool for clinical practice, including with what types of problems and with which types of providers. This sub-category does not include instances when providers describe how the BIT may help enhance



communication in clinical practice. Those instances are to be coded under **anticipated communication benefits**. **Clinical practice** also excludes instances where providers discussed the potential uses during or benefits of face-to-face interactions. Those instances are better coded under **face-to-face**. Approximately half of the quotations under **clinical practice** described ways that the BIT could be used for addressing nonadherence or facilitating behavior change. Meanwhile, the other half identified other more specific applications such as addressing substance use, use in private practice, use by nurse practitioners or chronic care nurse managers, and use to promote employee behavior change.

The following quotes from Participant Two and Seven support the **clinical practice** sub-category:

P2: I just think, for [people with substance abuse issues] in particular, because they're always measuring how much and where they were... I thought it was gonna be interesting for me to see where she was at, where she was finding herself. Because even though at times clients mentioned being ready, ready looks very different. I thought it was gonna be good for us, for herself and myself to have this evaluation and... point by point see the different factors that could be a barrier for her to achieve these goals and stop using.

P2: I don't think it's only a tool that I can use here. It is a tool that I definitely could use at my private practice.

P7: [The BIT] can be really helpful for folks who are coming through primary care to gain a little bit of insight into themselves and maybe create some motivation to make a behavior change potentially.

**Face-to-face** (3 participants, 15 references) is the third sub-category of **anticipated benefits & suggested uses**. It is defined as how providers might have used or benefited from using the BIT during face-to-face encounters as opposed to remote interactions. Participants discussed how if the BIT were used in person, they may have had participants fill it out themselves, administered more items, and integrated it into session more easily. These quotes by Participants Six and Eight exemplify the sub-category.

P6: The main difference being that had I been face-to-face, I think I would have been inclined to simply hand the measure to the patient to complete. At the beginning of the session right after giving them my standard PHQ-9 and or whatever other measures I give.

P8: If I would have had people in person sharing it with the [patients], “Here's your copy, here's my copy, let's go through that, see why some of this isn't working out.” I think I would have had a much smoother experience. Not to say that I didn't get good information, but the experience would have been, in my mind, smoother.

**Plan for future use** (6 participants, 10 references) is the fourth category of **anticipated benefits and suggested uses**. It is defined as provider descriptions of their intent to continue using the tool. Most quotations described providers’ general intentions to continue using the BIT in the future, while one provider planned to use it specifically for Emergency Department follow up visits, and another described plans to have their team use it. **Plans for future use** is exemplified by the following quotes from Participants Six and Eleven.

P6: With the final revision of this, I could absolutely see having this become standard with our program here... or at least with my particular team within our integrated care program here. So I think it’s really worth sticking with.

P11: ...I could see myself using it again in the future.

### **Benefits.**

**Benefits** (11 participants, 226 references) is the second category. It is defined as benefits of using the BIT or positive aspects of the tool and consists of several sub-categories:

**communication, goals & planning, helpful, keep these questions, layout & design, measurement, notes, promote thorough assessment, and reflection & insight.** In contrast to **anticipated benefits and suggested uses**, the **benefits** category represents aspects of the tool that were actually observed or experienced, rather than anticipated or suggested.

**Communication** (9 participants, 29 references) is the first sub-category of **benefits** and is defined as ways the BIT enhanced communication related to clinical work. **Communication**

consists of two properties, **concern & collaboration** and **conversation facilitation**. **Concern & collaboration** (participants 7, references 19) is defined as ways in which the BIT helped providers demonstrate concern, affirm the difficulty of behavior change, or enhance the therapeutic relationship. Quotations in this property described providers' perceptions that using the tool conveyed that a patient's efforts were being taken seriously, demonstrated caring, and supported the therapeutic relationship. The following quotes by Participants Four and Five illustrate this property:

P4: ... it improved the interaction because it felt to them like it was a very serious question. Taking something very seriously that they were trying to do. I thought it made my interaction more impactful in a way, or more concerned about them.

P5: ... I tend to go back to the biggest change factors being relational in nature. I'm looking at things like, you're working on your alliance there, you're showing that you're making this active effort that you want to help figure this out with them. And so you're really putting that into action in a very concrete, explicit kind of way. You're looking for, like I said before, the insight together with them, which matters. And so it's a collaborative relational process even though it's a tool here...

**Conversation facilitation** (5 participants, 10 references) is the second property of **communication** and is defined as ways in which the BIT helped to facilitate communication with patients. It excludes content that would better fit under **concern & collaboration**. It also excludes content in which the BIT facilitated discussion related to assessment; those instances are coded under **promote thorough assessment**. Quotations in this property generally suggested that the BIT facilitated communication. A couple providers said the BIT facilitated conversation by providing specific questions to ask. Other feedback on how it facilitated conversation was mixed and included that the tool was a nonconfrontational way to talk about nonadherence, it structured conversations, and it provided an opportunity to reiterate potential barriers. The following quote by Participant Seven exemplifies this property:

P7: ... sometimes when the provider is anxious about addressing something, or the client themselves doesn't really want to bring it up, I think this is a really nice way to have a direct conversation. Again, in a way that's not confrontational.

**Goals & planning** (4 participants, 11 references) is the second sub-category of **benefits**.

It is defined as ways the BIT helped facilitate goal setting or planning. Multiple providers noted that the motivation section of the BIT helped with goal setting, while individual providers mentioned that the BIT helped with setting more realistic goals, and that the other barriers section of the BIT helped with goal setting. The following quotes by Participants One and Eleven illustrates this sub-category in the following passage:

P1: ...definitely helped with goal setting... in my role I do a lot of goal setting, a lot of concrete, smart goals and things like that, so this was useful in incorporating that. Like, having cookies out on the counter is a barrier for you to keeping up with your calorie limits. And so they said, putting it in the cabinet... so it helped formulate that goal for the person.

P1: I think actually a lot of that came about during the [other] barrier section after having gone through the tool. And then they could reflect on that they're motivated. And they were like, "well last time I had this goal it did cost too much but I can do these other things." And it just helped reinforce that they're motivated. She was coming up with ideas on how to get around barriers without any prompting really. So, I think having that motivation discussion. And if its high motivation, then it's in their mind to really maintain that.

P11: We decided to take treatment at a different angle because of this... Since I do work [in] an integrated capacity, sometimes there're recommendations the primary care provider may give. But then of course we're following up with them. And what that ended up being was a conversation I had with the PCP about "I don't know if we're ready to do this right now. Here's some things that I think make it so it's really a hard time to start this. So we're gonna focus on a couple of other smaller pieces and what I'm thinking is at least we can cross some things off the list." They might not be this other focus that the PCP had envisioned us focusing on. But hopefully we can have some good practice on just following through with different changes and making small adjustments. And then eventually this other thing that seems bigger might not seem as big later.

**Helpful** (9 participants, 28 references) is the third sub-category of **benefits**. It is defined as ways the BIT, or an aspect of it, was generally helpful or useful. **Helpful** excludes instances where specific descriptions of how or why the BIT was helpful or useful were provided as these

occurrences may be coded into more specific sub-categories. Related to this exclusion, content may be coded under **helpful** and a code from another category, but it would not be coded under **helpful** and another sub-category of **benefits**. Examples of this sub-category include Participant Four's statement, "It's a good tool. I'm sure I'll be using parts of it and that perspective as I go along..." Similarly, Participant Five said, "It was nice to have it available and kind of felt like a tool [in] my back pocket." Participant Eight expressed a similar sentiment by commenting, "I hope you had multiple people say they were willing to do this because I think it was beneficial."

**Keep these questions** (4 participants, 10 references) is the fourth sub-category of benefits and defined as questions that providers think should be kept in future versions of the BIT. Two participants advocated for keeping all of the questions and three provider suggested keeping all of the motivation section questions. Meanwhile, one provider suggested keeping the other barriers section questions in an abbreviated form, in addition to each of the main questions. As an example, Participant Four spoke about keeping the four main questions on the BIT, saying "I like the bold headings: regarding your health what recommendations were made? How motivated are you to follow? I like all those [four]." Participant four also highlighted certain motivation related questions to keep:

P4: ...I do think the question about "is there... a bigger or another priority?" is an important question. So, keep that one... I got a lot of interesting information from that.

J: Yeah, what kind of stuff came out of that?

P4: ...on this one person, she said she had two other priorities that seemed more important than losing weight. But two of her appointments had been canceled because of the virus and she was pretty frustrated with that. And I think sometimes when people get frustrated with one thing, then everything kind of has a problem. And when you ask people "what's most important now?" or "what's your biggest priority now?" Sometimes it's that the woman who we were trying to see if she needed help with her alcohol use said, "I'm trying to move my mother, my [elderly] mother..."

Meanwhile, Participant Eight advocated for keeping all questions under the motivation section:

P8: I think I've already mentioned it, but the motivation piece. Keep that 100%. The motivation and then all those extra little questions below it. Top notch. I thought that was super important and easy to look at. You know, "how unpleasant or difficult or inconvenient is X recommendation?" That's an important question to ask. We know exposure is helpful in anxiety and PTSD. Huge treatment rationale. And yet it's unpleasant and difficult for people to do. So asking those questions, point blank, up front. "Hey, this is going to be uncomfortable. How are you feeling about that? Do you feel like you have the basic coping skills to deal with that?" And if not, maybe we need to readjust our goal. The intervention is not going and standing in the middle of the grocery store. The intervention is building some of those skills to be able to eventually do that... I love motivational interviewing, but that really, really helped. Having those questions there. Again that I can reference every day if I need to. But also as I'm completing notes or looking at a referral to behavioral health, writing up the case conceptualization, being able to think about what is going on here. I think it was just very helpful. I really enjoyed the motivation piece.

Participant Ten suggested keeping even more of the content the same, saying "I would keep the questions. I like all the questions."

**Layout & design** (10 participants, 29 references) is the fifth sub-category of **benefits**. It is defined as how layout or design made the BIT easier to use or navigate. Approximately half of participants who were coded into this sub-category noted that they found the introductory language useful, appreciated the BIT's division into sections, and found the general layout helpful. Meanwhile a couple participants stated that they liked the order the sections were in and another couple commented that the BIT was straightforward to use. The remaining comments were unique and noted that the language was accessible, the BIT was not too long, the BIT was flexible, and its forced choice format was helpful. Participant One exemplifies the sub-category with the following quote: "I like that the understanding, the motivation, the recall, barriers. I like the order that's in. That flowed nicely. I would not change that." Participant Seven also illustrates this category with the following:

P7: I thought the whole measure was really straightforward. There wasn't anything that I felt like I couldn't understand as I read through it. And it was kind of clear. I thought it was really nice that you have the four different areas and the first set of headings and then

with different questions specific to the overall theme of that section. So that's helpful to again, cue your mind into what you're talking about as you go through those questions.

**Measurement** (4 participants, 7 references) is the sixth sub-category in **benefits**. It is defined as how the BIT was helpful for measuring barriers or monitoring changes, or positive aspects of the scaling questions. Content in this sub-category ranged from general comments to more detailed reflections. A few participants noted that they liked the scaling questions and a couple noted that the scaling questions were helpful for monitoring changes. Individual participants made more unique comments. One participant shared that the scaling questions helped discuss change with clients and another said they appreciated that the scaling questions used a 0-10 scale. For instance, Participant One said, “And the scaling questions are great. Those are really good questions to ask.” Meanwhile, Participant Two stated the following:

P2: I think it's a good reference for us to monitor our clients' changes, slow changes, and baby steps. I think we will be able to see that weekly. But being able to rate it, in IBH it's huge... personally, I think it's gonna be a great tool for me to see and even reflect with the clients... what they have said, and to state what they have actually changed so they could actually see it.

**Notes** (3 participants, 4 references) is the seventh sub-category of **benefits** and is defined as how the tool facilitated taking notes or writing notes. Participants described how the BIT could be used for taking notes, their use of it could be mentioned in notes, and they could incorporate information they gained from using it in notes. An example of **notes** comes from Participant Two who said, “The times that I used it, I thought it was wonderful. It was good for me. I like to have things to make notes and code and cues to not forget.” The following example from Participant Eight also illustrates **notes**:

P8: ...being able to copy and paste each of those stimuli into my notes, so I knew to cover it during the session if I was having trouble conceptualizing at the last session, moving into this one. Or even when I'm meeting with somebody, being able to copy and paste

from my word document, put it right into my record: "Did you understand it? Why didn't you... Did it cost too much?"... The importance. The motivation. Being able to have those quickly to put into my notes I think really improved my notes, even conceptualization, and just the good old-fashioned note keeping.

**Promotes thorough assessment** (11 participants, 84 references) is the eighth sub-category of **benefits**. It is defined as ways the BIT promotes providers' delivery of more thorough and consistent assessment (e.g., serves as a memory cue) across various treatment targets. It includes reflections on how some providers conducted assessment previously.

**Promotes thorough assessment** excludes content that describes how the BIT facilitated conversations in a manner unrelated to assessment, as it can be coded under **Conversation**

**Facilitation**. Approximately half of participants who were coded in this sub-category noted that the BIT led to exploring barriers (including motivation) more deeply or broadly than they typically would. A quarter of participants said that the BIT helped them avoid making assumptions about whether or what types of barriers patients may be experiencing. A couple participants mentioned that the tool helped them identify how to address barriers to adherence. Meanwhile, individual participants identified unique ways the BIT promoted thorough assessment. For instance, one participant said the BIT helped them assess for barriers and modify patients' goals rather than immediately switching to a different intervention when the patient did not reach goal. Another participant said the BIT helped elicit feedback from patients on provider performance. Participant Eight exemplifies this sub-category with the following:

P8: It was super helpful in those situations where I wasn't quite sure what was going on. It's something that I can look at. I've got it posted right here... If I was having trouble or questions about motivation or homework completion, I had those questions right there that I could refer to. And so taking the time to slow down and talk about what actual barriers got in the way versus making the assumption it was avoidance, or you're just not motivated, you're resistant. Because again, I have it plastered right here on my wall and



then I've put a couple of questions into a Word document. That was super helpful. And being able to in the moment talk with the [patient] about "What was helpful? What wasn't? Where did we struggle? Where did we fall? Was it my communication of the recommendations, or the strategies, or was it a motivational thing that was going on, or other barrier? Was something else going on?" Which we had a lot of that right now.

Provider Eight later went on to elaborate on how the BIT helped him to slow down, saying:

P8: It gave me permission to really slow down and think about, why aren't some of these interventions or skills being utilized over the week. Was it a motivational thing or was it that they didn't understand it?

Meanwhile, Provider Six discussed how using the BIT impacted his normal way of assessing for nonadherence:

P6: ...if somebody is not necessarily able to complete the work I tend to just sort of move on quickly to see what have they done. Or if that didn't work, then I just think, okay, this is not the right intervention, or something like that. So, digging in a little bit more with some of these questions is nice just to see, are my assumptions about that accurate? Or is there reason to stick with this intervention even though it didn't work out this time?

Provider Four commented on how the BIT seemed to work for assessing a variety of patients:

P4: I also found that the people I brought it up with had a wide variety of things that they recommended that they wanted to follow or not follow. And so it was interesting that it worked for lots of different changes.

**Reflection & insight** (6 participants, 21 references) is the ninth sub-category of **benefits**.

It is defined as ways the BIT facilitated clients' self-reflection (including change-talk) or recognition of an insight about a barrier to change. All participants coded in this sub-category talked about ways that using the BIT promoted reflection or insight, while some identified specific insights. For instance, one participant's patient realized that their avoidance of treatment was founded in fear. Meanwhile, another participant's patient shared the thought that they needed to be scared into change. Half of participants coded in this sub-category discussed how the reflection or insight was related to motivation. A couple participants discussed how the reflection or insight pertained to the patient's relationship with their provider. Specifically,

whether the patient felt understood and supported. Participant Seven recounts an example of this in the following:

P7: I think it help[s] to point out some patterns and to identify that the lot of the avoidance of treatment is really founded in fear. And fear of having to find out that she has cancer again, having to eventually go through those treatments again. So I think it was able to help her really elaborate and speak more in depth about what this process has been like for her in a different way than the information that she shared when we went through the functional assessment for her initial [redacted] evaluation. Where she was able to sort of speak about the treatment that she had and that she is anxious. But this sort of allowed to pull out a little bit more than what she had initially shared.

The following example is Participant Three's recounting of an instance in which the BIT helped a patient to self-reflect and develop an insight:

P3: ...change talk is a fine line sometimes. But I think for her it was a good moment to start the change talk. Do you think you can build in 15 minutes or 20 minutes? And then I think her being able to measure, on a scale from one to ten, a ten being completely, I do need a break.

### **Challenges.**

The third category, **challenges** (10 participants, 63 references), is defined as challenges or barriers to using the BIT. **Challenges** consists of five sub-categories: **limited patient contact**, **limited time**, **remote contact**, **tool design**, and **unfamiliarity**.

**Limited patient contact** (7 participants, 16 references) is the first sub-category of **challenges**. It is defined as providers descriptions of having limited patient contact overall (e.g., due to COVID) and specifically in person. One quote that captures this **limited patient contact** came from Participant Three:

P3: But because of COVID-19 I am working remotely... I am not seeing as many people face-to-face and a lot of people cancel their appointments. They don't have access to Zoom and things like that. So I had to get a little bit creative [in] incorporating it into things.

**Limited time** (4 participants, 8 references) is the second sub-category of **challenges**. It is defined as having limited time to use the tool. All participants coded to this sub-category described having limited time to use the BIT and a couple related this issue to the shorter length of visits in primary care settings. For instance, Participant Ten stated, “I felt a little limited in my time trying to keep it in a half hour, how much detail to elicit on everything. As you can see, we’ve already been interrupted three times.”

**Remote contact** (5 participants, 7 references) is the third sub-category of **challenges** and is defined as ways phone or videochat are a barrier to using the BIT. An exemplar of this sub-category comes from Participant Eight who said:

P8: If you have a 30-minute telephone appointment with somebody during which you're asking the full PHQ-9 and the full PCL as well as any reminders, you've already asked them a lot of standardized questions. To then ask them another barrier identification set. And I realize there's not a ton here if you just do the main, there's only four main areas. But I think, especially for those one and done, it was too much to do over the telephone.

**Remote contact** was described as both a barrier to using the BIT at all, as well as a barrier to using it in full. Participants shared that working from home or conducting phone or video sessions made use of the tool more difficult. For instance, Participant Six stated, “I feel a little bummed that it just felt like a bridge too far to actually do the full thing in this video chat format.”

**Tool design** (5 participants, 17 references) is the fourth sub-category of **challenges**. It is defined as challenges to using the BIT that are related to its design (e.g., density, readability, or formal language). While a couple participants noted that the format was hard to follow, feedback was predominantly heterogenous. Individual participants’ feedback included that the language was too formal, it was too long to read aloud, it was less easy to administer than the PHQ-9,

there were too many words on the page, and it was difficult to interpret the reverse scaled items.

For example, Participant One discussed a design related challenge in the following passage:

P1: There's a few that have the asterisks.

J: Right, where the way you interpret it changes.

P1: So, I didn't do switch, because I didn't answer those questions, because I could tell the challenge of trying to figure out what the scale meant to them first.

J: Okay, and so that felt a little unwieldy?

P1: Yeah, I think just trying to then switch it in your brain made it more challenging. That was just a call on my part.

Meanwhile, this passage from Participant Three describes a challenge related to the amount of words on the page:

P3: There's a lot of words on it... visually looking at it I could get bogged down. So even though I've reviewed it, I would have to, as I'm doing with you, I'm like, okay, where's the spot?

Participant Three goes on to describe potential difficulty this may cause the patient, saying “And if I were somebody who got this form to fill out, I’d just be like, ‘oh god.’ Yeah, I think the formatting, all of the information is a lot.”

An example from Participant Six speaks to the provider’s view that the amount of content made it challenging to use it in its entirety if being used as an interview guide. “The sort of stuff that made this feel a little daunting was, if I'm gonna read through this whole thing, it just felt like too much.”

The fifth sub-category of **challenges** is **unfamiliarity** (files 3, references 15). It is defined as ways being unfamiliar with the tool was a challenge. For example, Participant Four described a learning curve associated with the tool being new:

P4: I think the most challenging thing is lack of familiarity. Even in that small sample, by the fourth one it was pretty easy to incorporate it into the discussion. The first one, I was trying to remember, now what are the main things I'm supposed to be looking for here? So that only has to do with my comfort in using the tool.

Participants Ten discussed how it was challenging to figure out how to integrate it with initial visits:

P10: With the initials I didn't, which has been a ton of them. Because I've been doing pretty much warm handoffs every day, so I haven't had follow ups. So trying to integrate it into the initial was my major hang up on the use of it. So it didn't change my practice because I didn't know how to really integrate it into that.

### **Implementation.**

**Implementation** (11 participants, 137 references) is the fourth category. It is defined as how the BIT was used, what aided its use, and how patients responded to it. **Implementation** does not include patient responses to the BIT that might be classified under **benefits** or **reported patient changes**. It is composed of nine sub-categories: **customization, decision to use or not, fit for primary care, fit with provider style, frequency of use, introduction, mode of contact, patient openness or engagement, and visit timing.**

**Customization** (11 participants, 30 references) is the first sub-category of **implementation**. It is defined as how providers tailored their use of the BIT with regard to their clinical practice or the patients with whom they were working. Participants demonstrated a heterogeneous approach to using the tool, both between and within participants. For instance, approximately half of participants reported using the questions that seemed relevant to a patient. A couple providers noted that this involved using questions from each major area. Meanwhile, a couple participants used the BIT in its entirety on at least one occasion, two mentioned using scaling at least part of the time, and two mentioned using the motivation section frequently. Other participants reported idiosyncratic ways they worked with the tool, such as by asking about certain content areas more directly than others. Participant Four shared an instance in which they used the entire tool, saying “You know one person I did ask almost every single question. And she was so into it.” Participant Seven offered an example of using questions from each content area, stating “I went through one three and four in its entirety and used just some pieces of the sub heading number two.” Similarly, Participant Six stated:

P6: ...the way that I ended up using it was actually more loosely around the four different sections of the tool. And so that would be the understand, motivated, remember, and other barriers areas. And so what I found was that I was loosely adhering to those areas to get a broad sense of what the patient's experience of doing agreed upon tasks was. And then I took it from there.

In contrast, Participant Three described using questions based on perceived relevance, saying "I guess you can probably tell as I'm describing, I didn't sit down with somebody and go through the tool. I totally picked things that seemed relevant and useful in the moment."

Meanwhile, one provider described a preference for navigating between sections of the tool out of sequence and said the following about it:

P3: I started with the motivation because that's what I had in mind. I'm gonna start doing this, and then I would go back and ask them if they had understood what I had said previously. And because of that, let's go back to the motivation now that you understand how easy and how important you think this change would be. So, customizing as I said, I could start here and then go back. If we are really addressing the change that we want, let's go back to the initial part. That's how I did it. A little disorganized, but it worked.

**Decision to use or not** (7 participants, 24 references) is the second sub-category of **implementation**. It is defined as providers' rationales for either: a) planned uses of the tool or b) instances in which they chose not to use it. It does not include descriptions of the BIT's **fit for primary care**, which are coded in the category of that name. Approximately half of participants reported using the BIT for nonadherence to homework or behavioral goals, while a couple participants shared that they used it when they were "stuck." Meanwhile a couple participants said they did not use it for PTSD avoidance, which they differentiated from other types of nonadherence issues. Other feedback was heterogeneous. For instance, participant ten did not use the BIT for initial appointments due to uncertainty on how to integrate it. The following passage illustrates Participant Five's perspective on use of the BIT:

P5: Sometimes I did not choose to use it. I felt like it might have interrupted the authentic flow of the session. But other times when we were stymied or something, those were the times that I did use it. That if you felt stymied or stuck, it was like, "Hey, I have this tool

here that came up recently and maybe this will help us figure this out a little bit more.” So in that regard, I think it's a good tool to have in your back pocket.

Meanwhile, Participant Six described using it when patient goals were more concrete:

P6: I didn't use it with everybody. I used it when there were more concrete tasks which I had assigned, or not assigned, which the patient had agreed to complete. And so that would be things like scheduling activities or using an app, or... completing a particular task. Something like that. That's where I would use this. If it was more abstract or just less of this is the exact task, then I wasn't really using it because it felt too structured if I were asking somebody to do an unstructured thing.

**Fit for primary care** (4 participants, 12 references) is the third sub-category of **implementation**. It is defined as ways in which the BIT is well suited for use in primary care.

Participants highlighted different ways in which the BIT fit in integrated primary care. For instance, Participant Seven said the following:

P7: I think primary care is really conducive to using something like this. It's not super lengthy or burdensome so... it seems like a really good fit for that kind of setting as opposed to a more in-depth psychological evaluation type of more traditional measure. It kind of matches on to everything else that we use on a regular basis in terms of looking at measurement-based care.

Meanwhile, Participant Eight stated, “Again [IPC] is about being flexible and kind of, you know, innovating on the fly. And I think the BIT helped to reduce the cognitive burden of thinking through all these questions at times.” Another example of **fit for primary care** comes from Participant Two, who described it as well suited for working with patients to make lifestyle changes:

P2: So, using it here in the primary care setting, I think it's easier because most of the time clients are referred to myself for lifestyle changes. So, it makes sense. It makes it easier for us to address these types of questions for clients. So that we are getting the picture of what's going on.

**Fit with provider style** (4 participants, 9 references) is the fourth sub-category of **implementation**. It is defined as how the BIT worked with providers' clinical style/approach. A

couple participants said the BIT integrated well with their current approach, while three participants stated that aspects of the tool could interrupt their “flow” with patients and some of them described how the way they implemented the tool helped avoid this. One participant noted that it fit well with their style because as a CBT therapist they appreciate structured tools, while another noted that they had difficulty finding a way to integrate it into their sessions.

Participant Five provides one exemplar of **fit with provider style** that describes how the BIT fit with their style:

P5: I guess whenever I think about introducing some kind of a new tool or intervention or something into my clinical work, it has to integrate with my approach to the work. So, after going over it, and after you provided the review and overview when we met and talked about it more in depth, I felt pretty comfortable with it.

Similarly, Participant Six reported incorporating the tool into the first few minutes of follow up sessions and also said the following:

P6: ...adhering to the more broad approach to this was pretty consistent with my approach anyway. And so it was easy to incorporate. It was a little different from what I do but not so different that it was like oh, this feels like a major shift in how I'm approaching folks when I've given them concrete tasks.

Participant Eight provided the following example of how aspects of the BIT could interrupt the clinical interaction: “I got to a point sometimes where reading some of the stuff off the BIT, it just didn't flow with how I am relationally. But that's not to say that it wasn't getting good information.”

**Frequency of use** (5 participants, 15 references) is the fifth sub-category of **implementation**. It is defined as the rate at which providers used certain questions.

**Frequently used** (3 participants, 9 references) is the first dimension of **frequency of use**. It is defined as components (e.g., questions or sections) of the BIT that providers utilized more often on the occasions in which they used the BIT. A list of these items and how many times they were explicitly mentioned is included below:



- Understanding section x1
- Motivation section x2
- Recall section x1
- Regarding your health, what recommendations were made? x1
- Did you receive a written copy of the recommendation(s)? x1
- How important is it to you to make this change? x2
- How confident are you that you can make this change? x2
- How ready do you feel to make this change? x1
- To what extent do you feel that you have had a say in the recommendation(s)? x1
- To what extent do you feel that your provider respected your concerns? x1

One example of **frequently used** is Participant Two's statement, "I used more the first three parts, the understanding, the motivation, and the recall." While some providers commented on using entire sections of the BIT more frequently, others identified particular questions they used more frequently. Participant Four demonstrated a tendency expressed by more than one provider, saying "Mostly I asked everybody a lot about "how important it is to make the change?" and "how confident they were?" Another example from Participant Four is "And then I usually ask them also if they thought that they had any say in the recommendation, and if they thought the provider understood where they were coming from."

**Infrequently used** (5 participants, 6 references) is the second dimension of **frequency of use**. It is defined as components (e.g., questions or sections) of the BIT that providers utilized less often on the occasions in which they used the BIT. The items that were identified are:

- Other Barriers Section x2
- To what extent do you think (recommendation[s]) will help? x1

- BIT Cover Page x1

Participant Four exemplified **infrequently used** with the following statement about a particular question on the BIT:

P4: The one I did not ask much was “to what extent do you think the recommendations will help?” Maybe I should have but I didn't. That one is the one I skipped sometimes... I was really, I was more interested in the next one, which said “to what extent do you think your provider understood your problem” and “to what extent did you have a say in the recommendation?” Because I think if some, let's see how that was worded. “To what extent do you think the recommendations will help?” Sometimes they hadn't really used the recommendation, so they didn't really know if they were going to help. Or they tried and didn't think they had helped very much. So, I think I may have gotten a sense of that without asking the question directly.

This statement from Participant Eight about non-use of the cover page also exemplifies

**infrequently used:**

P8: To be fair, I did take notes when we spoke the first time. So I did get some of that. Honestly, I didn't look at [the cover page] beyond when we initially talked... looking at it now, it's fine as far as, this is why we're doing this stuff. As an introductory piece it has the four main areas that we're going to be asking. Again, I didn't really use it beyond that. That's just some hard, straight shooting truth there. So yes, the orientation to the process. But like I said earlier, the actual BIT covers that same information obviously, just in a little different way.

**Introduction** (7 participants, 11 references) is the sixth sub-category of **implementation**.

It is defined as how the BIT was introduced to patients.

**Formal introduction** (5 participants, 6 references) is the first property of **introduction**.

It is defined as instances when providers told patients they were going to use a tool with them prior to using the BIT.

One example of **formal introduction** comes from Participant One, who said “I presented it as ‘Hey. I've got this tool. Since you're kind of batting around the idea of making this change, let's try this and see where your motivation is at.’ So, sometimes I presented it that way.”

Multiple participants presented it in similar formats, with one of them, Participant Four, adding

that they were participating in a study. Participant Four said, “A couple of people I said that we were using a tool as part of a survey process. You know, kind of a research process. And asking them if they be willing to answer some questions.”

**Informal introduction** (3 participants, 4 references) is the second property of **introduction**. It is defined as instances in which providers used questions from the BIT without saying they were using a tool.

Participant Six illustrated **informal introduction** with the following: “No I was not introducing it as a thing I was using.” Participant Four offered another example of **informal introduction**, saying “...the other two people it seemed like it was more natural just to get into the script without an introduction if they were already talking about a change.”

**Mode of contact** (5 participants, 10 references) is the seventh sub-category of **implementation**. It is defined as the mode of contact (e.g., Face-to-Face or Phone/Videochat) by which providers interacted with their patients.

Participants described interacting with clients face-to-face, over-the-phone, and via videochat. All participants coded in **mode of contact** indicated that they carried out telehealth (phone or video), while one participant stated that they used the BIT in person on one occasion. Participant One said, “I did get a chance right before everything changed to do one in person.” Meanwhile, Participant Four stated, “I was doing this all by telehealth.”

**Patient openness or engagement** (7 participants, 14 references) is the eighth sub-category of **implementation**. It is defined as patient exhibition of willingness or unwillingness to engage in session while utilizing the BIT. All participants shared that patients were willing to engage with the tool. One participant suggested that patients may be less forthright in responding to questions about how well their provider is attending to their needs.

One example of **patient openness or engagement** comes from Participant Seven, who said:

P7: I don't think any of the questions created any sort of resistance or reaction. Again, I know I only used it with two folks, but I didn't have any experience where they felt really put off by the questions or that there was like an argumentative kind of response that came from it. So I think those are really helpful.

Meanwhile, Participant Ten stated “It didn't hurt or help, I guess, the relationship with the people.

Participant Four provided another examples of **patient openness or engagement**, which highlighted the negative aspect of this code:

P4: People usually don't like to say that they don't think their doctor did a good job. So when asking if they had any say in the recommendations, they said no even though they did. You know, didn't want to say that the doctor recommended something they didn't want to do. And then ask if the provider respected their concerns, a couple said yes and a couple said no.

**Visit timing** (6 participants, 11 references) is the ninth sub-category of **implementation**.

It is defined as uses of the BIT in initial visits or follow ups.

**Follow up** (6 participants, 8 references) is the first property of **visit timing**. It is defined as uses of the BIT in follow up visits. Participant Six exemplified this code in the following passage:

P6: ...only follow-ups. I assumed that when I'm spelling something out for a patient in the first session, if I am giving them a task, that they get it. Because I'll have them write it down and all that sort of stuff. So I haven't even considered using it for one of the initial sessions.

**Initial visit** (2 participants, 2 references) is the second property of **visit timing**. It is defined as uses of the BIT for initial appointments. Participant Three exemplified this code, saying “I've had one new patient that I was able to use the tool with...”

### **Reported patient changes.**

The fifth category, **reported patient changes** (5 participants, 8 references), is defined as whether and how patients seemed to change as a result of using the BIT with them. A couple

participants reported that use of the BIT seemed to facilitate behavior change in their patients. Other feedback was heterogenous. It included reports that use of the tool helped patients focus on discussing a goal and be more observant. One participant shared that the tool helped enhance patient motivation, confidence, belief in their ability to make changes, and actual ability to address barriers. Meanwhile, one participant reported that using the tool did not seem to facilitate change with a patient.

Participant One exemplified **reported patient changes** in the following description of how the BIT helped a patient focus on discussing a treatment goal:

P1: They were more focused on the specific goal that we were talking about. I guess maybe able to focus more on it instead of... cut off on tangents. And I said something like, "I got this tool!" And I think it just helped focus on the task at hand.

Participant Three shared an example of **reported patient changes** in which using the BIT seemed to help a patient make a valued lifestyle change:

P3: And it was cool too because I checked in with her this week, this is last week when I was going through the motivation section with her. She has built space into her day. And so I was like, "sweet, that's cool."

Participant Six shared how using the BIT helped persist with the intervention and noted some changes this facilitated for the patient:

P6: ...one of them was related to using the Mindfulness Coach app. And this particular patient, he's the one who had fence issues actually. And so this particular patient wasn't able to really dig into it the first time that we agreed upon doing it for a task. And then once I got a sense that there were these other pulls on his time, then we stuck with it. And he actually has really taken to the mindfulness practice. He still has ups and downs with it, but it's opening up some really cool channels for him, or areas to explore for him. And I probably would have abandoned it had I not been keeping this outline in mind with this particular patient... He's having a bit of a opening in a really nice way because we stuck with it basically.

In contrast to the prior examples, the following passage from Participant Seven illustrates an instance where using the BIT did not seem to facilitate any change for a particular patient:

P7: Unfortunately, in terms of him and where he's at, I don't know that it necessarily created any change. But I think that's just sort of the presentation of this guy. He's like just very very down. He thinks, "my body's kind of destroyed at this point. I'm down all the time. I don't want to smoke but I smoke all the time just because I have nothing else to do. Why make any changes?"

### **Suggested modifications.**

The sixth and final category, **suggested modifications** (11 participants, 89 references) is defined as suggestions on how to improve the BIT. It consists of ten sub-categories: 1) **alternate versions**, 2) **condense**, 3) **language**, 4) **none**, 5) **orientation**, 6) **readability**, 7) **remove questions**, 8) **reorganize**, 9) **scaling questions**, and 10) **space for writing**. In addition to being described below, **suggested modifications** are captured in the BIT Modifications Proposals document in appendix H, which details how suggested modifications were chosen for incorporation into revised versions of the BIT.

**Alternate versions** (3 participants, 11 references) is the first sub-category of **suggested modifications**. It is defined as suggestions to create additional versions of the BIT.

There were three distinct suggestions made for **alternate versions** by participants: 1) create a digital version with active check boxes, 2) create patient and provider versions to allow for the comparison of provider and patient perspectives, and 3) create a long version (similar to original) and short version (1-page) of the tool. Participant One articulated the utility of having a digital version of the BIT in the following passage:

P1: We have our laptops in the room and the exam rooms with the patient and being able to have it up in a digital format, maybe a PDF that's got the active checkboxes or stuff like that. I think having it digitized might actually, now that I'm thinking about it, be helpful for our work because everything's on the laptop.

Meanwhile, Participant Eight suggested it might be helpful to have clinician and patient version of the tool:

P8: I was thinking more about the patient, having one that they fill out. And then the provider's subjective experience as well. A provider then says, "I made the recommendation of behavioral activation and I knocked it out of the park. I said the rationale, how it applies to them, why it applies to them, how it might be important. I did all that stuff." But then you get the patient's report and it's like, "he mentioned behavioral activation in 10 seconds, and I don't understand what's going on." That's good information to have. And so I guess that's what I was thinking. More of a subjective report on the side of the provider and on the side of the patient. And that's where I think you could get that converging and diverging information.

Finally, Participant Eleven stated that it might be helpful to have long and short versions of the tool:

P11: I want to say you could just have two versions. You could have a long version and a short version, like a screener version and an extended version. I think having it on one page, and that would be so nice if we wanted to pop this in someone's EMR. If it's on one page, it's so much easier to get that in there.

**Condense** (6 participants, 17 references) is the second sub-category of **suggested modifications**. It is defined as comments on how to make the tool shorter or more concise. A couple participants advocated for making the BIT one page. Meanwhile, individual participants suggested that the tool could be made more condensed through cutting the introductory language, using shorthand for the subquestions, cutting the cover page, removing questions from the motivation section, or using a bulleted format.

Some participants' **suggested modifications** involved making the tool fit on one page. For instance, Participant Two said "My recommendation would be that everything is in one page, if possible." Meanwhile, other participants did not think condensing the BIT in this way was important. For example, Participant Eleven said "I would say two pages would work for me as opposed to the one and that more distinct, concrete. I like things simple." Other suggested modifications focused on cutting certain content or abbreviating the questions. The following example from Participant Four illustrates this:

P4: I like the bold headings: regarding your health what recommendations were made? How motivated are you to follow? I like all those five. And I think if I use this myself now, if I just rewrote it for my own benefit, I would probably just take those big headings and maybe put in the motivation questions and... "what else got in the way?" I might just have some little shorthand like cost and physical support, and you know. Just to make it more cryptic and less words on the page. If I were using it just my own practice... more of a bulleted form

Relatedly, Participant Three suggested modifying the BIT in the following way:

P3: And then somebody who's comfortable with it. At the top under the title, just the "changing behaviors can be difficult to do." This is really a good introduction for the tool but having it on the paper is sort of like extraneous.

Similarly, Participant Eleven posited the following question about the BIT's cover page: "Do you need one? I guess is one thought. Do you need to have a cover page? "

**Language** (3 participants, 9 references) is the third sub-category of **suggested modifications**. It is defined as ways to improve language used on the BIT. Two participants suggested changing the language of the main understanding question section item ("Regarding your health, what recommendations were made?") to make it less formal and clearer. Additionally, one participant suggested changing the phrase "to what extent" (used extensively throughout tool) to "how much," as a way to make the language less academic. Finally, one participant suggested changing the introductory language to make it gentler and more inclusive.

Participant Five described the rationale for changing "to what extent" in the following passage:

P5: I mean one of the phrases you used a lot in here is "to what extent". That seems to come across as a very academic term. Right? Something that we will use in our doctoral programs, but with our average Joe patient, you know what I mean? It comes across a little stiff, a little academic. Versus for example, "to what extent was physical support or access to an important resource an issue?" I don't know. Most of my patients don't talk like that. So they would say, "how much?" Something simple like that versus "to what extent was"... so that's a small qualitative change just in terms of the wording to make it more relatable for probably most patients that aren't academic psychologists.

Participant Six advocates for modifying the main understanding question in the following:



P6: ...and then what I was saying about a more sort of catch-all term instead of health. Well-being or overall well-being might be catch-all. I think there are other areas where it said health is well to manage just that top one. I think I just use a catch-all there just because I feel like that could cut down on confusion for the patient.

A final example of **language** highlights suggestions from Participant Eleven on how the BIT might be introduced differently:

P11: I think the way that first sentence is... “changing behaviors can be really difficult to do.” I totally understand that it is about behaviors. But sometimes I think we can say that statement in such a kind way... “there's things you would like to change in your life and you've mentioned how important they are.” I think that could feel really gentle. I don't know the right words. And I know that people who have had a lot of training can read that and think okay, well, I'm gonna frame it a little bit differently for this patient because of XYZ. Maybe there could be options like, if you're talking to parents about a child, say your concern, or you're talking to a person, not that we have to say specially to certain people but, maybe just options like you could say it this way, you can say it this way.

**None** (5 participants, 5 references) is the fourth sub-category of **suggested modifications**. It is defined as provider statements that they would not change anything about the BIT or have no feedback on making changes.

Examples of **None** include: 1) “You know about the content, I don't think I have anything to request for change. I think it's good,” from Participant Two, 2) “I think the cover page is good, keep it the same,” from Participant Six, and 3) “I honestly didn't find anything wrong with the structure or anything that was jumping out at me as making it difficult to use or difficult to understand,” from Participant Nine.

**Orientation (4 participants, 11 references)** is the fifth sub-category of **suggested modifications**. It is defined as provider comments on the utility of having orienting information about the tool and how it might be used.

A couple participants suggested that providers should be orientated to how they can use the tool. For instance, Provider Two said the following:

P2: Maybe an [explanation]... yeah. Because I didn't think about this Jacob since you explained that directly to me. But if you're not explaining it to the provider, that will be using it and how they have to say each thing.

Similarly, Provider Seven made this statement:

P7: I think it's helpful talking to you too when you let me know that I can stick to it verbatim, or I can jump around, or use some and not all of the pieces. So that was helpful just in terms of understanding how the tool can be used. And that it can be used [as] a straightforward measure where you sit down and really ask, where you incorporate the questions into the dialogue a little more naturally. So that was helpful.

Provider Seven later noted that including some interpretive information for the BIT could be helpful:

P7: I guess it's nice to have the page with measures that speaks to the way that it can be used and the way to interpret it. So I don't know if that's something that you are working to create with this but that could potentially be nice.

A final example of **orientation** comes from Provider Ten, who suggested including roleplays to orient patients to the tool:

P10: I think what would have been beneficial for me, was a rehearse, or just a walk through on it. Just to really see what the flow, what it looks like in the real world. So just a role play or two of how you would go through all of that. Because it could have been just me, but it just felt, I felt clunky in my delivery of it.

**Readability** (6 participants, 9 references) is the sixth sub-category of **suggested modifications**. It is defined as changes that could make the tool easier to read (e.g., spacing and bullet points).

All participants coded under **readability** commented on improving readability by incorporating more spacing into the tool. Approximately half of these participants also advocated for using bullet points to enhance readability. Unique feedback coded under **readability** included grouping the questions with asterisks all together and putting boxes around each of the major sections. For example, Participant One said “Yeah, I just think a little bit more spacing in between particularly those motivation questions and maybe having the asterisk ones together.”

The same provider later stated, “if we look at understanding, maybe having those all have bullet points, ‘if yes, if no,’ instead of in parentheses, and then actually all of the motivation scaling questions.” Participant Three also commented on the use of more spacing or bullet points saying, “And then honestly just more spacing and some bullet points.”

Other participants provided additional specificity on how spacing might be improved in the BIT. For instance, Participant Four made the following comment:

P4: Well if you used this again, for me it might just be helpful to even add a little bit more space. (Inaudible) and then to what extent questions, even if there were some, a line between those. Just because if you're looking at it, sometimes you get lost on what now, where was I on it?

Participant Seven also commented on how to improve spacing on the BIT:

P7: This is something silly, maybe a space at each section. Like the lines "did you receive a written copy of the recommendation?" The line for that is kind of sitting on the line box around motivation.

Participant Ten also noted that spacing could be used to break up sections and create more space for comments:

P10: ...especially if you flip it, if it was two pages, but really distinct. Breaking up sections and giving a little space to add comments in. Because on the backside there's only what, about a quarter of the page used. But possibly making the sections more... I would say two pages would work for me as opposed to the one and that more distinct, concrete. I like things simple.

Participant Two provides yet another example of **readability** that focused on changing how boxes were used on the BIT:

P2: And if maybe you're gonna be putting the different, understanding, motivation, recall, and then other barriers, maybe putting them on blocks so that we can actually separate them. If you're gonna be doing it that way or just making them smaller. Like here, instead of just putting that, putting it just one block... okay there are four blocks of them...

J: Put a box around the entire section.

P2: Yes.

**Remove questions** (3 participants, 6 references) is the seventh sub-category of **suggested modifications**. It is defined as suggestions to remove questions from the BIT. Two participants suggested removing questions in the motivation section of the BIT. Meanwhile there were two other unique suggestions made by participants. One advocated for removal of questions that included the phrase “to what extent,” while the other suggested removing the single subquestion in the recall section of the BIT. Participant Three said the following about the motivation section:

P3: I'm looking to at the motivation scales. And those could probably be edited...This is hard because they're all good questions. But I just wonder if there were, if you could take out even four or five. And just pick the ones that were, because they all ask, they're all similarly driven, right? We're all asking about the nature of the motivation? So it's, what's the most crucial of these?

Similarly, Participant Six suggested cutting down on the motivation section and proposing that the following questions be removed:

P6: I think probably, “to what extent do you think problem is a problem?,” “to what extent do you think recommendations will help?,” “to what extent do you think that I/your provider understand the problem?,” “to what extent do you feel that you had [a] say in the recommendations?,” “to what extent you feel your provider respected your concerns?” Probably drop those, the middle ones there. The assumption I’m having is that we would have come to an understanding of those questions when agreeing upon the assigned task. And so, I think that those are, at least in my practice, I think I've covered those when we've come up with the task. Okay. And so those feel like they would be, I would cut those out.

Relatedly, Participant Three advocated for removing the extent questions, saying: “And then the extent ones, I didn't really use those. Because by the time we were talking about change, we'd already assessed out the problem.”

Meanwhile, Participant Four suggested removing a question from the Recall section, saying “I probably wouldn't ask “how many times have you thought about it?” I think that sounds more like a research question to me.”

**Reorganize** (3 participants, 4 references) is the eighth sub-category of **suggested modifications**. It is defined as how providers would reorganize the BIT (e.g., by changing the order of its sections).

One example of **reorganize** came from Participant Five, who suggested putting the recall section of the BIT before the motivation section:

P5: "...Did the thought of carrying out the recommendation enter your mind?" I guess I usually end up asking that earlier. I think just in my natural flow. I try to do so in kind of a neutral, matter of fact way, if that makes sense. Not in this pessimist way, but that I generally want to know, "did this cross your mind during the week?" And what we talked about last week, "did it enter your mind?" And I think that usually gets us off to an honest start right at the beginning. But I'm not fishing for some particular answer or something like that, but that I'm genuinely wanting to know, "did this stick in your mind over the course of the week?" Or did you leave the office and poof, it didn't come out until you sat back down in the chair? Which happens, of course sometimes too. So that one there. I probably would actually switch that up higher in the order, honestly. Really, probably above the motivation piece. I mean, to me, because those are more specific in some ways. Right? "Do you feel ready to make this change?" And that kind of thing. If it's not entering their mind to begin with, why get specific, you know?

Meanwhile, Participant Eight suggested moving the motivation and recall sections of the BIT to the second page:

P8: This is a pretty busy page, right? And so I think that even if you had just the one section two and section three on a separate page, you just say, okay, boom. So that way once they read that they know what they're doing at the very beginning. They can just switch right to this and then have a little bit of area to write... But that's the only recommendation I have. Otherwise it's perfectly fine.

J: Yeah. And so you're thinking, keep section one on this page in the intro, but then move the other stuff to the next page. Is that right?

P8: Well, yeah. Because I think the first one is more of a question, is going to be answered by the provider, right? "If applicable, does the patient's understanding line up with the plan? Yes. Was that my understanding as well? Yeah." So this is something that kind of be done, either before you even meet with the patient. If you're thinking, you know what, this is something that maybe next time we visit, should be done or anything else. But I think their motivation would be something really good to have almost by itself so then you can go through and be like, "okay. How are we feeling about this plan? What are you thinking? Did I make myself eat?" So it's like that first part, they can already have those answered. And then just keep these on a separate one so then they can answer them a little bit faster. That's my only thing. And honestly if you left it the same it's not bad.

A final example of **reorganize** comes from Participant Eleven, who suggested aligning the questions and quantitative response fields to the left and right sides of the BIT, respectively:

P11: And what I like about that format is on the right-hand side is this check box or number. Probably number on that one. But on this one it could be the numbers on the right-hand side and then the left-hand side is what you're asking. What you're assessing. And the data all goes on the right-hand side. I think that would feel really easy to navigate, but I'm really being picky with you Jacob.

**Scaling questions** (4 participants, 6 references) is the ninth sub-category of **suggested modifications**. It is defined as ways to improve scaling questions on the BIT. Two participants suggested using fewer numbers in the scaled items, two participants suggested providing visual scales, and one participant suggested having a digitized version of the scaling items with check boxes.

One example of **scaling questions** comes from Participant One, who suggested incorporating a visual scale:

P1: 'Cuz you know, you'd say, "how confident are you on a scale of 0-10." And they're like, "oh I'm pretty confident." So, I'm like, okay, "so where would you put that on the scale?" So, it's trying to help. I think a visual to have handy...would be helpful, particularly with the scaling.

The following quotation from Participant Four exemplifies the suggestion to simplify scaling:

P4: I think a little more limited scale, like a zero to five. I know they might be easier than a one to ten, just because it's a lot of numbers and that, you're in your brain. And obviously it's all kind of the same thing for one to ten or one to a hundred...

**Space for writing** (5 participants, 10 references) is the tenth sub-category of **suggested modifications**. It is defined as suggestions about adding space to the BIT to allow for note taking during sessions, or so that patients have more space to provide detailed responses to certain items.

Participant Two provided the following instance of **space for writing**, which puts forth the idea of including space for session information on the BIT:

P2: Maybe add a piece for notes that if providers want to write anything there. Maybe it'll be good to put initial visit, follow up, what visit and maybe to grade, to give us some information for doing information gathering.

J: Like some session information.

Interviewee: Yeah. Could be used. I don't know. Now I'm thinking. If it is for data collecting for yourself, do you want to do these like week one, week four, and putting it there, maybe at the bottom, or maybe that one goes up the back...

Additionally, Participant Six suggested adding additional space for patients' responses to certain items:

P6: And if there are things for like, "what other problems or concerns feel like a bigger priority right now?" Maybe having a little more space for that if you want an actual answer to that. And same with the obstacles making it harder to follow the recommendations and expected. I think that I would have those, have a decent sized space for them to write something into. I think for me, I like when I can just give these to patients obviously. And so whatever makes this sort of friendlier to the patient is my sort of interest.

Finally, Participant Ten spoke about generally creating more space to make notes on patient responses:

P10: ...if I'm asking the person this or if I'm filling it out or you know, that's what I did. I have to jot a little note beside each one and there's really, like especially in section, it's just like with motivation. There's a bunch of questions in there, not a whole lot of space. So, definitely more space would be valuable to me.

## **Member Check Findings**

Overall, six participants confirmed that the concept map and summary of the code structure aligned with their experience. The participants who engaged in the member check discussed different parts of the concept map that resonated with them and some shared additional thoughts or examples that coincided with certain categories. Multiple participants talked about the utility of the research in creating a tool that may benefit clinical practice. For instance Participant Eleven said the following

P11: I think it's useful. I'm excited about it... And I guess my mind went to people who are wanting to brush up on something. People who are maybe in training. But I'm not in training and I'm not necessarily trying to brush up on something right now and I found this incredibly helpful just to kind of reorient... It's not like I can't always improve but you know I didn't seek it thinking, I really want to work on something. I just used it and it was really helpful.

Participant Three also commented on this topics, saying “My first impression was like, oh, this could be used in a variety of settings. And I remember thinking, oh yeah, clinicians could really use this.” Participant One also commented on the utility of the BIT, saying “My overall impression is that this is accurately reflecting the usability of the tool and how it can help in a primary care setting and with patients.”

Multiple participants shared that the concept map and summary of the findings generally confirmed their experiences. For instance, Participant Three stated the following:

P3: Yeah, I mean those all seemed like things that came up in our conversation... this looks really thorough... If I didn't say any of these things, I'm seeing them and I'm like yeah that makes sense that they would be on here.

Meanwhile, Participant One said, “It all resonates with my experience of using it.” Similarly, Participant Six said “This seems like a pretty comprehensive list,” in addition to the following:

P6: This looks like you took a thoughtful approach and were inclusive with the categories and sub-categories that you developed. Overall impressions include that this seems like the top-level categories, those seem like categories I would expect to see on a project like this. So for the results to reflect that seems appropriate. When I see this, it looks in order.

Participant Seven affirmed the findings, saying “Well just looking through it, it makes sense to me. And I think a lot of these categories I can relate to or imagine understanding how some of those topics came up for different people using the tool itself.” Finally, Participant Ten succinctly stated “I like the diagram and the description.” This participant later noted “I'm not seeing any that don't make sense to me or anything.”

Participants also expressed how particular aspects of the code structure or description of the findings resonated with them. For instance Participant One made the following statement about the **reflections and insight** sub-category of **benefits**.

P1: I'm looking at the **benefits** and all those I definitely experienced, particularly the last thing of **reflection and insight**. When you ask those, the way that the questions are



formulated really helps the conversation go and people be able to identify themselves. So that part of the tool I really appreciate.

Additionally, Participant Three described how **customization** resonated for them:

P3: I guess that's an example of the **customization**. It's just me taking one along to an appointment so I can get some ideas, or going into an appointment and being like, I'm definitely going to use the motivation section to aid in the motivational interviewing that I'm already going to do.

J: You found you're, based on the situation, choosing to utilize certain parts of the tool.

P3: Picking and choosing for sure.

Participant Six identified the **mode of contact** code as one that resonated with them, saying "...it so strongly affected how I decided to implement it. Because I had all those people I was working with remotely during the time of your data collection for this."

Meanwhile, Participant Seven described their identification with the **unfamiliarity** and **reflection and insight** codes in the following passages:

P7: I relate to, under **challenges**, the **unfamiliarity** with the tool. Anytime you're using a different measure or questionnaire I think that maybe your attention is split in different directions, just in terms of making sure that you're going through the steps properly and then also attending to the actual feedback from the patient around it. And that I think is something that you get used to it the more you utilize it.

P7: I think the **reflection and insight** too. It brings about some different dialogue that maybe otherwise wouldn't have happened. I mean, I think... part of why you looked at this in the beginning is that there are obviously pieces that were missing in terms of patient engagement. And so this is like a really nice direct way, and gentle way to explore those factors for treatment engagement. And so I definitely resonate with that piece around the **reflection and insight**, that it promotes that.

Participant Ten described resonating with both **unfamiliarity** and **decision to use or not** in the following:

P10: ...kind of like the PHQ-9 or GAD-7, once you started to get to use it... it just becomes common practice. But I think... until you use it enough and get it into your routine... It's just like, wow, this...can be a little clunky.

Finally, Participant Eleven described resonance with **fit for primary care** in the following example:

P11: I think if it's something that works for people, regardless of their modality, whether they're doing CBT or ACT or whatever else it might be, I think it would fit for people. And it also it feels like it is free. So if people are using it more often than I think it would be a really good fit for primary care.

There were a couple instances of a participant stating that certain codes were incongruent with their experience. Specifically, Participant Eleven identified **decision to use or not, mode of contact**, and **keep these**. For instance, regarding **decision to use or not** Participant Seven said “I don’t know what that means, and it doesn’t make sense to me.” Similarly, Participant Eleven made the following comment with respect to **mode of contact**: “Again, I’m not super certain what that means...I think you should be able to use it regardless.”

## **Enhancing Trustworthiness**

### ***Triangulation***

Multiple triangulation methods were used to enhance the credibility of findings by reducing bias in the coding process (Golafshani, 2003) and examining the consistency of findings. This was accomplished by using multiple coders to analyze each interview and resolving discrepancies through discussion with the entire coding team and inquiry auditor. Triangulation was also accomplished by collecting both qualitative and quantitative data that could be considered together when examining some of the research aims/questions.

### ***Generating rich, thick description***

Detailed description of the methodology, data, and interpretations are provided to support transferability. Through the inclusion of contextual information and direct quotations, readers will be able to determine whether and how this research applies to their context of interest. Ultimately, whether the research applies to another setting must be determined by the reader (Lincoln & Guba, 1985). Thorough information on this study is provided to help the reader make this determination.

### ***Reflexive journaling***

A reflexive journal was maintained throughout the duration of the project to support transparency, dependability, and confirmability. It included information on the physical and mental processes involved in participant selection, methodological decisions and ideas, and logistical planning. It was used to record methodological adjustments that were made based on the project's evolution and to record the contents and outcomes of consultation meetings. The journal was particularly helpful for the primary investigator to consider and track changes to the methodology as the project evolved. The methodological considerations ranged from questions about how interview style may influence data collection to reflections on how participant recruitment was interacting with maximum variation. Specifically, it involved paying attention to the extent to which the participants being recruited reflected a range of salient provider characteristics (e.g., experience levels, training background, work setting, age, gender identity, race).

The reflexive journal highlighted certain instances in which well-intentioned methodological decisions were later reconsidered because they did not serve the needs of the project. For instance, a tentative decision had been made early on that text segments could only be coded once. This was based on Creswell's (2015) assertion that unless data is being analyzed from multiple theoretical perspectives, a single meaning unit need only be coded once. He argues that in instances where it seems two codes might apply, a meaning unit may be split in two, each receiving a single code. While this rationale was compelling in theory and attractive in its simplicity, it became evident during coding that this project would benefit from the flexibility of coding a meaning unit multiple times when deemed beneficial. Sometimes a meaning unit

corresponded to multiple codes and the coding process may have lost accuracy by assigning only one of them.

### ***Inquiry auditing***

Inquiry auditing was used to support credibility, dependability, and confirmability. The inquiry auditor helped resolve disagreements about coding decisions that the coding team was unable to resolve on its own. The coding team was generally able to make collaborative coding decisions without involvement of the inquiry auditor; however, there were a couple of occasions in which the coding team had trouble deciding how to move forward with a coding decision and it was brought to the inquiry auditor. For instance, the coding team could not agree on whether to maintain or remove the properties found under the subcategories **introduction** and **visit timing**. As a result, whether to collapse the properties was discussed with the inquiry auditor and they were kept as they were.

Regarding dependability and confirmability, regular meetings were held between the PI and inquiry auditor to provide the opportunity to process potential biases and determine that the analysis process and results were grounded in the data (Lincoln & Guba, 1985). The inquiry auditor read a sample of the analyzed transcripts along with the developing codebook and discussed their contents with the primary investigator. No significant concerns were raised about how the data was analyzed or the codebook evolved. The primary investigator discussed the possibility that his expectations or hopes for the project would bias the interviews or analysis. For instance, he raised the concern that his summaries during the interviews might be leading the participants to agree with statements that they did not fully endorse. Later he discussed the possibility that his expectations or hopes for the project may influence how the results were interpreted. They discussed the normality of this potential influence on research and how

methodology and the involvement of multiple coders, qualitative consultant, and inquiry auditor help to control for this.

## **Discussion**

The Barrier Identification Tool (BIT) was developed to help integrated primary care providers collect information on barriers to treatment adherence in a thorough and systematic manner. The purposes of the current study were to examine the feasibility of the BIT for actual clinical practice, explore the reactions of practitioners who made use of it, and incorporate feedback into a revised BIT. Qualitative data were collected and analyzed from 11 providers working in integrated primary care settings, who had the opportunity to use the BIT however they chose for approximately one month. Interviews were then conducted with the providers.

Overall, the results of the study supported the feasibility, especially acceptability and practicality, and usefulness of the BIT. Providers, on average, rated it as quite useful ( $M = 8.6$  on a scale of 1-10), said they were likely to use the BIT in the future ( $M = 8.2$  on a scale of 1-10), and reported a wide variety of ways that they found it helpful. Providers used the BIT an average of 4.5 times and only one of them did not use it at all. Providers used it to address various patient concerns, including anxiety and panic, medication adherence, exercise, and smoking cessation. They reported benefits ranging from improved communication with clients to achieving more thorough assessment to assisting with documentation. The benefits discussed by participants will be explored further below. Providers also discussed some limitations or challenges with using the BIT. These included time constraints, issues with accessibility of the language, and density of the text. The principal investigator evaluated the difficulties described and participant suggested changes and incorporated them into a new, full-length version of the BIT, as well as a shortened version of the BIT (see appendix I). There was a significant amount

of variability within provider feedback, and opinions were sometimes at odds. Feedback that seemed likely to improve the tool for most providers was prioritized.

COVID-19 had numerous effects on patients, providers, and healthcare systems during the study period of March through June of 2020. It disrupted clinical schedules, limited face-to-face opportunities, and constrained how the BIT could be administered. Most study participant transitioned to providing predominantly telehealth services towards the beginning of the study. This limited the number of opportunities there were to use the tool in-person and created a significant barrier to having patients fill out the BIT themselves.

Participants noted that the BIT was useful in a number of ways relevant to addressing adherence. Providers reported that it helped enhance provider-patient communication by demonstrating that a patient's change efforts were being taken seriously (**concern and collaboration**) and providing a nonconfrontational way to discuss barriers to adherence (**conversation facilitation**). Participants also said that the BIT was useful in working with patients to set more realistic goals (**goals and planning**). For instance, one participant's use of the tool led to collaboratively setting a more modest initial goal than what the patient's PCP had hoped for and communicating about that adjustment to the PCP.

Multiple participants noted that using the BIT helped them to be more thorough in their assessment of adherence barriers and make fewer assumptions about which barriers may be relevant for a patient (**promote thorough assessment**). One participant shared that they typically move on to a new intervention when a patient is not making progress with a given intervention. They described an instance in which use of the tool led to further exploring potential barriers and making adjustments to help the patient incorporate a mindfulness practice into their daily life. Taken together, provider feedback suggests that using the BIT facilitated connecting with

patients, setting realistic behavior change goals, and carrying out more thorough assessment for barriers to adherence.

Participants shared that use of the BIT evoked reflection and change for patients. For instance, providers relayed how using the tool seemed to help one patient recognize their need for self-care time and another patient identify the source of their treatment avoidance (**reflection & insight**). Further, some providers noted that using the BIT seemed to facilitate behavior change for patients (**reported patient changes**). For one patient, use of the BIT was associated with an increase in mindfulness practice. These examples and the categories they represent suggest that using the BIT may facilitate patient insight and the development of target behaviors.

Providers demonstrated that the BIT could be used in a number of ways by various professionals to fit their differing needs, styles, and contexts. While some participants used the full tool, others used certain sections, covered each general area, or used only questions that seemed relevant to a given patient (**customization**). Feedback seemed to suggest that each of these approaches could work and was suitable for different situations. Participants also shared that patients seemed unanimously willing to engage with the tool (**patient openness or engagement**) and several providers spoke about their plans to continue using the BIT in the future (**plans for future use**). Interestingly, participants had differing ideas about how the BIT might be used by providers over time. For instance, some providers seemed to view it as a training tool. One provider shared the viewpoint that clinicians should aspire to internalize the content, so they no longer need the tool itself. Meanwhile, another provider shared the perspective that the BIT was a useful reference for assessing nonadherence and may reduce the cognitive burden associated with this clinical task (**fit for primary care**). This feedback suggests that the BIT can be used in a number of ways, was generally well received by patients, seemed to

fit with integrated primary care, and led to clinicians planning to use it in the future, all of which support its feasibility.

Participants discussed how the BIT may be useful for their employees, in other settings, and by other professionals. A couple participants who held supervisory positions said that they saw potential benefit in having their clinician employees utilize the BIT for addressing nonadherence. In addition to use by integrated primary care providers, some participants speculated that it may be helpful in other settings (e.g., private mental health practices) and for other professionals, such as nurse practitioners or chronic care nurse managers (**clinical practice**). This feedback suggests that providers saw the tool as useful and feasible for not only themselves, but also for other clinicians and professionals who regularly encounter nonadherence.

In addition to illuminating positive aspects of the BIT, providers also highlighted several challenges or difficulties they encountered while using it. Some noted issues related to the BIT's formatting, such as it being too long to read aloud or having too many words on the page (**tool design**). They suggested that these issues could limit the amount that clinicians verbally administer the tool and contribute to losing one's place while navigating it in session. Additionally, one participant noted that some of the language was excessively formal or academic (**tool design**). As an example of this, they pointed to the phrase "to what extent," which was used in many questions on the tool. Another challenge to using the BIT was having limited session time (**limited time**). Multiple providers described this challenge in general and a couple of them specifically linked it to the shorter session time that is normative in integrated primary care settings. Several providers noted that using the BIT was more challenging in the context of telehealth sessions, which were described as both a barrier to using the tool at all, as



well as a barrier to using the BIT in full (**remote contact**). Altogether, having limited time, aspects of the tool's design, and remote contact stood out as challenges to using the BIT.

Qualitative analyses helped identify a number of suggestions that addressed the second research question (What feedback do these providers have regarding the BIT that could lead to its change or improvement?). Suggestions were considered according to the extent to which consensus was present, whether the change was practical, and if the modification was congruent with the goals of the study. The proposed changes were discussed with the inquiry auditor along with reasons for or against incorporating them into a revised version or versions of the BIT. The changes that were considered and ultimately incorporated can be viewed in Appendix H. The following changes were made to the BIT: incorporating bullet points to increase readability, decreasing formality of language, including more orienting information, including more information on how to use the tool, increasing spacing to facilitate readability and note-taking, grouping questions with asterisks together, adding a visual rating scale, noting that the BIT may be used with multiple patient populations (e.g., parents of children with behavior concerns, as well as adults). To incorporate these changes, two revised versions of the BIT were created, which can be found in Appendix I.

### ***Implications of Study Results for Health Behavior Change Models***

The items included on the BIT, as it was tested in this study, were derived from review of several models of health behavior change, and from existing assessment instruments based on those theories. Although the current study was not primarily designed as a test of the models, the results can be usefully explored in terms of what they can tell us about the models utilized. It is important to note that there is substantial overlap between the various theories. For example, each of the models, the Health Belief Model (HBM; Rosenstock, 1974; Rosenstock et al., 1998),

Self-Determination Theory (SDT; Deci & Ryan, 1985), the Theory of Planned Behavior (TPB; Ajezen, 1991), the Transtheoretical Model (TTM; Prochaska, DiClemente, & Norcross, 1992), and the Information-Motivation-Strategy Model (IMS; Martin, Haskard-Zolnierrek, & DiMatteo, 2010) identifies self-efficacy / competence / perceived behavioral control as an important component of health behavior change.

One way to evaluate the extent to which the findings from this study support the components of the various health behavior change models is to examine the degree to which participants expressed that they viewed items or sections of the tool favorably or found them useful. Participants saying that they found certain items/sections particularly helpful, and/or that they wanted those items to be kept in the final version of the BIT, may be understood as reflecting support for the theory informing those items/sections. Although this should not be assumed to be a one-to-one relationship, presumably items are seen as more useful if they reflect topics or issues that are consistent with the practitioner's experience working with patients with health behavior challenges.

Based on this premise, at the broadest level, feedback suggested that components of each of the models were supported, in that some providers explicitly advocated for keeping all of the questions (2) or all of the main questions (1). Overall, the IMS model appeared to receive the most support. The IMS model incorporates 1) patients' knowledge about how to adhere to a given behavior change and the quality of the patient-provider relationship (information), 2) factors that may impact motivation for change (motivation), and 3) skills and strategies that help patients address barriers to adherence and enable treatment adherence. The IMS model was developed most recently and it was developed as a heuristic model that incorporates elements of

the other models. Thus, it is a broad and comprehensive model that has the most overlap with the other models.

The results also indicated substantial support for models that focus on motivation. Multiple participants (5) specifically expressed that they found the motivation section of the BIT to be helpful. The motivation items were drawn from elements of each of the health behavior change models. A number of questions in this section are helpful in identifying the TTM stages of change and self-efficacy. Where a person is with their particular level of motivation is central to the TTM, and this was represented in the BIT motivation items. Items in this section were also based on TPB attitudes towards the behavior, which consist of an individual's favorable or unfavorable appraisals of an action, and IMS motivation, which encompasses various aspects of motivation (e.g., belief that treatment will work, belief that patient can carry out action). Motivation section items additionally were based on the HBM elements, perceived susceptibility and severity, the belief that action will reduce susceptibility/consequences, and barriers, which are the extent that a person believes that they are susceptible to a health condition, the health condition carries severe consequences, taking action will reduce their susceptibility to the condition or consequences of it, and there are few barriers to taking actions to address the condition. Finally, SDT autonomy, which refers to being in control of one's behaviors, was also represented in the motivation section items.

One participant noted that the understanding and recall sections were helpful, both of which support the IMS model (e.g., information and strategy components). One participant advocated for keeping the other barriers section, albeit in a shorthand format, which also lends support to the IMS (e.g., strategy component), as well as HBM (e.g., belief in ability to carry out

needed health behaviors, and barriers components), and TPB (e.g., perceived behavioral control and subjective norms components) relevant questions.

At a finer level, multiple participants (4) explicitly stated that they found the inclusion of motivational interviewing relevant questions helpful, which indirectly supports the TTM. One of those participants, along with another unique participant, highlighted specific MI relevant questions they found useful (e.g., importance, confidence, and readiness). While perhaps most commonly associated with conducting MI and the TTM, these questions are also related to components of multiple other health behavior change models (e.g., IMS motivation component; TPB attitudes towards the behavior and perceived behavioral control components, SDT competence component). Given the broad exposure of providers in clinical settings to MI (Miller & Rose, 2009), it is unsurprising that this TTM related approach was identified by name. In contrast, none of the health behavior change models reviewed was mentioned by providers during the interviews.

Providers identified questions about the extent to which the patient felt that he/she had a say in their treatment recommendations, and the extent to which their provider respected their concerns, as useful. Both items are based on the IMS "information" component, while the first question also relates to SDT's "autonomy" component. The "information" part of the IMS model includes a focus on rapport between patient and provider, while the "autonomy" component of SDT refers to being in control of one's behavior. Participants seemed to feel that assessing these aspects of rapport and autonomy, the patient's sense of having input and feeling respected, was useful. This lends support to these components of the IMS model and SDT. Behavioral health providers may be particularly well positioned to assess this area, as they may have more time and skills to develop rapport with patients; some patients may be reluctant to disclose difficulties

with rapport to a medical team member who they may interact with in briefer, more directive interactions. Relatedly, BHPs may also be more accustomed to using a collaborative approach to treatment that encourages patient autonomy. Ideally, the BHP could use information they gain about difficulties with rapport or shared decision making to help improve relationships between patients and their PCP or BHP.

Providers identified questions about what else got in the way of carrying out a behavior change plan and whether a written copy of the recommendation(s) was useful. Both items are based on the “strategy” component of the IMS model, which focuses on skills or strategies that aid treatment adherence (e.g., physical or emotional support, cost, forgetting), while the first question is also based on the overlapping “barriers” component of the HBM, which focuses on perceived barriers to taking action (e.g., financial, convenience). The identification of these items as useful lends support to the HBM and IMS models. BHPs’ psychosocial training emphasis may make them more attuned to “other barriers,” such as access to resources and specific strategies, that impact adherence. Therefore, they may find these questions especially useful. BHPs may also benefit from having more time in their appointments to explore these areas than other medical team members.

Broader themes that emerged in the qualitative analysis also related to components of the health behavior change models incorporated into the BIT in various ways. First, a theme concerning the importance of the relationship between the provider and patient emerged. Multiple providers described how the BIT helped them demonstrate concern, affirm the challenges of behavior change, and enhance their therapeutic relationship (**concern and collaboration**). These effects of using the tool could help foster relatedness in patients, a sense of belonging or connection to others, which is a core component of SDT. Similarly, this property

is related to the IMS information component, which includes patient-provider rapport. On a broader level, this finding is also consistent with research on psychotherapy, which demonstrates the importance of the therapeutic relationship (Flückiger, Del Re, Wampold, & Horvath, 2018). Although behavioral health interactions tend to be briefer, it appears that being aware of the patient's sense of being cared about and respected is viewed as important both by participants, and according to both SDT and IMS theories.

Providers discussed a number of instances in which using the BIT facilitated client self-reflection or insight about a barrier to change (**reflection and insight**). For example, one patient shared that avoiding a health behavior seemed to be founded in fear. This sub-category is pertinent to aspects of multiple health behavior change models, as the BIT could help providers and patients unearth information relevant to any of the models. For instance, the BIT might help a patient develop insight about whether they are susceptible to a disease or reflect on whether they are facing barriers to engaging in a health behavior, in addition to other elements of the HBM. Similarly, the BIT may help elicit awareness of a patient's attitudes towards a health behavior (TPB) or their stage of change (TTM). Although the content of interest may differ across these models, each model inherently relies on some degree of patient insight and reflection to help themselves and their providers understand where they are in the change process and identify potential areas of intervention that may improve adherence.

Multiple providers also discussed how the BIT was helpful in setting goals or treatment planning with patients (**goals & planning**). For instance, providers described how the tool was helpful in identifying a trigger to unhealthy eating in one instance, and that a goal seemed too lofty in another. In these representative examples, this information was used to make appropriate adjustments to the patients' treatment goals. The BIT's use to clarify or hone goals can be related

to the HBM's barriers component, which focuses on perceived barriers to behavior change. Likewise, it seems to reflect the IMS model's strategy component, which encompasses skills and strategies that enable adherence. Identifying specific barriers or skills deficits can be usefully incorporated into BHPs' work with patients to create more realistic treatment plans and determine what type of scaffolding may allow a patient to successfully work towards longer term goals. This category also relates to the TTM's stages of change as these instances highlight provider attentiveness to a patient's readiness to change and their willingness to adjust treatment to meet the patient where they are. Knowledge of a patient's readiness to change helps providers support appropriate goal setting. For example, if someone is contemplative, a goal might be to read material about how a behavior impacts people's health; whereas if someone is in the preparation stage of change, you might collaboratively come up with a goal for taking a small step towards changing the health behavior (e.g., smoking 1-2 fewer cigarettes/week). Thus, more thorough assessment can lead to more appropriate goal-setting.

Another important theme concerned avoiding assumptions about the types of barriers that patients may be experiencing, and adopting a more holistic approach in the assessment of barriers (**promotes thorough assessment**). Reducing assumptions and doing broader assessment supports skillful application of all of the theories at a process level. Avoiding assumptions may help providers form a clearer idea of whether a patient perceives a health concern as having consequences or thinks that taking action can address said concern (HBM). Being more comprehensive in one's assessment may also increase the likelihood that providers correctly identify a patient's stage of change (TTM), which can then enable the selection and enactment of an appropriate intervention strategy. Avoiding assumptions may also help providers ascertain the extent to which a patient and their social supports have favorable attitudes towards a given

behavior change (TPB). A more comprehensive assessment approach might also increase the likelihood that providers find out whether a patient has the information or strategy needed to implement a change (IMS). For any model to be applied effectively, the provider must have gathered the relevant information rather than making assumptions about what the patient is experiencing.

The BIT builds upon prior research (e.g., IMS Model; Martin, Haskard-Zolnieriek, & DiMatteo, 2010) and clinical tools (e.g., MLA; Linehan, 2015) aimed at improving adherence. A well-designed BIT may help BHPs efficiently and systematically assess for barriers to adherence for a range of patient issues (e.g., anxiety and panic, exercise, diet, taking medication, depression). Knowledge of these barriers might then be used to inform targeted interventions aimed at mitigating obstacles to treatment adherence. This work could increase the effectiveness of the patient care team as a whole, by increasing the likelihood that patients follow agreed on behavior change recommendations. It could also contribute to the greater body of efforts that aim to address the enormous health and financial costs that are associated with patient nonadherence.

### ***Limitations***

This study included several limitations. First, the COVID-19 pandemic limited the ways in which the BIT could be utilized by providers, and thus constrained the feedback collected in this study. Multiple participants commented that the pandemic led to seeing fewer patients overall or fewer new patients, which meant fewer opportunities to utilize the BIT. Relatedly, some providers shared that conducting remote therapy limited how they could administer the BIT (e.g., they were unable to hand it to patients for them to read or fill out), which hampered their ability to provide feedback on these administration methods.



Second, although the participants in the study were relatively heterogeneous, there were various identities that were not represented in the study. The study could have been more representative by including participants from various regions of the country, additional racial/ethnic groups (e.g., African American), and additional training backgrounds (e.g., counseling).

Third, since participation in the study was voluntary, it is possible that individuals who participated already held positive impressions of tools like the BIT and were more willing to utilize it. This may have contributed to more favorable feedback about the tool and how easy it was to implement.

Fourth, the findings of the qualitative analysis relied on interview data and are therefore subject to the shortcomings of that medium. Because interviews rely on participant recall they may be influenced by a number of variables, including what information participants attended to during their patient interactions, which details appeared salient at the time, social desirability bias, desire to please the investigator, and how much time elapsed between their patient interactions and the interview. Although participants were encouraged to take notes after each use of the BIT and were provided with materials to facilitate this process, it is likely that there was information relevant to our research questions that participants did not report during the interviews.

Fifth, given this writer's desire to produce a useful and well received tool for clinicians, it is possible that bias was introduced into the analytic process. Efforts were made to address this by coding in conjunction with the RAs and consulting as needed. For instance, this writer consulted with the qualitative consultant on the project to see whether reflection statements (e.g.,

you're saying...) should be avoided since they may be equivalent to leading questions in some cases.

Sixth, this study focused primarily on providers' experiences with the BIT and perceptions about its effectiveness. It did not directly address whether the BIT actually improved patient outcomes. Future research may address this by examining therapist efficacy/effectiveness when using the BIT vs not using the BIT.

### ***Future Directions***

Conducting follow-up studies after the pandemic would allow providers to use the BIT more in face-to-face settings and give feedback on it within that context. This could illuminate whether providers tend to administer it differently in person (e.g., having the patient fill it out; using a different number of questions) and how they view it when used face-to-face. Additional studies may benefit from including providers with identities (e.g., racial/ethnic, regional) not represented in the current study. Future qualitative studies may also benefit from excluding the principal investigator from the coding team to control for potential bias. To complement this primarily qualitative project, carrying out quantitative future studies could provide opportunities to collect information on the feasibility of using the BIT and examine whether its use impacts patient adherence to particular behavior change goals or other outcomes. It may also be helpful to explore whether use of the tool differs based on theoretical orientation of the therapist, therapist characteristics, patient characteristics, or the interaction of these variables.

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## Appendix A

Age:

\_\_\_

What is your current gender identity (Check one):

\_\_\_ Female

\_\_\_ Male

\_\_\_ Transgender Female / Trans Woman / Male-to-Female (MTF)

\_\_\_ Transgender Male / Trans Man / Female-to-Male (FTM)

\_\_\_ Genderqueer, neither exclusively male nor female

\_\_\_ Additional Gender Category, please specify:

\_\_\_\_\_

\_\_\_ Choose not to disclose

What sex were you assigned at birth on your original birth certificate? (Check one):

\_\_\_ Female

\_\_\_ Male

\_\_\_ Choose not to disclose

Race/Ethnicity:

\_\_\_ African American/Black

\_\_\_ Asian/Pacific Islander

\_\_\_ Hispanic/Latino

\_\_\_ Multiracial

\_\_\_ Native American/American Indian

\_\_\_ White

\_\_\_ Not Listed (please specify)

\_\_\_ Prefer not to respond

Years of Experience in Clinical Practice:

\_\_\_ (Fill in the blank)

Years of Experience in Primary Care Mental Health Integration:

\_\_\_ (Fill in the blank)

Professional training:

\_\_\_ Master's in Social Work

\_\_\_ Master's in Counseling

\_\_\_ Ph.D. in Clinical/Counseling Psychology

\_\_\_ Other (Fill in the blank)

Are you embedded in a medical clinic?

\_\_\_ Yes

\_\_\_ No

Briefly describe your training in integrated behavioral health and health psychology.

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Appendix B  
**Barrier Identification Tool (BIT)**

*Patients do not follow health recommendations for many different reasons. The purpose of this sheet is to help figure out why a patient did not follow health recommendations. Health recommendations refer to any health-related behaviors, such as taking medications, attending appointments, engaging in exercises, practicing relaxation skills, etc. That information can then be used to problem-solve the issue and support the patient in making appropriate changes.*

*The Barrier Identification Tool helps to systematically identify barriers to adherence that are related to the patient, the provider, and/or the system. They are organized into four categories.*

*They are:*

- 1. Did the patient **understand** the recommendation(s)?*
- 2. Was the patient **motivated** to follow the recommendation(s)?*
- 3. Did the patient **remember** to follow the recommendation(s)?*
- 4. Did **other barriers** interfere with following the recommendation(s) (e.g., not having the necessary skills, strategies, reminders, and/or resources)*

## Barrier Identification Tool (BIT)

*Changing behaviors can be really difficult to do, and it's normal to have some trouble following recommendations for your (behavior). I'd like us to try to figure out what obstacles are making it hard for you. Some questions I ask will involve you giving number ratings of the extent you agree with a given statement. For these questions, 0 means "Not at all," 5 means "Somewhat," and 10 means "Completely."*

(If applicable, what recommendation was the patient supposed to carry out?)

### UNDERSTANDING

#### 1. Regarding your health, what recommendations were made?

(If applicable, does the patient's understanding line up with the plan?) Yes \_\_\_ No \_\_\_

(IF YES), that was my understanding as well.

(IF NO), it seems like there may have been a miscommunication. My understanding was that...

What got in the way of knowing what the recommendation was? \_\_\_\_\_

To what extent did you feel that the recommendation(s) was clear? (0-10) \_\_\_

Did you receive a written copy of the recommendation(s)? \_\_\_

### MOTIVATION

#### 2. How motivated are you to follow the recommendation(s) right now? (0-10) \_\_\_

(IF <7 to Question 2), what got in the way of feeling motivated to carry out the plan?

How important is it to you to make this change? (0-10) \_\_\_

How confident are you that you can make this change? (0-10) \_\_\_

How ready do you feel to make this change? (0-10) \_\_\_

To what extent do you think (problem) is a problem? (0-10) \_\_\_

To what extent do you think (recommendation[s]) will help? (0-10) \_\_\_

To what extent do you think that I / your provider understand(s) (the problem)? (0-10) \_\_\_

\*To what extent have I or other providers done things that have made it hard for you to make these changes? (0-10) \_\_\_

To what extent do you feel that you have had a say in the recommendation(s)? (0-10) \_\_\_

To what extent do you feel that your provider respected your concerns? (0-10) \_\_\_

\*How unpleasant or difficult or inconvenient is (recommendation[s])? (0-10) \_\_\_

What other problem(s) or concern(s) feel(s) like a bigger priority right now? \_\_\_\_\_

### RECALL

#### 3. Did the thought of carrying out the recommendation(s) enter your mind?

Yes \_\_\_ No \_\_\_

How many times have you thought about it since it was provided? \_\_\_

TURN OVER





OTHER BARRIERS
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**4. "What else got in the way of carrying out the plan?"**

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*\*To what extent did it cost too much? (0-10) \_\_\_\_*

*\*To what extent was physical support (e.g., mobility) or access to an important resource an issue? (0-10) \_\_\_\_*

*\*To what extent was it difficult to find time to carry out the behavior? (0-10) \_\_\_\_*

*\*To what extent did you have trouble figuring out how to do it? (0-10) \_\_\_\_*

To what extent do important people in your life support this recommendation(s)? (0-10) \_\_\_\_

What obstacles made it harder to follow the recommendations than expected? \_\_\_\_\_

Appendix C  
Quantitative Questions for BIT Feasibility Study

1. How many times did you utilize the BIT? \_\_\_\_\_
2. With how many patients did you utilize the BIT? \_\_\_\_\_
3. On average, how much time did it take you to utilize? \_\_\_\_\_
4. With which patient issues did you use the BIT?

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- ☐ Medication adherence
- ☐ Smoking Cessation
- ☐ Depression
- ☐ Substance Abuse
- ☐ Chronic pain
- ☐ Insomnia
- ☐ Anxiety or Panic
- ☐ ADHD
- ☐ Diet
- ☐ Exercise
- ☐ Other: \_\_\_\_\_

5. On a scale of 0-10 (0 is Not at All; 5 is Somewhat; 10 is Completely), how likely are you to use this tool with patients who are nonadherent to treatment? \_\_\_\_\_
6. On a scale of 0-10 (0 is Not at All; 5 is Somewhat; 10 is Completely), how useful is the Barriers Identification Tool? \_\_\_\_\_

## Appendix D

Integrated Practice Assessment Tool (IPAT) Version 2		
1. Do you have behavioral health and medical providers physically or virtually located at your facility?		“Virtual” refers to the provision of telehealth services; and the “virtual” provider must provide direct care services to the patient, not just a consult, meaning that the provider visually sees the patient via televideo and vice versa.
“No” - Go to question 4	“Yes” - Go to question 2	
2. Are medical and behavioral health providers equally involved in the approach to individual patient care and practice design?		EXAMPLE: Is there a team approach for patient care that involves both behavioral health and medical health providers?
“No” - Go to question 7	“Yes” - Go to question 3	
3. Are behavioral health and medical providers involved in care in a standard way across ALL providers and ALL patients?		EXAMPLE: Does the practice use the PHQ-9 to systematically screen for depression, and then assure that every patient with a PHQ-9 > or = 15 receives behavioral health treatment and medical care? All get the tools and resources (including staff) needed to practice.
“No” - Go to question 7	“Yes” - Go to question 8	
4. Do you routinely exchange patient information with other provider types (primary care, behavioral health, other)?		EXAMPLE: Behavioral health provider and medical provider engage in a “two way” email exchange or a phone call conversation to coordinate care.
No, then pre-coordination – STOP	“Yes” - Go to question 5	
5. Do providers engage in discussions with other treatment providers about individual patient information?		In other words, is the exchange interactive?
“No”, then pre-coordination - STOP	“Yes” - Go to question 6	
6. Do providers personally communicate on a regular basis to address specific patient treatment issues?		EXAMPLE: Some form of ongoing communication via weekly/monthly calls or conferences to review treatment issues regarding shared patients: use of a registry tool to communicate which patients are not responding to treatment, so that behavioral health providers can adjust treatment accordingly based on evidenced based guidelines.
“No”, then Level 1 coordinated - STOP		
“Yes”, then Level 2 coordinated - STOP		

7. Do provider relationships go beyond increasing successful referrals with an intent to achieve shared patient care?	EXAMPLES can include: coordinated service planning, shared training, team meetings, use of shared patient registries to monitor treatment progress.
"No", then Level 3 co-located - <b>STOP</b>	
"Yes", then Level 4 co-located - <b>STOP</b>	
8. Has integration been sufficiently adopted at the provider and practice level as a principal/ fundamental model of care so that the following are in place?	
a. Are resources balanced, truly shared, and allocated across the whole practice?	NOTE: In other words, all providers (behavioral health AND medical) receive the tools and resources they need in order to practice.
b. Is all patient information equally accessible and used by all providers to inform care?	EXAMPLE: All providers can access the behavioral health record and medical record.
c. Have all providers changed their practice to a new model of care?	EXAMPLES: Primary Care Providers (PCPs) are prescribing antidepressants and following evidenced based depression care guidelines; PCPs are trained in motivational interviewing; behavioral health providers are included in the PCP visit.
d. Has leadership adopted and committed to integration as the model of care for the whole system?	EXAMPLES: Leadership ensures that system changes are made to document all PHQ-9 scores in the electronic health record (EHR); leadership decides to hire a behavioral health provider for a primary care clinic after grant funding ends.
e. Is there only 1 treatment plan for all patients and does the care team have access to the treatment plan?	NOTE: Treatment plan includes behavioral AND medical health information.  EXAMPLE: Even though there may be a medical record and a behavioral health record (separate EHRs), the treatment plan is included in both and is accessible in real time by all providers.
f. Are all patients treated by a team?	A care team requires membership from all disciplines.
g. Is population-based screening standard practice, and is screening used to develop interventions for both populations and individuals?	EXAMPLE: All patients are screened for tobacco use, and then offered tobacco cessation at the facility. All patients are screened for body mass index (BMI) and then offered weight loss interventions by their primary care provider, or referred to a health coach or wellness program.  EXAMPLE: Facility reviews cardio-metabolic monitoring for all patients on atypical antipsychotics and determines which patients need screening and additional supports to reduce cardio-metabolic risk factors; primary care clinic screens all diabetics for depression and refers to behavioral health provider, then primary care provider.

h. Does the practice systematically track and analyze outcomes related for accountability and quality improvement?	Population-based measures and outcomes are used in improving population health.
"No" to any, then Level 5 integrated - <b>STOP</b>	
"Yes" to all, then Level 6 integrated - <b>STOP</b>	

Current Level of Integration (Please Circle One)						
Pre-Coordinated	LEVEL 1 Minimal Collaboration	LEVEL 2 Basic Collaboration at a Distance	LEVEL 3 Basic Collaboration Onsite	LEVEL 4 Close Collaboration Onsite with Some Systems Integration	LEVEL 5 Close Collaboration Approaching an Integrated Practice	LEVEL 6 Full Collaboration in a Transformed/Merged Integrated Practice

## Appendix E

### Qualitative Questions for BIT Feasibility Study

- Thanks for taking some time to speak with me about your experience with the BIT.
- This interview will take about 45 minutes.
- Our conversation is going to be audio recorded so I can focus on our interaction without the distraction of taking notes.
- The recording will be transcribed to allow my team to identify themes that emerge across interviews. These themes will help us better understand users' experiences with the BIT and identify common feedback that will be used to update it.
- We take our responsibility to protect the identities of people we talk with very seriously and your name will never be associated with any information that we share through publications, posters, or with your workplace. In fact, no one outside of our research team will be told that you participated in this interview. We want you to feel comfortable sharing your honest thoughts and opinions because otherwise we won't be able to learn very much.
- Is that agreeable to you? Any questions or concerns?

#### Interview Warm-Up:

- ☐ First, would you please describe your role here?

#### Practicality and Acceptability to Providers

- ☐ Can you tell me about your experiences with the BIT?
  - How did the BIT change your practice, if at all?
  - What was your experience introducing this into your clinical practice?
    - What made it easier or more difficult to utilize it?

#### Impact on Clinical Effectiveness

- ☐ How did using the BIT impact your interactions with patients?
  - How did using the BIT affect what you learned about patients?
  - Did you observe any changes in patient behavior or engagement when utilizing the BIT?

#### Tool Development

“Please look at the BIT...”

- ☐ Given your experience, what would you change about the BIT instrument? What would you change about the delivery process?
- ☐ What would you maintain about the BIT? What would you maintain about its delivery process?

#### Ending the interview:

“Thank you again for taking the time to participate in this important research. Here is a gift card as a token of our appreciation. Do you have any questions or comments before we end? Thank you.”

Appendix F  
**Supplemental Qualitative Questions for BIT Feasibility Study**

**\*\*Round 2 Additions\*\***

**Practicality and Acceptability to Providers**

- How did you administer (introduce, type of visit, navigation of tool) it?  
How did it go?

**Tool Development**

- ☐ [Given your experience, what would you change about the BIT instrument] and cover page?

**\*\*Round 3 Additions\*\***

**Impact on Clinical Effectiveness**

- (If used w/ a specific population, ask how it went).
  - What was helpful or not helpful with X population?

**Tool Development**

- ☐ “I’ve heard a range of suggestions on how to modify the BIT that don’t necessarily line up... Some providers have suggested... single-sided to simplify use. Others... blank space to enhance readability or allow more space to write... Others... keep all of the questions and keep it relatively the same...
  - How important is it to make this tool one-sided? How important is it to create more blank space or space to write on the tool? How important is it to keep the tool relatively unchanged?
  - How would you make those changes?

Appendix G  
**Orientation to the BIT Study for Providers**

- **Introduce myself**
- **Intro to dissertation research:**
  - Encountering nonadherence in my clinical work over the past few years led me to exploring this topic.
  - My research led me to understand how prevalent it is, ranging from 1 in 4 patients for adherence to simple medication regimens up to 70% for individuals being asked to make complicated lifestyle changes.
  - Nonadherence is not only associated with worse health outcomes, but also higher costs to patients and the healthcare system.
- **When I say nonadherence, what comes to mind for you?**
  - Definition: “the extent to which a person’s behaviour – taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider”
    - WHO, 2003
- **What examples of nonadherence have you encountered in your clinical work? What is your general approach when addressing it?**
- **Continuation of intro to dissertation research**
  - My research and clinical experience has shown that nonadherence is typically addressed in an organic way, where the clinician might ask the patient a few questions to try and figure out what has gotten in the way of them carrying out an agreed on behavior change (e.g., did you remember to do X? What made it hard to do X?, etc.) and then problem-solving.
    - This approach works some of the time.
  - It might be helpful to have a tool that provides a relatively exhaustive and systematic, yet concise, list of questions to help identify common barriers to adherence.
    - While there are some tools out there that assess for adherence barriers related to specific behaviors, there was nothing that could be used flexibly across treatment targets and was oriented for clinical use in a primary care setting.
  - To develop the BIT, we went through the research literature and identified all the most common obstacles to adherence. We then grouped them under four general categories and utilized expert feedback to help shape the design and final list of items included in the tool.
- **Overview of the BIT**
  - (p. 1) The BIT is a tool to help providers systematically identify barriers to adherence that are related to the patient, provider, and/or system. They are...



- (p. 2) The tool itself is designed so that the text that is not in parentheses can be read out loud, verbatim to the patient. That being said, you all have unique clinical styles and voices, and may want to adapt the wording to make it fit your approach.
    - Read intro to tool
  - (p.2-3) You'll notice that the tool is arranged in sections that correspond to the four adherence barrier categories... Each of these sections begins with a broad question about an area of adherence and is then followed with more specific, related questions that are indented.
  - Many of the questions are scaled, and the lower the response, the more likely this area could be a barrier to adherence. The only exceptions to how the scaling works are the subquestions in bold that are preceded by an asterisk. In these cases, a high number means that that area is likely a barrier to adherence.
    - For example...
  - While the tool can be used in its entirety, introduced to the patient, and administered by the clinician, there are various ways you could flexibly incorporate it... You may administer only part of it, have a patient fill out part or all of it on their own, use it as a reference before a session or have it on your clipboard during session, pull specific questions from it, use or exclude the scaling, take notes on it that might help them keep track of the barriers for subsequent visits, or use it in some other way.
  - The tool is set up to help you identify potential barriers to adherence, and the idea is that you could use this information to work with the patient and come up with a plan to address it.
- **Practicing with the BIT**
    - I'd like you all to pair off.
    - Individually, I'd like you to think about applying this with a patient who has particular difficulty with adherence to treatment recommendations. Take a few minutes to go through this list and highlight areas that you think are obstacles, as well as other potential barriers that you haven't had an opportunity to ask about.
    - Then, I'd like you to discuss what you noticed with your partner, as well as how you could see yourself incorporating this tool in your practice.
  - **Provide extra copies of the tool**
    - My hope is to develop a tool that makes it easier for practitioners to help patients with non-adherence. To help with this I am recruiting providers to participate in my study. This would involve using the tool as you see fit over the next 5-6 weeks, filling out a few brief questionnaires (~5 minutes), and then participating in an interview where I'll be asking questions to better understand your experience using the tool (~30 minutes). Once I've analyzed the results of the interviews, I'll be able to share them with you and will be requesting your feedback to make sure my research team is representing your experiences with the tool accurately. As a thank you gift for your help in developing this tool, I will be providing \$30 Amazon gift cards to every participant. Please know that your participation is completely voluntary, and your decision to participate will not be communicated to anyone you work with.

- I know you all have a lot of demands on your time and I would be very appreciative of you sharing your experience. I wanted to do something for my dissertation research that could be helpful to clinicians and patients. Your sharing your clinical expertise would be an important contribution to developing this tool.
- You're welcome to use the BIT without completing the questionnaire and interview, but of course it would be great if you were willing to do both
- If you are interested in participating, please respond to the e-mail that I sent you.
- The first sheet in each stack of BITs is a MASTER copy attached to some lined note paper. Should you choose to participate, it would be great if you could jot down some notes on the master copy and note paper about your experiences using the BIT to help recall them later. I am interested in hearing about your experiences using the tool and your thoughts on the tool itself, so please make note of anything that stands out to you about your experiences with it. You can still do the interview even if you don't have time to keep notes.
- Demographic Survey: send link
- Thank you!

## Appendix H

### BIT Modification Proposals

The following includes a list of proposed changes made by participants. For each one, I considered the following criteria: 1) is there consensus? 2) Is the change practical 3) Is the change consistent with the goals of the study? Although this framework was used, decision making was ultimately subjective. In many cases there was a lack of agreement on whether to make a change, how participant feedback translated into these criteria was not entirely straightforward, and it was common for only a subset of participants to have commented on a proposed change.

#### Criteria to consider

- Is there consensus?
- Is the change practical?
- Is the change consistent w/ goals?

#### Relevant Aims & Research Questions

##### Aims:

- incorporate feedback from providers who have used it
- refine the tool
- learn how best to implement it

##### Research question 2:

- What feedback do these providers have regarding the BIT that could lead to its change or improvement?

#### Suggested Changes to Implement

1. Create long and short version (e.g., “a screener version and an extended version” P11)
  - Consensus? (P11 for both; P2, P6 for short/single-page; P9, P10 for long/2-page)
    - P6 – lengthy, especially to administer verbally
  - Practical? Y
  - Consistent w/ goals? Y
  - Rationale: practical and consistent w/ goals. Multiple providers expressed interest in both short and full versions of the tool.
2. Use bullets to increase readability
  - Consensus? (P1, P2, P3, P4)
  - Practical? Y
  - Consistent w/ goals? Y
  - Rationale: practical and consistent w/ goals. Multiple providers expressed that use of bullets would make tool easier to read.
3. Change “to what extent” to “how much” to decrease formality of language
  - Consensus? N (P5)
    - P4 said that the current language was good
  - Practical? Y

- Consistent w/ goals? Y
- Rationale: A simple change that would make the language more accessible. Although P4 said language in general was good, this seems like a helpful and targeted change.
- 4. Formal language such as “regarding your health, what recommendations were made?” was a challenge → maybe change to “What recommendation or plan was made to help with your health?” or something similar
  - Consensus? (P3)
  - Practical? Y
  - Consistent w/ goals? Y
  - Rationale: Make the language more accessible for providers and patients.
- 5. Include the orientation information I gave to providers when they were introduced to the BIT (maybe on cover page)
  - Consensus? (P2, P7)
  - Practical? – Y, very
  - Consistent w/ goals? – Y, we want people to have an orientation to the tool
  - Rationale: Would ensure that providers have basic orienting information to help them utilize the tool.
- 6. Include interpretive information / how to use the information that you collect / how it can be used
  - Consensus? (P7, P11)
    - Keep cover page the same (P6)
  - Practical? - Y
  - Consistent w/ goals? – Y
  - Rationale: It is practical and consistent with the goal of making this tool usable for providers. Brief information could be included on cover page that there is currently no psychometric data supporting scoring or using this tool in a particular way.
- 7. Include more spacing to increase readability
  - E.g., between the subquestions (p4), between the sections (P7, P10)
  - Consensus? (P1, P2, P3, P4, P10)
    - P5, P6, P7 noted that there was a clear separation of information into sections
  - Practical? – Y
  - Consistent w/ goals? – Y
  - Rationale: Providing more space on the tool may make it easier to navigate/read.
  - Additional changes to allow for more spacing:
    - Removal of the suggestion to use ratings of >7 as a cut-off for considering interventions.
      - Rationale: In addition to creating more free space, this suggestion was not evidence-based. Providers did not speak about this cut-off suggestion as being useful.
    - Move section 3 before section 2.
      - Rationale: This change will create a more even distribution of free space on both sides of the tool and does not seem to adversely affect use of the tool.

8. Add space for note-taking
  - Consensus? (P2, P6, P10)
  - Practical? - Y
  - Consistent w/ goals? – Y
  - Rationale: Would provide more space for providers write down relevant information.
9. Group questions w/ asterisks together
  - Consensus? (P1)
  - Practical? – Y
  - Consistent w/ goals? – Y
  - Rationale: It will make the tool easier to use and interpret.
10. Add visual scaling for the patient
  - Consensus? (P1, P10)
  - Practical? – Y
  - Consistent w/ goals? – Y
  - Rationale: It may make the scaling easier to use for some providers/patients.
11. Introduce that the BIT may be used with multiple patient populations on the cover page (e.g., parents of children, as well as adults)
  - Consensus (P11)
  - Practical – Y
  - Consistent w/ goals – Y
  - Rationale: Will allow providers to know it can be used with pediatric populations as well. No perceived issue with adding this language.

### **Suggested Changes Not Adopted At This Time**

1. Create Digital Version (e.g., PDF w/ active checkboxes)
  - Consensus? N (P1)
  - Practical? Y
  - Consistent w/ goals? Y
  - Rationale: An interactive PDF is beyond the scope of this project.. A word doc version will be available to providers upon request and they may modify, enter, or copy and paste information as they choose.
2. Simplify scaling (use fewer numbers)
  - Consensus? (P4, P6)
    - P1 – 0-10 scale may be difficult for some
    - P3 – I’m glad it’s 0-10 and 0-5
  - Practical? – Y
  - Consistent w/ goals? – Y/N
  - Rationale: There was a lack of consensus to justify changing the current format at this time.
3. Patient and provider versions
  - Consensus? N (P8)
  - Practical? N
  - Consistent w/ goals? N
  - Rationale: A patient version is beyond the scope of the current study but could be developed in the future.

4. Cut intro text
  - Consensus? N (P3 was for cutting it to save space)
    - P1, P3, P6, P8, and P10 liked intro text
  - Practical? Y
  - Consistent w/ goals? N
  - Rationale: No consensus and not consistent w/ goals. It seems like most providers who commented on the intro text saw it as useful.
5. Rephrase intro language
  - Consensus? N (P11; P1, P3, P6, P8, P10 liked intro text)
  - Practical? Y
  - Consistent w/ goals? Y
  - Rationale: Although making changes to the intro text may improve it, most providers who discussed it seemed satisfied as-is. Providers are encouraged to modify the language of the tool as they see fit during use.
6. Replace the word “health” with something more inclusive (e.g., “behavioral recommendations” – P5 OR “psychological and physical health” or “psychological and/or physical health” or “well-being” or “overall well-being” (p6)
  - Consensus? (P5, P6)
  - Practical? Y
  - Consistent w/ goals? Y/N
  - Rationale: It is not certain that substituting another term would make the tool more accessible for most users.
7. Include more information or rules on using the BIT, even if it is not required that providers follow them
  - Consensus? (P11)
  - Practical? – Y/N
  - Consistent w/ goals? – Y/N
  - Rationale: Given that there is no psychometric data supporting use of the tool in a particular way, providing explicit rules may be unwarranted.
8. Abbreviate questions
  - Consensus? N (P4)
  - Practical? N (might be harder to understand)
  - Consistent w/ goals? N (may make it harder to use)
  - Rationale: While this could make it easier to navigate for those already familiar, it could make the tool harder to understand for new users and difficult for patients to understand.
9. Cut cover page
  - Consensus? N (P11)
    - Keep cover page the same (P6)
  - Practical? N (would remove orienting information from tool)
  - Consistent w/ goals? N (would likely make it more difficult for new users to understand)
  - Rationale: Cutting the cover page would remove orienting information and likely make it difficult for new users to understand.
10. Remove Q1 (“regarding your health, what recommendations were made) to avoid making the patient feel like they’re being tested

- Consensus? N (P5)
  - Practical? N
  - Consistent w/ goals? N
  - Rationale: Patient's understanding of treatment goals/recommendations is a core barrier to adherence and is important to assess in some way.
11. Put a box around each section of the BIT
- Consensus (P2)
  - Practical? – Y/N
  - Consistent w/ goals? – Y/N
  - Rationale: The sections are set off by having boxes around the names of the section; only 1 provider mentioned this; potentially consider formatting sections to make them more distinct (e.g., adding space, changing font size, making lines around section thicker)
12. Add bullets to “If Yes” or “If No” Instead of using parentheses
- Consensus (P1)
    - P11 – Confused about “If applicable...” and “(IF YES)” / “(IF NO)”
  - Practical? Y/N
  - Consistent w/ goals? – Y/N
  - Rationale: Parentheses are used throughout to show that the words are not meant to be spoken aloud and there does not seem to be a strong rationale for changing this approach. It may be useful to indent or bullet the “If Yes” or “If No” in addition to using the parentheses
13. Put section 3 before section 2
- Consensus (P5)
    - Liked the current order of sections (P1, P3)
  - Practical? Y/N
  - Consistent w/ goals? – Y/N
  - Rationale: Unclear whether this change would be beneficial for most providers or increase usability of tool since two other providers noted that they liked the current order.
14. Put sections 2 and 3 on the second page
- Consensus (P9)
  - Practical? – Y
  - Consistent w/ goals? – Y
  - Rationale: Clinicians can answer much of section 1 on their own, so moving sections 2 and 3 to the second page may make it easier to add space to the tool and improve flow. Only mentioned by one provider.
15. Format questions to the left and leave space for answering on the right like the CSSRS
- Consensus (P11)
  - Practical? – Y/N
  - Consistent w/ goals? – Y/N
  - Rationale: It may be improve usability but was only mentioned by one participants.
16. Space to note whether it's an initial or F/U and the visit #
- Consensus P2)
  - Practical? – Y/N

- Consistent w/ goals? – Y/N
  - Rationale: This change was mentioned by one provider. Given that there was feedback that the tool was rather dense and providers may jot down this information at the top without a dedicated space, this suggested change may be postponed for the time being.
17. Remove questions from sections 2
- Consensus (P3, P6)
    - Cut questions 4-6 in section 2 (P6)
    - Question 4 was helpful or should be kept (P4)
    - Question 5 was helpful or should be kept (P8)
    - Question 6 was helpful or should be kept (P2)
    - Keep all questions (P10, P11)
    - Keep all questions in section 2 (P4, P8)
    - Keep content the same (P2, P11)
  - Practical – Y/N
  - Consistent w/ goals – Y/N
  - Rationale: Given that for each suggested cut there was at least one provider suggesting the opposite, it makes sense to keep all items, at least in the full-length version of the BIT.



## Appendix I

### Barrier Identification Tool (BIT) Overview

*Patients encounter various barriers to treatment adherence that are related to them, their providers, and the systems in which they function. Treatment often includes diverse behavior change goals, such as taking medications, attending appointments, engaging in exercise, practicing relaxation skills, monitoring behaviors, or making lifestyle changes. The purpose of the Barrier Identification Tool is to help providers and patients collaboratively figure out why a patient is having difficulty carrying out agreed upon behaviors. That information can then be used to problem-solve the barrier(s), which may improve intervention efforts. This tool was created with consideration for primary care behavioral health providers. However, other clinicians may find it useful as well. The BIT may be useful for working with adult patients or parents of pediatric patients.*

#### **Orientation notes on using the BIT:**

- Text that is not in parentheses can be read out loud, verbatim to the patient. Nevertheless, clinicians may want to rephrase content to suit their unique styles and voices.
- The tool is arranged in four sections that each correspond to an adherence barrier category. Each of these sections begins with a broad question about an area of adherence and is then followed with more specific, related questions.
- Many of the questions are scaled. The lower the rating, the more likely this area could be a barrier to adherence. Questions that are bolded and preceded by an asterisk are interpreted in the opposite manner. For these questions, a high number means that area may be a barrier to adherence.
- There is currently no psychometric data supporting scoring or use of this tool in a particular way. It is assumed that you will use your clinical judgment on a case-by-case basis regarding how to integrate the tool and your findings into patient care. You may choose to administer the BIT in whole or in part, use or exclude scaling, introduce the tool or simply incorporate aspects of it into session, have patients fill it out on their own or administer it yourself, use it as a reference before or during session, or use it in some other way.

## Barrier Identification Tool (BIT)

*Changing behaviors can be really difficult to do, and it's normal to have some trouble following recommendations for your (behavior). I'd like us to try to figure out what obstacles are making it hard for you. Some questions I ask will involve you giving number ratings of how much you agree with a given statement. For these questions, 0 means "Not at all," 5 means "Somewhat," and 10 means "Completely."*

(If applicable, what recommendation was the patient supposed to carry out?)

### UNDERSTANDING

**1. What steps did you and your provider talk about taking to improve your health?**

**(If applicable, does the patient's understanding line up with the plan?)** Yes \_\_\_ No \_\_\_

(IF YES), that was my understanding as well.

(IF NO), it seems like there may have been a miscommunication. My understanding was that...

What got in the way of knowing what the recommendation was? \_\_\_\_\_

- How clear was/were the recommendation(s)? (0-10) \_\_\_\_
- Did you receive a written copy of the recommendation(s)? \_\_\_\_

### RECALL

**2. Did the thought of carrying out the recommendation(s) enter your mind?**

Yes \_\_\_ No \_\_\_

- How many times have you thought about it since it was provided? \_\_\_\_

Not at all                      Somewhat                      Completely  
0      1      2      3      4      5      6      7      8      9      10

TURN OVER



\* Denotes that the item is reverse scored.

## MOTIVATION

3. How motivated are you to follow the recommendation(s) right now? (0-10) \_\_

What got in the way of feeling motivated to carry out the plan?

- How important is it to you to make this change? (0-10) \_\_\_\_
- How confident are you that you can make this change? (0-10) \_\_\_\_
- How ready do you feel to make this change? (0-10) \_\_\_\_
- How much do you think (problem) is a problem? (0-10) \_\_\_\_
- How much do you think (recommendation[s]) will help? (0-10) \_\_\_\_
- What other problem(s) or concern(s) feel(s) like a bigger priority right now?  
\_\_\_\_\_
- How much do you think that I / your provider understand(s) (the problem)? (0-10) \_\_\_\_
- How much do you feel that you have had a say in the recommendation(s)? (0-10) \_\_\_\_
- How much do you feel that your provider respected your concerns? (0-10) \_\_\_\_
- *\*How much have I or other providers done things that have made it hard for you to make these changes? (0-10) \_\_\_\_*
- *\*How unpleasant or difficult or inconvenient is (recommendation[s])? (0-10) \_\_\_\_*

## OTHER BARRIERS

#### 4. "What else got in the way of carrying out the plan?"

- What obstacles made it harder to follow the recommendations than expected?
- How much do important people in your life support this recommendation(s)? (0-10)
- *\*How much was cost a problem? (0-10)* \_\_\_\_
- *\*How much was physical support (e.g., mobility) or access to an important resource an issue? (0-10)* \_\_\_\_
- *\*How difficult was it to find time to carry out the behavior? (0-10)* \_\_\_\_
- *\*How much trouble did you have figuring out how to do it? (0-10)* \_\_\_\_

Not at all                      Somewhat                      Completely

0    1    2    3    4    5    6    7    8    9    10

## Barrier Identification Tool (BIT)

*Changing behaviors can be really difficult to do, and it's normal to have some trouble following recommendations for your (behavior). I'd like us to try to figure out what obstacles are making it hard for you. One questions I ask will involve you giving a number rating of how much you agree with a given statement. For this question, 0 means "Not at all," 5 means "Somewhat," and 10 means "Completely."*

(If applicable, what recommendation was the patient supposed to carry out?)

### UNDERSTANDING

**1. What steps did you and your provider talk about taking to improve your health?**

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### RECALL

**2. Did the thought of carrying out the recommendation(s) enter your mind?**  
Yes \_\_\_ No\_\_\_

### MOTIVATION

**3. How motivated are you to follow the recommendation(s) right now? (0-10) \_\_\_**

### OTHER BARRIERS

**4. "What else got in the way of carrying out the plan?"**

---

Not at all                      Somewhat                      Completely  
0      1      2      3      4      5      6      7      8      9      10