PHARMACIST PERCEPTIONS TOWARD SCREENING, BRIEF INTERVENTION, AND REFERRAL TO TREATMENT FOR PRESCRIPTION OPIOID MISUSE: INITIAL INSTRUMENT RELIABILITY AND VALIDITY

by

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A thesis

submitted in partial fulfillment

of the requirements for the degree of

Master of Health Science in Health Promotion

Boise State University

December 2019

BOISE STATE UNIVERSITY GRADUATE COLLEGE

DEFENSE COMMITTEE AND FINAL READING APPROVALS

of the thesis submitted by

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Thesis Title: Pharmacist Perceptions Toward Screening, Brief Intervention, and Referral to Treatment: Initial Instrument Reliability and Validity

Date of Final Oral Examination: 23 October 2019

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ACKNOWLEDGEMENTS

Thank you to all those who contributed to making this study possible. I would like to thank my supervisory Committee: Dr. Megan Smith, Dr. Sarah Toevs, and Dr. Mike Mann, for their ongoing support, inspiration, and encouragement. I would like to extend a special thank you to Dr. Megan Smith for your reassuring voice and guidance through this project, especially the statistical analysis and write-up. Thank you to the expert panel members who took the time to review the questionnaire, provide feedback, and talk through ideas with me in-person or on the phone. A special thank you to Dr. Cathy Oliphant for your support in the early stages of the study. I would also like to thank the Idaho Board of Pharmacy for quickly responding to questions and their willingness to help a graduate student.

I would like to thank my friends and family. Scott, thank you for your ongoing words of encouragement, support, and love. I appreciate you always being an empathetic ear during the ups and downs in the Master's program. Lastly, thank you to the Health Policy and Promotion team at Central District Health for being the best support system. You are the most caring, passionate, idea-generating, and inspirational group of people I have had the opportunity to work with.

ABSTRACT

Prescription opioid misuse has become a growing problem in the United States, and there has been a significant increase in the number of nonfatal overdose and overdose deaths since the 1990s. Idaho has also experienced an increase in the number of drug-induced deaths over time, increasing nearly 30% from 2012 to 2016. The Centers for Disease Control and Prevention indicates overprescribing and dispensing of prescription opioids is a main driver to the increase in overdoses. Evidence-based early intervention methods, such as screening, brief intervention, and referral to treatment (SBIRT), can be utilized in healthcare settings to identify risky behaviors among individuals who may not be seeking help for substance problems. However, limited research has been done to examine SBIRT in a pharmacy setting and in pharmacist perceptions toward performing SBIRT for prescription opioid misuse.

The purpose of this study was to develop an instrument based on the Theory of Planned Behavior (TPB) to measure pharmacist perceptions toward using SBIRT for prescription misuse and then test initial validity and reliability. To construct appropriate questions, survey items for attitude, subjective norms, perceived behavioral control, past behavior, and intention were developed from a previous TPB instrument on the utilization of the prescription monitoring program. After data was collected, psychometric testing was initiated and included factor analysis, testing the internal consistency of the subscales, and a correlation to determine the degree of similarity between subscales. A Principal Component Analysis (PCA) was used to extract factors in

this study with a non-orthogonal rotation (Direct Oblimin). Items were retained if they loaded onto a factor at |0.4| or higher. Findings supported the eight-factor solution that was conceptually hypothesized with strong internal consistency for each construct. Cronbach's alpha scores were 0.7 and above for all factors except for past behavior. These results offer a foundation for future research to build on the instrument and inform interventions that may shape pharmacist readiness in prescription misuse early intervention strategies.

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LIST OF ABBREVIATIONS

BOP	Board of Pharmacy
BSU	Boise State University
CDC	Centers for Disease Control and Prevention
OUD	Opioid Use Disorder
SAMHSA	Substance Abuse and Mental Health Services Administration
SBIRT	Screening Brief Intervention and Referral to Treatment
SUD	Substance Use Disorder
PMP	Prescription Monitoring Program
TPB	Theory of Planned Behavior

CHAPTER ONE: INTRODUCTION

Prescription opioid misuse has become a growing problem in the United States, and there has been a significant increase in the number of overdose and overdose deaths since the 1990s. According to the Centers for Disease Control and Prevention (CDC), two out of three drug overdose deaths involved prescription or illicit opioids (Hedegaard, Miniño, & Warner, 2018). Idaho has also experienced an increase in the number of drug-induced deaths over time, increasing nearly 30% from 2012 to 2016 (Drug-Induced Deaths: Idaho Residents 2016 summary, 2017). The CDC indicates overprescribing and dispensing of prescription opioids is a main driver to the increase in overdoses.

Statement of the Problem

According to the National Survey on Drug Use and Health (NSDUH), Idaho's estimated 2015-2016 prevalence of pain reliever misuse in the past year was 5.09% for ages 12 years and up, and the rate was even higher for those 18-25 years of age (9.77%), both exceed the estimated national rates. Additionally, NSDUH estimated approximately 104,000 people ages 12 years old and up to have a substance use disorder (SUD) in Idaho, and yet 96,000 Idahoans needed but did not receive treatment in a specialty facility for SUD (National Survey for Drug Use and Health, 2015-2016). Although NSDUH found the majority of people who misused prescription pain relievers in the past year obtained the medication from a friend or relative (53%), 35.4% obtained the pain medication through a prescription(s) from a provider.

Evidence-based early intervention methods, such as screening, brief intervention, and referral to treatment (SBIRT), can be utilized in healthcare settings to identify risky behaviors among individuals who may not be seeking help for substance problems (Substance Abuse and Mental Health Services Administration 2011). As part of a team-based approach, pharmacists have the potential to mitigate harm in instances of early prescription opioid misuse before risky behavior reaches a diagnosable level.

Purpose of this Study

The focus of this research was to develop an instrument that could accurately assess community pharmacists' perceptions towards performing SBIRT in their practice setting. This was completed by adapting a Theory of Planned Behavior (TPB) questionnaire used to examine pharmacists' perceptions toward utilizing the Prescription Monitoring Program (PMP) for opioid misuse and administering a pilot study to perform initial psychometric tests. The TPB constructs in the instrument examine attitude, subjective norms, and perceived behavioral control in relation to behavioral intention and past behavior.

Justification of the Study

Misused medications are often obtained through a pharmacy (Cicero et al., 2011). Additionally, pharmacists are considered the most accessible and trusted health professional whose doctorate-level training can help address gaps in primary care, especially in health professional shortage areas (Manolakis & Skelton, 2010). There is promising research on the effectiveness of SBIRT in reducing risky alcohol and substance use behaviors and improving short-term health outcomes (United States, 2012).

However, limited research has been done to examine SBIRT in a pharmacy setting and in pharmacist perceptions toward performing SBIRT for prescription opioid misuse.

Research Questions

The purpose of this study was to develop a valid and reliable instrument based on the Theory of Planned Behavior to measure pharmacist perceptions toward deploying SBIRT for prescription misuse. Therefore, the overall research question was: can the instrument that measures the constructs in TPB be reliable and valid? From this overall research question, three additional research questions were created:

1. Does the instrument achieve face and content validity?
2. Are the attitude, subjective norms, perceived behavioral control, intention, and past behavior subscales internally consistent?
3. Do the underlying factor structures in the subscales support the theoretical framework?

Findings from this study will inform future psychometric testing on the instrument and potential points of education that would build readiness to implement SBIRT in a pharmacy setting.

Delimitations

1. The study was conducted on licensed pharmacists practicing in the state of Idaho at the time of the study.
2. Participants included actively practicing pharmacists that were registered to the Idaho Board of Pharmacy's Prescription Monitoring Program (PMP) database with an active email address.
3. Data were collected from March -April 2019.

Limitations

1. The survey instrument was adapted from a Theory of Planned Behavior questionnaire used in two previous studies rather than eliciting measures through qualitative methods.
2. There was no previous study or instrument to compare results to for concurrent validity or test-retest reliability.
3. Data were self-reported and responses may not have been candid.
4. Participants that responded to the survey may not have been representative of all pharmacists practicing in Idaho.
5. Participants may have different understandings of the Screening, Brief Intervention, and Referral to Treatment practice.

Assumptions

1. Survey items that were adapted in this study were based on utilization of the Prescription Monitoring Program, which can be considered the first step to screening for misuse. The intended audience, context, and time of the behavior remained the same.
2. Definitions were provided in the instrument to provide a basic understanding of the SBIRT steps.
3. Data collected in this pilot would be useful for further instrument psychometric testing and future SBIRT training and piloting implementation in a pharmacy setting.

Definition of Terms

- **Community pharmacy:** Pharmacy practiced in various retail settings such as independent pharmacies, chain stores, food stores, where prescription orders are dispensed outside an inpatient hospital setting that allows the public access to medications when needed.
- **SBIRT:** Screening, Brief Intervention, and Referral to Treatment is a comprehensive, evidence-based public health approach used to identify, reduce, and prevent problematic use, abuse, and dependence of alcohol and drugs. It is useful in disrupting the development of use disorders.
- **Screening:** Use of a validated universal tool to quickly assess a patient for risky substance use behaviors, and who may already have a substance use disorder, and identify appropriate level of intervention.
- **Brief Intervention:** A time-limited strategy where a healthcare professional engages patients showing risky behaviors in a short conversation with a focus on increasing insight in substance use and motivating change.
- **Referral to Treatment:** In instances where more advanced treatment is necessary, a healthcare professional provides a referral to brief therapy or a higher level of care when a patient's screen indicates additional services.

CHAPTER TWO: LITERATURE REVIEW

This chapter provides information on the role of a community pharmacist in the opioid crisis. This chapter will also review the literature relevant to this study on Screening, Brief Intervention, and Referral to Treatment, SBIRT in a pharmacy setting, and the Theory of Planned Behavior.

Community Pharmacists in the Opioid Crisis

Community pharmacists remain one of the most accessible health professionals in the healthcare system and are often under-utilized in a public health capacity. Among many tasks, community pharmacists are frontline professionals responsible for dispensing medications, ensuring the legitimacy of prescriptions, monitoring drug utilization, and maintaining links with primary care and other health professionals (World Health Organization, 1988). The role of pharmacy has evolved from traditional dispensing practices to support public health initiatives through providing immunizations (Ndiaye et al., 2003) and health screenings such as influenza testing (Klepser et al., 2018). In some states, the pharmacist's role has also expanded to medication therapy management (Casserlie & Mager, 2016) and chronic disease state management (Schuessler, Ruisinger, Hare, Prohaska, & Melton, 2016). Today, amidst the public health crisis in opioid-related overdoses, the American Society for Health-System Pharmacists (ASHP) supports pharmacists' active involvement in reducing the negative effects substance misuse has on society, health systems, and the pharmacy profession (2016).

As part of a comprehensive approach, several national pharmacy organizations have stressed the importance of the pharmacist's role in responding to the opioid crisis due to their expertise and accessibility. Pharmacists are well positioned to exercise professional judgment to balance patients' legitimate medical need for prescription opioids with the need to prevent diversion, misuse, dependence, and substance use disorders (American Pharmacists Association, 2018; The College of Psychiatric and Neurologic Pharmacists, 2016). One study found that 86% of the pharmacists surveyed had concerns about prescription opioid use in several patients, and the number of patients they were concerned about was positively correlated to the number of patients on opioids for chronic pain (Kahan et al., 2011). In addition to educating and counseling patients on safe use, storage, and disposal of medications, pharmacists have access to screening tools such as the Prescription Monitoring Program (PMP). The PMP allows pharmacists to verify the validity of a prescription and assess for "red flags" in prescribing or dispensing history. An educational document published by the College of Psychiatric and Neurologic Pharmacists, *Opioid Use Disorder: Interventions for Community Pharmacists* (2016), outlines additional strategies for public-facing pharmacists to deploy. These strategies include increasing access to naloxone (an opioid overdose reversal medication), developing an intervention resource list for patients, and talking with patients about SUD. To reduce the risk of diversion and opioid-related overdoses, pharmacies have also participated in and promoted medication take-back programs to reduce the amount of available controlled substances (Strand, Eukel, & Burck, 2019).

While the aforementioned efforts have made an impact on the opioid crisis for diversion and individuals who may have a SUD, more pharmacy-involved interventions

need to focus on preventive patient care. Proactive approaches utilizing pharmacists in underserved rural areas are particularly important where individuals have a higher risk for opioid misuse than their urban counterparts (Cochran, Engel, Hruschak, & Tarter, 2016). Furthermore, ASHP supports pharmacists in the identification of patients who may have substance misuse problems and referring those patients to appropriate resources for further evaluation and treatment (2016).

Screening Brief Intervention and Referral to Treatment

Screening, brief intervention, and referral to treatment (SBIRT) is a public health approach to early intervention for risky alcohol, tobacco, and other substance use behaviors (SAMHSA, 2011). SBIRT is based on the Institute of Medicine report that recognized substance use occurs on a continuum of severity and calls for integrated service systems to fill gaps between primary prevention and intensive treatment for SUD (1990). SBIRT is designed for use by professionals who do not specialize in addiction treatment and is relatively easy to learn by diverse health professionals. In 2003, SBIRT was funded across the U.S. by the Substance Abuse and Mental Health Services Administration (SAMHSA) in various settings such as primary care offices and college campuses (SAMHSA, 2011). The SBIRT model uses three basic elements in the process: (1) universal screening, (2) if screening indicates moderate risk a brief intervention is used to motivate change in behavior, and (3) a referral to treatment or additional services if the screening indicates high-risk behavior.

A brief universal screening, typically taking about 5-10 minutes to complete, addresses specific behaviors. Because the screening is done with all patients and takes little time, professionals working in busy practices may more generally accept SBIRT

(SAMHSA, 2011). If individuals screen positive, then the brief intervention uses motivational interviewing to provide feedback and advice to facilitate behavior change. The screening process may also assist in connecting patients to preventive services such as diversion reduction services, access to naloxone, and coordination of care services (Pringle, Cochran, & Aruru, 2019). In instances when individuals screen for substance dependence or a use disorder, a referral to a specialty treatment provider should be made. In a primary care setting, approximately 5%-20% of screened patients are positive for some level of substance misuse and only 3%-4% need to be referred (SAMHSA, 2011). The flow for the SBIRT process is shown in Figure 2.1.

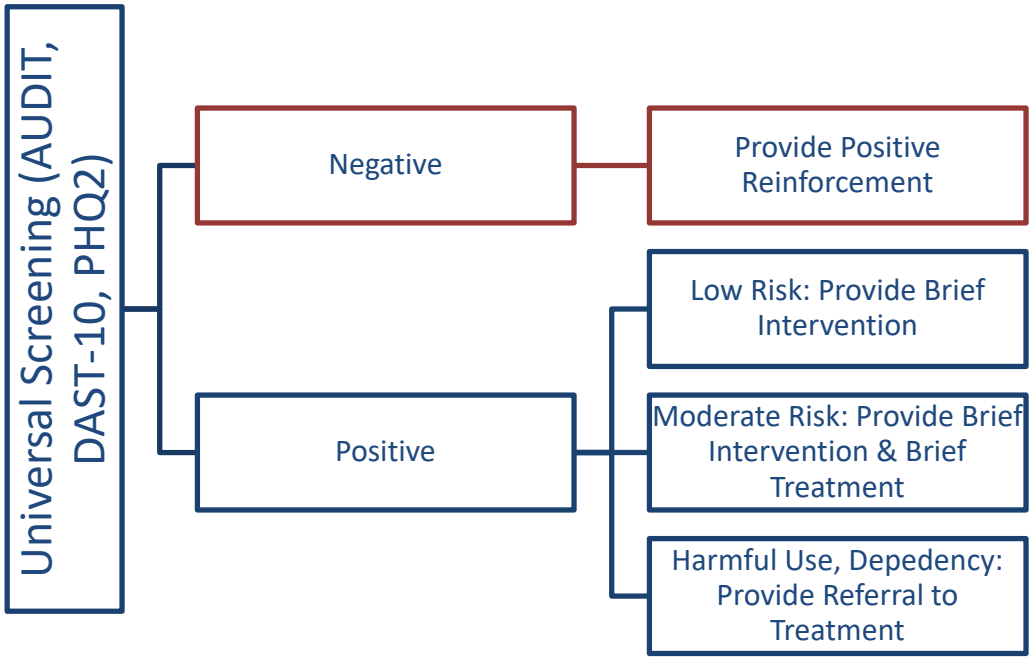

Figure 2.1 Flow Chart for the SBIRT process

Effectiveness of SBIRT

There is substantial research that supports the efficacy of SBIRT at reducing hazardous alcohol use (Beich, Thorsen, & Rollnick, 2003; Bien, Miller, and Tonigan, 1993; Kaner et al., 2009) and a growing body of research that supports the effectiveness at reducing substance use (Barbor, Del Boca, & Bray, 2017). Similar to alcohol use, licit and illicit substance use conditions can occur across a continuum of severity but are typically only identified and treated when it becomes severe. In respect to prescription misuse, Zahradnik et al. (2009) found that brief intervention led to a reduction in prescription drug consumption, including opioids.

SBIRT in Pharmacy

Pharmacists frequently encounter patients at risk for prescription misuse, dependence, diversion, and use disorders. Leong, Alessi-Severini, Sareen, Enns, and Bolton (2016) found that the most common reasons a patient would request an early prescription opioid refill or duplication of prescription refills are lost medication, going out of town, and stolen medications. While the majority of pharmacists denied the prescription refill, factors such as familiarity with the patient and easy access to medical history facilitated the filling request. Pharmacists are well positioned to utilize SBIRT to inform the decision-making process in instances of early refill requests and to identify potential opioid misuse in their practice. SBIRT is versatile, brief, and easy to learn. However, unlike the extensive research on use in a primary care setting, few studies have reviewed the SBIRT model in a pharmacy setting.

Screening

Of the emerging studies on SBIRT-type strategies in a pharmacy setting, many investigate screening and/or brief intervention (SBI) or referral to treatment. A survey administered to Utah and Texas pharmacists found a high level of interest in helping patients with prescription opioid use problems, with 50.2% of respondents agreeing that a pharmacy would be a good setting to test if screening and brief intervention could help patients misusing prescription opioids. Additionally, over 40% of the surveyed pharmacists indicated they already screen for prescription opioid misuse (Cochran, Field, Lawson, & Erikson, 2013). Authors note that pharmacists' interest and their practice setting are important factors to consider when implementing pharmacy-based misuse interventions. A 2015 study conducted by Cochran, Field, and Lawson found that practicing in a chain pharmacy was the strongest predictor of screening, and pharmacists who did screen had practiced, on average, three years longer than those who did not report screening. Pharmacists who reported feeling awkward inquiring about prescription opioid misuse in patients were 58% less likely to screen, and those who had inadequate access to screening tools were 44% less likely to report screening. In contrast, pharmacists indicated quick and easy screening tools would motivate them to work with patients who misused medications (Cochran et al., 2015). Pharmacists who felt electronic prescription record systems were useful as a screening tool were also 75% more likely to screen at the time of the study (Cochran, Field, & Lawson, 2015).

A 2019 study assessed the feasibility of community pharmacists screening patients using the Opioid Risk Tool, a validated tool used in pain clinics, to identify opioid misuse. If patients screened positive, the pharmacists offered services including

counseling patients on the potential for SUD. The six-week pilot study showed that, of the 107 patients screened, 25% were identified at some risk of misuse, similar to rates in other settings. Of the patients screened, 71 received information about medication take-back programs and 17 were provided information on community support services (Strand et al., 2019). Preliminary research on screening for opioid misuse and use disorder in a community pharmacy setting found that an objective assessment helped identify patients at risk for misuse and facilitate a discussion on use disorders (Strand et al., 2019). Additionally, screening for misuse increased the likelihood of discussing potential opioid misuse (Cochran et al., 2015). Leong et al. (2016) found that nearly 50% of pharmacists felt confident in their ability to identify high-risk patients for prescription misuse; however, 44% of respondents felt they were not confident in their ability to intervene if they did suspect misuse.

Brief Intervention

Regarding providing a brief intervention, chain pharmacists were again the largest group that reported currently engaging patients in a discussion on prescription opioid misuse while hospital system pharmacists were the least likely group (Cochran et al., 2015). Authors also found that pharmacists who held a bachelor-level degree were the largest group currently discussing misuse with patients (54.8%) while doctorate-level pharmacists were the largest group who did not discuss misuse (50.5%).

In 2018, Riley and Alemagno evaluated patient and pharmacist acceptability of five opioid misuse interventions in Ohio. Two of the five interventions included counseling patients on the risks associated with opioid misuse (brief intervention) and referring patients to treatment programs. Patients and pharmacists alike demonstrated

some level of support for counseling on risks associated with opioid misuse. However, only 32% of patients indicated that a pharmacist had ever counseled them on proper prescription opioid use and potential risks like an addiction (Riley & Alemango, 2018). From the pharmacists' perspective, the depth of the patient-pharmacist relationship may affect the decision to engage in a discussion about prescription misuse (Hagemeier et al., 2016).

Referral to Treatment

In respect to referring patients to treatment, Riley and Alemango (2018) found that both patients and pharmacists reported more cautious support. Authors also asked pharmacists if they have ever referred a patient to local treatment resources, and interestingly, 25% of pharmacists reported they had at least once in their professional career. However, only 1.6% of patients reported receiving treatment resources from a pharmacist. Similarly, Hagemeier, Alamian, Pack and Murawski (2014) found that approximately 25% of 637 Tennessee community pharmacists surveyed have previously provided addiction treatment facility information to patients and only 13% had addiction treatment facility information readily available. Hagemeier et al. (2014) also found an association in pharmacists providing addiction treatment facility information to patient(s) with being male, increased number of hours worked per week, having information readily available in their pharmacy, higher self-efficacy beliefs, and participation in prescription opioid abuse-specific continuing education. Unlike both screening and brief intervention, pharmacists employed in a chain or grocery store setting were significantly less likely to provide treatment information than pharmacists in an independent setting were.

Barriers and Facilitators to SBIRT

Several studies indicated barriers to effectively use SBIRT-type interventions in a pharmacy setting. First, the need for additional training and education surfaced as a barrier (Cochran et al., 2015; Lafferty, Hunter, & Marsh, 2006). Pharmacists were less likely to discuss prescription misuse with patients if they felt they had too little training in addiction and helping patients with substance use disorders (Cochran et al., 2014; Wenthur et al., 2013). A survey administered to Florida pharmacists found that only 38% of respondents indicated having “much” to “very much” knowledge about addiction as a disease (Lafferty et al., 2006). Additionally, 46.9% of pharmacists reported rarely or never counseling patients on addictive medication even though similar rates (46.7%) were reported of having “much” knowledge about counseling and intervening in misuse (Lafferty et al., 2006). Based on these findings, authors note pharmacists should stay up-to-date on appropriate interventions for substance abuse and treatment resources for substance use disorder. Wenthur et al. (2013) found that both student pharmacists and practitioners were interested in additional addiction education, and many believed it would positively affect their ability to counsel patients and better use local treatment resources. When it came to practicing pharmacists, 75.7% of respondents felt the pharmacy curriculum needed to include drug withdrawal and treatment, available addiction resources (57.9%), intervention (40.5%), and recovery options (43.7%) (Wenthur et al., 2013). Even though student pharmacists rated it lower in importance than practicing pharmacists, student pharmacists also rated addiction-related topics as high importance. Interestingly, the more practice experience gained in both students and

practitioners, the more important addiction-related topics became to them (Wenthur et al., 2013).

Confidence also emerged as a potential barrier to performing behaviors in SBIRT. Hagemeier et al. (2014) found that the majority of pharmacists were confident in their ability to identify misuse in patients, but few were confident in their interpersonal skills regarding prescription misuse. Pharmacists appear more confident in their ability to screen for or detect misuse and less confidence in their ability to briefly intervene with a discussion about addiction (Hagemeier et al., 2014; Lafferty et al., 2006). Furthermore, only 18% of respondents were confident in their ability to detect misuse, discuss misuse with patients, counsel on addiction, and discuss treatment options with patients. The number of years practiced, practice setting and gender appeared to influence confidence. Additionally, pharmacists who felt they had a right to ask about misuse were twice as likely to engage patients in a discussion about it (Cochran et al., 2015). Pharmacists who felt their patients believed the pharmacists had a right to ask were 88% more likely to discuss misuse.

Pharmacists also identified employer type as a potential barrier to screening and briefly intervening, particularly in chain or supermarket practice settings, and fear from employer repercussions (Hagemeier et al., 2014). In addition to employer type, fear of patient's response, personal safety, quick easy access to tools and information, and time constraints were identified as barriers (Hagemeier et al., 2014; Hagemeier et al., 2016; Cochran et al., 2015; Fleming, Bapat, & Varisco, 2019).

Theoretical Framework: Theory of Planned Behavior

The Theory of Planned Behavior (TPB), based on the Theory of Reasoned action, is a theoretical model used to predict individual behaviors (Ajzen, 1991). The TPB is designed to examine the relationships between intentions, behaviors, perceptions, attitudes, and motivations. TPB posits that behavioral intention determines actual behavioral performance, and Ajzen (1991) states that intention can be determined by three constructs: attitude, subjective norms, and perceived behavioral control. In this context, attitude can be defined as the "degree to which a person has a favorable or unfavorable evaluation or appraisal…" towards the behavior (Ajzen, 1991). Subjective norms are the perceived social pressure from close personal and professional relationships to perform or not perform the behavior. Lastly, perceived behavioral control is the perceived ease or difficulty of doing that behavior by reflecting on past experiences and anticipating future obstacles or difficulties (Ajzen, 1991). TPB is an appropriate theory to explore beliefs that may facilitate or deter pharmacists' adopting SBIRT as an early intervention.

Ajzen and Fishbein (1980) recognize external factors that can also influence behavioral intention and performance but are not considered a construct in the model. External factors include demographics like age, gender, and education level. The TPB also assumes that individuals will have the resources and opportunity to perform the behavior in question. According to Ajzen (1991), TPB can be modifiable and additional variables can be included in the model. Consequentially, this study will also include perceived contextual barriers in addition to attitude, subjective norms, and perceived behavioral control. See Figure 2.2 for the TPB conceptual model used in this study.

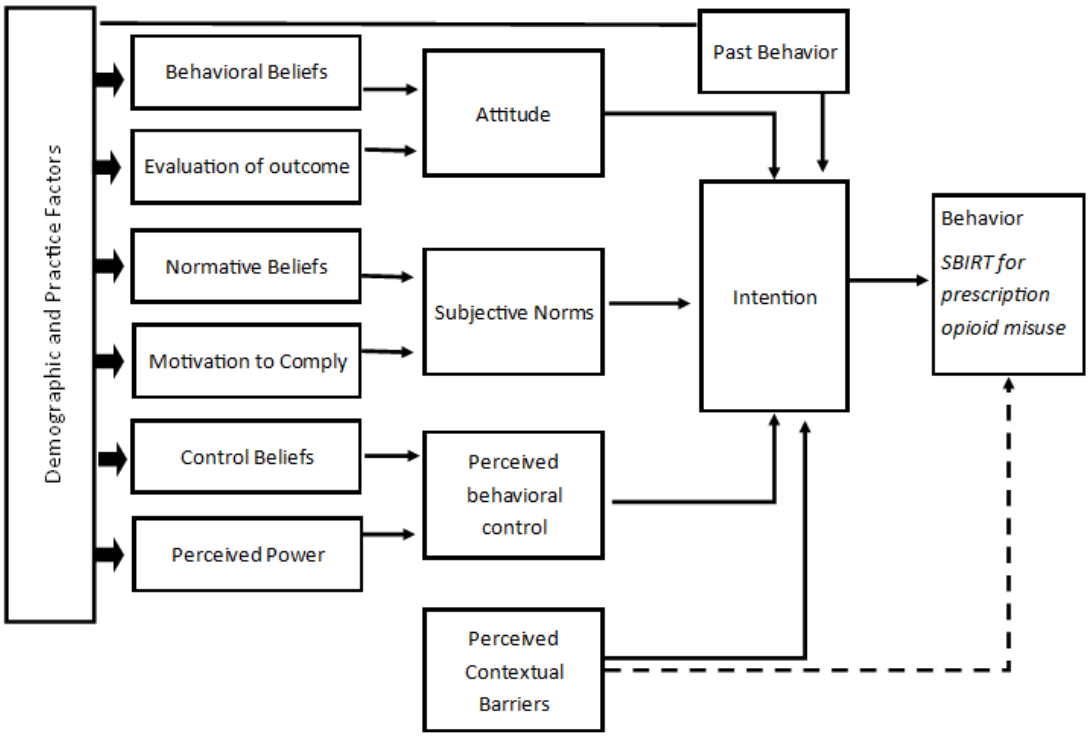

Figure 2.2 Theory of Planned Behavior Model

Theory of Planned Behavior in a Pharmacy Setting

Previous studies have used the TPB to gain a better understanding of health professionals' behaviors and to investigate perceptions across a broad range of behaviors (Armitage & Conner, 2001). TPB has been utilized as a theoretical framework in several prescription drug misuse studies in pharmacy including intention to utilize the PMP database (Fleming et al., 2014; Gavaza, Fleming, & Barner, 2014), intention to provide medication disposal education (Tai, Hata, Wu, Frausto, & Law, 2016), and intention to report adverse drug events to the FDA (Gavaza & Bui, 2012). The TPB has also been used to explore pharmacist perceptions and behavioral intention toward the three behaviors in SBIRT. For example, a Tennessee study used the TPB to explored pharmacists' perceptions toward initiating communication with patients about

prescription drug misuse and if they see it as their role to potentially intervene in circumstances such as use disorders (Hagemeier et al., 2014). However, no single study has explored all three SBIRT behaviors in a pharmacy setting using the TPB.

Conclusion

Pharmacists are encouraged to address and respond to the increase in prescription drug misuse, and the research indicates that some pharmacists already occasionally screen, briefly intervene, or refer patients to treatment for substance misuse. Studies that have explored pharmacists' perceptions towards intervening indicates that quick and easy access to tools and information influence their decision to screen, briefly intervene, and refer to treatment. Previous studies also suggest that pharmacists may experience practice setting-related or personal barriers to using SBIRT. These barriers listed in the research include gender, education, experience, time constraints, and fear from employer or patients' reactions. Despite emerging research evaluating the possibility of SBIRT in a pharmacy setting, it is still largely unknown what pharmacists' perceptions toward implementing all steps in the evidence-based practice are for prescription misuse.

CHAPTER THREE: METHODOLOGY

Introduction

This chapter describes the research methodology used in the design, construction, and evaluation of the survey tool. The first section details the first steps in conceptual design and instrument development. The second section details the data collection phase including the process to disseminate the test survey and sample participants. The final section describes the process for data analysis, specifically testing the reliability and validity of the survey tool. The proposal of this study was approved by Boise State University's *Institutional Review Board* (Appendix A).

Instrument Design

The survey instrument development was done in three steps. These steps include (1) defining behavior and research population (2) adapting items from a previously reviewed TPB survey instrument, and (3) submitting the proposed items to a panel of expert reviewers to ensure content validity.

Defining Behaviors

Fishbein and Ajzen (2010) instruct the first step as clearly defining the behavior of interest in terms of target, action, context, and time (TACT). Specifically applied to pharmacists currently practicing in Idaho and accessible to the public, the TACT goes as follows: pharmacists (target) Screening Brief Intervention and Referral to Treatment (action) to identify and provide early intervention for nondependent risky behaviors in the pharmacy (context) when patients pick up their prescription (time). For this study, SBIRT

was divided into three behaviors (1) screening for risky behaviors, (2) briefly intervening with feedback and advice, and (3) referring to treatment if needed.

Identifying Survey Items and Scale

Secondly, to construct appropriate questions, survey items for attitude, subjective norms, perceived behavioral control, past behavior, and intention were developed based on the TPB instrument from Gavaza et al. (2014). Gavaza, Fleming, and Barner's (2014) TPB instrument items were developed from focus groups and elicitation interviews with pharmacists in Texas on intention to utilize the Prescription Monitoring Program (PMP) to help identify diversion or other controlled substance misuses (Fleming et al., 2014). Items were adapted to reflect each behavior in SBIRT to capture if pharmacists' perceptions varied across each step in the process. A matrix of TPB constructs and SBIRT questions can be found in Appendix C.

Additionally, 11 demographic items and one question to capture perceived barriers were added to the instrument. Barriers to counseling patients with mental health disorders by Panesar (2016) were used to inform perceived barriers in this study. Demographic items included gender, age, education level, practice setting, number of years practicing pharmacy, number of hours working in a community setting, and estimated opioid prescriptions filled in a week. Attitude was made up of 9 items, 30 items for subjective norms, 11 items for perceived behavioral control, and 12 items for past behavior and intention. All items for the TPB construct used a 7-point bi-polar scale ranging from extremely unlikely (-3) to extremely likely (+3) with 0 being neutral (Glanz, Lewis, & Rimer, 1997). The survey instrument included 74 items to capture perceptions for the three SBIRT behaviors and demographics.

Content Validation

Expert opinions were solicited to aid in assessing the content validity and clarity of the survey instrument. Five individuals made up the expert panel – four individuals with pharmacy background and expertise and one professional with expertise in substance abuse prevention and health behavior theory. These experts were chosen because each has an interest and worked with substance misuse issues in different capacities. Each reviewer was sent an email with information on the purpose of the study and the survey items, including demographics, to provide comments and feedback on. Revisions were made to the survey items based upon the feedback and comments from the reviewers. Subjective norms questions were narrowed from 30 items to 18 items, combining “friends” and “family” into a single item instead of two separate categories. Feedback from reviewers also indicated that two items in perceived behavioral control were duplicative and therefore were removed. Lastly, perceived contextual barriers were reduced to 18 possible barriers with the option for participants to write in a barrier.

Survey Pilot

The survey instrument was also pretested with a cohort of Master of Health Science (MHS) students. Students enrolled in Program Evaluation were sent a test link to access the Qualtrics survey. Students were asked to complete the survey and provide feedback on language, survey design, and use of the TPB. Based on feedback from the MHS students and the expert panel, revisions were also made to the wording in perceived behavioral control and attitude, and definitions of each SBIRT behavior were added for participants.

Finalized Survey

In total, 60 items made up the finalized survey instrument. There were 11 demographic items, 9 items to capture attitude, 18 items for subjective norms, 9 items for perceived behavioral control, 12 items for past behavior and intention, and one item for perceived barriers. The survey instrument is provided in Appendix D.

Data Collection

Participants

Study participants included pharmacists currently practicing in the state of Idaho and were registered for the Idaho Prescription Monitoring Program (PMP), a statewide electronic database that tracks data on dispensed controlled substances. The Idaho Board of Pharmacy provided a contact list for pharmacists registered to Idaho's PMP. For this study, pharmacists who practice in a hospital setting were excluded from the list to focus on those most easily accessible to the public. However, the BOP does not require pharmacists to be employed to hold a valid Pharmacist license in Idaho. Additionally, the employment status of the pharmacist does not necessarily restrict or grant access to the public. For example, a pharmacist shown to work in a hospital setting may also be accessible to the public as a freelance pharmacist or with the permission of the hospital while working at the hospital. A demographic question on current practice setting to identify pharmacists who are registered for the PMP but not practicing (i.e. retirement) was used to exclude those responses in the analysis. With the exclusion criteria, there were 1,330 pharmacists on the distribution list.

Data Collection Procedures

An introductory message and link to the pilot survey were distributed electronically to the list of pharmacists provided by the Idaho BOP. The introduction message (Appendix B) included a summary of the study, eligibility to participate, time expected to complete the online survey, and consent to participate. The survey was created, distributed, and collected using Qualtrics. The period for data collection was between March 12 and April 18, 2019. A soft distribution to approximately 10% of the sample (n=130) was used the first week to correct any issues and the remaining email distributions were sent 7 days later. Three email reminders were emailed to unfinished respondents. To maintain privacy and confidentiality, all data was collected anonymously and no identifying information was obtained. The data was stored in a password-protected online database until the end of the survey period.

Data Analysis

After data was collected, psychometric testing was initiated. Statistical analyses included factor analysis, testing internal consistency reliability of the subscales, and a correlation to determine the degree of similarity between subscales.

Factor Analysis

A factor analysis was performed to identify factor structure. An Exploratory Factor Analysis (EFA) was used to determine if the 48 TPB items followed the underlying constructs of the theory and if the items hang together in each of the subconstructs. A Principal Component Analysis (PCA) was used to extract factors in this study with a non-orthogonal rotation (Direct Oblimin). Overall, eight factors were requested based upon the theoretical design of the instrument to index: attitude behavioral

intention, attitude evaluation, subjective norms motivation to comply, subjective norms normative belief, perceived behavioral control control belief, perceived behavioral control perceived power, behavioral intention, and past behavior.

There were three criteria used to determine factor retention in the analysis. The first criteria was the Kaiser-Meyer-Olkin (KMO) measure used to verify sampling adequacy and Bartlett's test of sphericity to test if the variables are correlated enough for factor analysis. An acceptable KMO limit was established at 0.5 or above while the Bartlett test should be significant, meaning less than 0.05 (Morgan, 2013). Secondly, Cattell's scree plot was used to determine at what point a factor explains little variance. In the scree plot, each subsequent factor explains less variance than the factor before it. Typically below the "elbow" of the plot factors will explain little variance whereas above the "elbow" factors explain considerably more variance. Lastly, interpretability criteria including if there were at least three item loadings onto a factor at a significant level, if the variables share a conceptual meaning, if the other factor loadings appear to measure a different construct, and if there were either high or low loadings onto a factor (Suhr, 2006). Although significant levels are just guidelines, low factor loadings would typically be below |0.30|, but setting the level at |0.50| or above is atypical (Morgan, 2013). Therefore, a significant level for an item to load onto a factor was established at |0.40| or greater.

Reliability

Cronbach's coefficient alpha, a preferred indicator, was then used to test reliability of the survey items (Cohen, 2003). According to Morgan (2013), alpha is commonly used to indicate the internal consistency of multi-scale items when the survey

has been administered once, such as this case. Cronbach's alpha is determined by the average correlation of each item in the scale with every other item. An acceptable alpha score should be 0.70 or higher (Morgan, 2013).

Correlation

A Pearson-r correlation was performed on the TPB subscales to examine the relationships between the constructs and determine if there was a significant relationship between behavioral intention and attitude, subjective norms, and perceived behavioral control. A +1 and -1 indicates a strong correlation between variables and 0 indicates no effect. (Morgan, 2013). Using Cohen's guidelines to the interpretation of relationship strength, absolute r values less than 0.1 are considered small, absolute r values $0.3>r>0.1$ are considered moderate or medium, and absolute values $0.5>r>0.3$ are considered larger (Morgan, 2013).

CHAPTER FOUR: RESULTS

A total of 160 online surveys (12% response rate) were captured during the collection period with a 68% completion rate. Cases were eliminated from data analysis if less than 65% of the survey was complete. Cases were also excluded if participants indicated they were retired, not practicing, or if practice setting did not align with the study (e.g. specialty home infusion, long-term care facility, pharmaceutical company). As a result, 52 cases did not meet the criteria and were eliminated from the analysis. Specifically, 42 cases withdrew participation in the early demographics stages of the questionnaire and 10 cases were either retired, not working, or excluded due to practice setting. In total, 108 cases were used in analysis.

The descriptive statistics on the demographic data are presented in Table 4.1. Female participants represented 53.3% of the sample with 46.7% of male respondents. Participants ages ranged from 26 years old to 72 years old (M= 47.8). The majority of participants held a doctoral-level degree (80.4%) and there was a wide range in number of years practicing pharmacy. In regards to practice setting, 36.1% of participants indicated currently working in a drug or grocery store pharmacy, and the second-highest category in practice setting was a health system pharmacy at 22.2%. When asked about the number of opioid prescriptions they filled each week, 18% indicated zero. However, 63% of participants filled anywhere between 1-100 opioid prescriptions in a week with 3 participants indicating they fill over 400. When asked about approximate hours of

continuing education related to opioid use disorders, the majority (65.4%) responded between 1 and 10 hours of education.

Table 4.1 Pilot study participant demographic characteristics

Characteristic	Frequency	Percentage (%)	Total N
Sex			
Male	50	46.7	107
Female	57	53.3	107
Age (mean= 47.8, median=47)			
26-35	25	24	104
36-45	30	28.8	104
46-55	23	22.1	104
56-65	17	16.3	104
>65	9	8.7	104
Hours per week working in a community pharmacy setting			
0	21	20.2	104
1-10	11	10.6	104
11-20	9	8.6	104
21-30	10	9.6	104
31-40	38	36.6	104
>40	15	14.4	104
Years practicing pharmacy			
1-3	14	13.6	103
4-6	10	9.7	103
7-10	13	12.6	103
11-15	16	15.5	103
16-20	14	13.6	103
21-25	16	15.5	103
26-30	6	5.9	103
>30	14	13.6	103
Primary Practice Setting			
Grocery or drug store	39	36.1	108
Independent Pharmacy	19	17.6	108
Mass Merchandiser	14	13.0	108
Outpatient/Clinic	12	11.1	108
Health System Pharmacy	24	22.2	108
Idaho Public Health District			
PHD 1	13	12.1	107
PHD 2	8	7.5	107
PHD 3	12	11.2	107
PHD 4	37	34.6	107
PHD 5	13	12.1	107
PHD 6	13	12.1	107
PHD 7	11	10.3	107
Education			
Bachelor	19	17.8	107
Master	2	1.9	107
PharmD	86	80.4	107

Number of year since completing highest degree			
1-5	23	21.7	106
6-10	16	15.1	106
11-15	15	14.1	106
16-20	15	14.1	106
21-30	22	20.8	106
31-40	9	8.5	106
>40	6	5.7	106
Approximate number of Continuing Education hours completed for Opioid Use disorder			
>1	2	2	101
1-5	41	40.6	101
6-10	25	24.8	101
11-15	11	10.9	101
16-20	11	10.9	101
21-30	4	3.9	101
31-40	3	3	101
>40	4	3.9	101
Avg. Opioid prescription filled in a week			
0	18	18	100
1-50	40	40	100
51-100	23	23	100
101-200	9	9	100
201-300	4	4	100
300-400	3	3	100
>400	3	3	100

Factor Analysis

As previously discussed in the methodology section, this study used the Exploratory Factor Analysis (EFA) to examine the factor structures of the survey tool. An EFA was conducted on the 48 items based on the five Theory of Planned Behavior constructs with non-orthogonal rotation (Direct Oblimin). To determine how many factors to extract, a combination of criteria was created: (a) the number of constructs and subconstructs in the Theory of Planned Behavior, (b) eigenvalues-greater-than-1 for each factor, (c) the scree test, and (d) interpreting item loading factors extracted.

Attitude

The Kaiser-Meyer-Olkin (KMO) measure verified the sampling adequacy for the analysis, KMO = 0.733 (sufficient items for each factor should be 0.70 or greater and adequate items at 0.50) (Morgan, 2013). Bartlett's test of sphericity x^2 = 485.058, *df* = 36, *p* = <0.000, indicating that correlations between items were sufficiently large for PCA. Two components had eigenvalues over Kaiser's criterion of 1 and in combination explained 64.5% of the variance as shown in Table 4.2. The scree plot, however, showed flattening after the third factor, suggesting that a third factor might be interpretable (Figure 4.1).

Table 4.2 Total Variance Explained for Attitude: Factor Solution with PCA Extraction

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total
1	3.825	42.497	42.497	3.257
2	1.978	21.975	64.472	2.852
3	0.874	9.711	74.183	

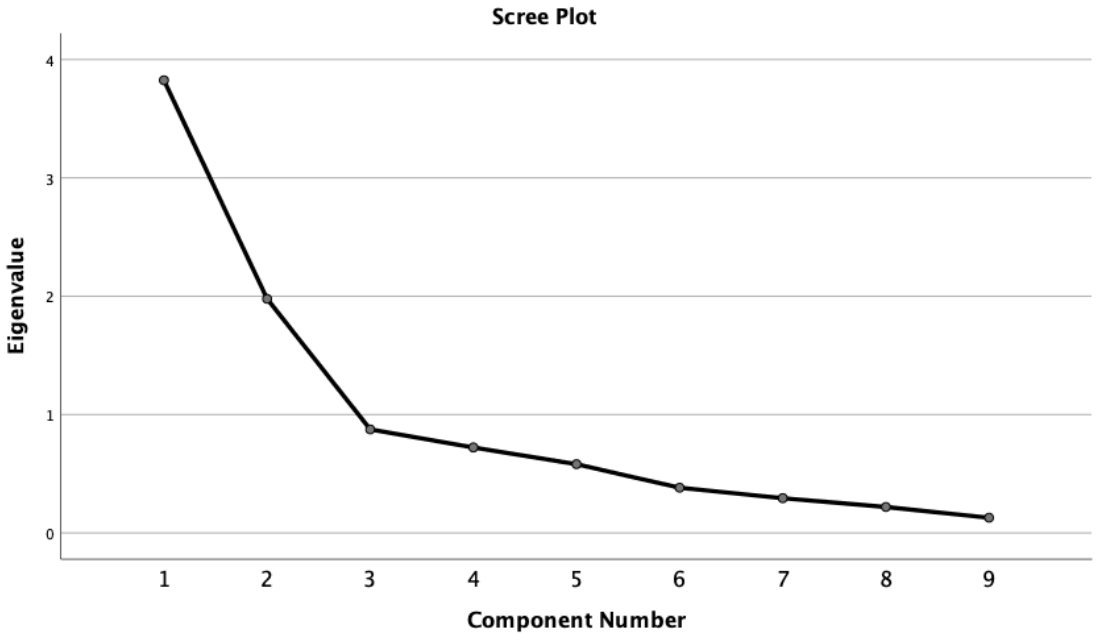

Figure 4.1 Nine item screen plot for Attitude

The next step was to explore the rotated structure matrix of the two-factor solution. Table 4.3 shows the factor loadings after rotation using a structure matrix. The items cluster on the same components suggest that items A13 through A16 load onto factor one. Items that loaded onto factor one asked participants questions such as Q14.1“when the validity of an opioid prescription is in question, I believe it would be useful to screen patients for misuse,” and Q15 “I believe it is a pharmacist’s professional duty to briefly intervene with feedback and advice when patients show risky prescription opioid use.” Items that loaded onto the second factor included questions such as Q17 “Overall, prescribers are more responsible than pharmacists for screening patients for prescription opioid misuse,” and Q19 “Overall, prescribers are more responsible than pharmacists for referring patients to treatment for prescription opioid misuse.”

Items A15 and A16 were originally intended to load onto factor two and capture values attached to the outcome. However, factor loadings indicate items cluster with factor one. Item A16 appears to cross-load on both factors above |0.40|.

Table 4.3 Attitude factor loadings after rotation

Item	Factor Loadings	
	1	**2**
A13	**.464**	.052
A14.1	**.839**	-.217
A14.2	**.846**	-.316
A14.3	**.592**	.102
A15	**.852**	.-339
A16	**.669**	-.438
A17	-.255	**.901**
A18	-.087	**.885**
A19	-.158	**.890**

Subjective Norms

The KMO measure for the 18 subjective norms items verified the sampling adequacy (KMO = 0.778) and Bartlett's test of sphericity x^2 = 1931.633, df = 153, p = 0.000 indicated factor analysis would be useful. As presented in Table 4.4, five components had eigenvalues greater than 1, and the combination explained 82.0% of the variance. Factors six and seven were also close to 1, and the scree plot in Figure 4.2 revealed ambiguous flattening between the fourth and eighth components.

Table 4.4 Total Variance Explained for Subjective Norms: Factor Solution with PCA Extraction

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total
1	6.944	38.578	38.578	4.797
2	3.352	18.631	57.199	4.269
3	2.015	11.192	68.391	4.007
4	1.320	7.333	75.724	4.425
5	1.128	6.266	81.990	4.396
6	0.973	5.408	87.398	
7	0.679	3.770	91.168	

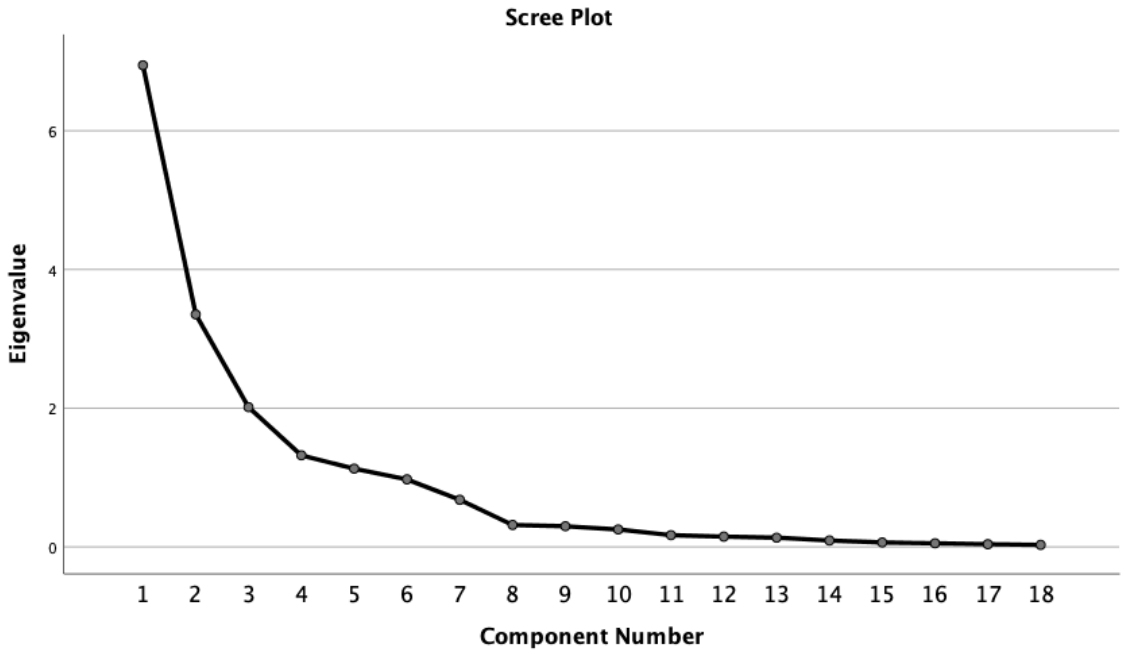

Figure 4.2 Eighteen-item scree plot for Subjective Norms

However, the TPB Subjective Norms should reflect two underlying latent variables: normative belief and motivation to comply. Based on the theoretical model, subjective norms were forced to two factors which then explain 57.2% of the variance. Table 4.5 shows the factor loadings after rotation using a structure matrix and suggest that the items in subjective norms work well with two factors. Items that cluster onto

factor one reflect respondents' motivation to comply with what their supervisor and other pharmacists want. Factor one questions include items like Q21.1 "when it comes to screening patients for prescription opioid misuse, I want to do what my supervisor thinks I should do." Items S25.1-25.3 asking about motivation to comply concerning friends and family correlate strongly to both factors above |0.40|. Items that cluster onto factor two ask questions such as Q25.2 "how much do you agree that your friends and family think you should briefly intervene with feedback and advice about opioid misuse?" The items that cluster onto factor one appear to represent motivation to comply and factor two represents normative belief in subjective norms.

Table 4.5 Subjective Norms factor loadings force to 2 after rotation

Item	**Factor Loadings**	
	1	2
S20.1	.054	**.712**
S20.2	-.098	**.715**
S20.3	.076	**.689**
S21.1	**.725**	.143
S21.2	**.791**	.332
S21.3	**.738**	.215
S22.1	**.714**	.096
S22.2	**.766**	.197
S22.3	**.811**	.295
S23.1	**.719**	.112
S23.2	**.781**	.176
S23.3	**.800**	.292
S24.1	.264	**.772**
S24.2	.235	**.774**
S24.3	.337	**.727**
S25.1	**.503**	**.643**
S25.2	**.444**	**.730**
S25.3	**.421**	**.679**

Perceived Behavioral Control

The KMO measure for the nine items in Perceived behavioral control (PBC) indicated acceptable sampling with a KMO = 0.636, and Bartlett's Test of Sphericity x^2 =

371.160, *df* = 36, *p* = 0.000. Initial analysis showing eigenvalues over 1 indicated three interpretable factors for PBC as shown in Table 4.6 and was supported by the scree plot in Figure 4.3. The three items that loaded onto factor one included "For me, questioning a patient with whom I have a relationship with would be easy," and "…engaging patients in a discussion relating to prescription opioid misuse would be easy for me." Factor two included items regarding the decision to screen, briefly intervene, and refer to treatment being beyond the participant's control. Finally, the third factor appeared to relate to confidence in their ability to perform each behavior.

Table 4.6 Total Variance Explained for PBC: Factor Solution with PCA Extraction

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total
1	2.959	32.879	32.879	2.383
2	2.235	24.830	57.710	2.361
3	1.138	12.640	70.350	2.208

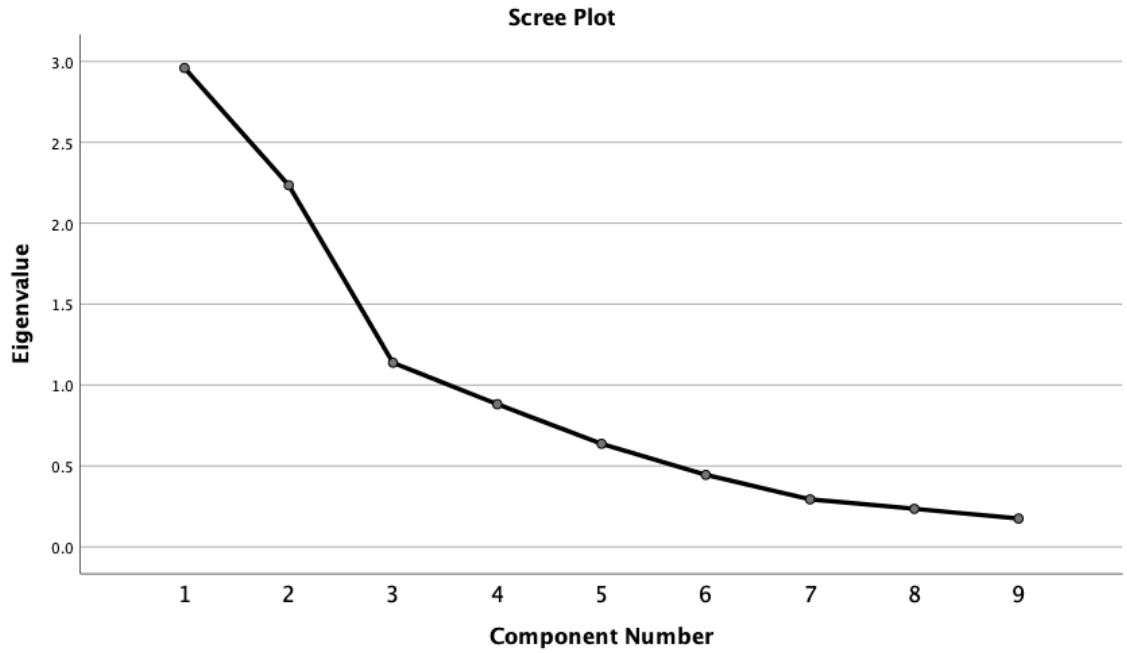

Figure 4.3 Nine-item scree plot for PBC

The next step was to explore the rotated structure matrix of the factor solution. Table 4.7 shows the factor loadings after rotation using a structure matrix. When the factor analysis was forced to two factors to align with the TPB PBC constructs, the "easy" items P26, 29-30 and "confidence" items P28.1-28.3 loaded onto factor one while the control items loaded onto factor two. The two factors explained 57.7% of the variance as seen in Table 4.6. The items that cluster on factor one appear to represent perceived power, which measures the perceived effect of making behavioral performance difficult or easy. Factor two represents control belief in PBC which measures the perceived likelihood of occurrence of each facilitating or constraining condition.

Table 4.7 PBC factor loadings force to 2 after rotation

Item	Factor Loadings	
	1	**2**
P26	**.731**	-.106
P27.1	-.092	**.883**
P27.2	-.095	**.922**
P27.3	-.117	**.832**
P28.1	**.760**	-.019
P28.2	**.815**	-.005
P28.3	**.567**	-.054
P29	**.561**	-.136
P30	**.662**	-.127

Behavioral Intention

Behavioral intention KMO measure verified acceptable sampling for the analysis, KMO = .639 and Bartlett's Test of Sphericity x^2 = 314.094, *df = 15*, *p* = 0.000 for the six items. Initial factor analysis indicated items load onto two factors shown by the eigenvalues over 1 in Table 4.8, and the "elbow" in the scree plot in Figure 4.4 also indicates two factors.

Table 4.8 Total Variance Explained for Behavioral Intention: Two-Factor Solution with PCA Extraction

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total
1	3.294	54.897	54.897	2.689
2	1.039	17.316	72.213	2.649

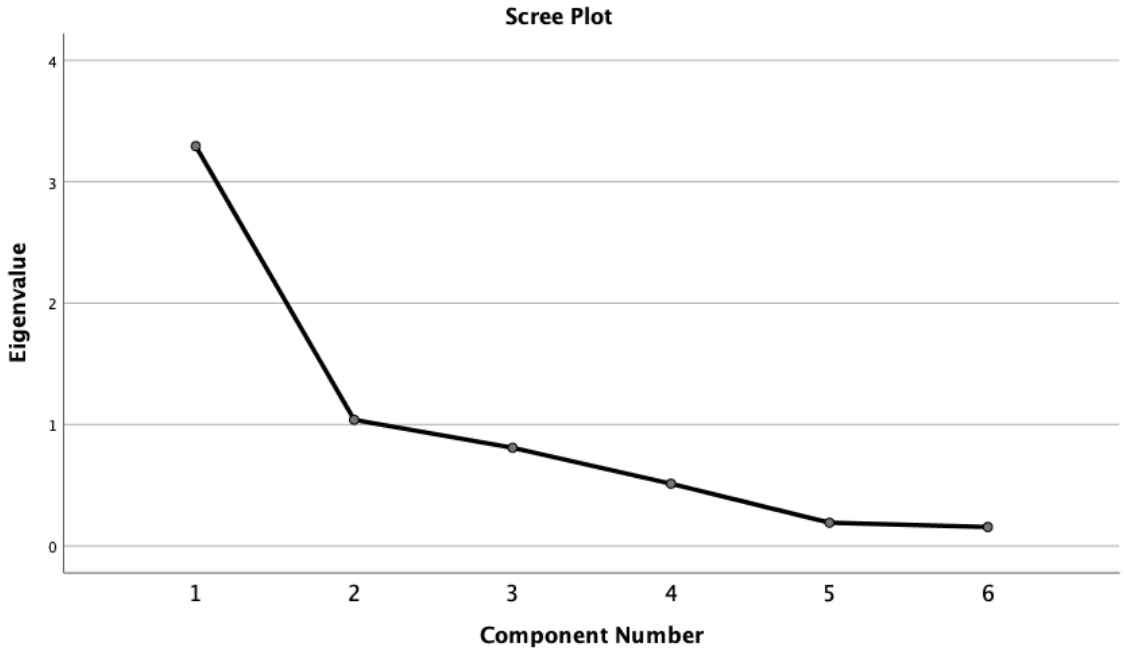

Figure 4.4 Six items scree plot for Behavioral Intention

However, when exploring the rotated structure of the two-factor solution five of the six items load highly (above |0.40|) onto both factors as shown in Table 4.9. The underlying TBP behavioral intention also does not have an underlying subscale and therefore BI was forced to one factor.

Table 4.9 Behavioral Intention Factor Loadings

Item	Factor Loadings	
	1	2
B33	.442	-.924
B34	.377	-.935
B35	.532	-.554
B36.1	.764	-.499
B36.2	.797	-.558
B36.3	.922	-.230

Past Behavior

Lastly, a principal component analysis was conducted on the six items for past behavior. The KMO measured indicated an acceptable sampling for the analysis (KMO = 0.587) and Bartlett's Test of Sphericity $x^2 = 101.446$, $df = 15$, $p = 0.000$. Similar to behavioral intention, initial analysis indicated items load onto two factors for past behavior as shown in Table 4.10 and by the scree plot in Figure 4.5. However, the TPB past behavior should demonstrate one factor in the model, but does ask about ever performing the behavior and performing in the past 30 days. The rotated factor structure in Table 4.11 shows items PB31.3 and PB32.3 asking about past behavior performing referral to treatment load onto the second factor. To align with the theoretical model, past behavior was forced into one factor, which explains 37.6% of the variance.

Table 4.10 Total Variance Explained for Past Behavior: Factor Solution with PCA Extraction

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total
1	2.256	37.595	37.595	2.034
2	1.146	19.098	56.693	1.609

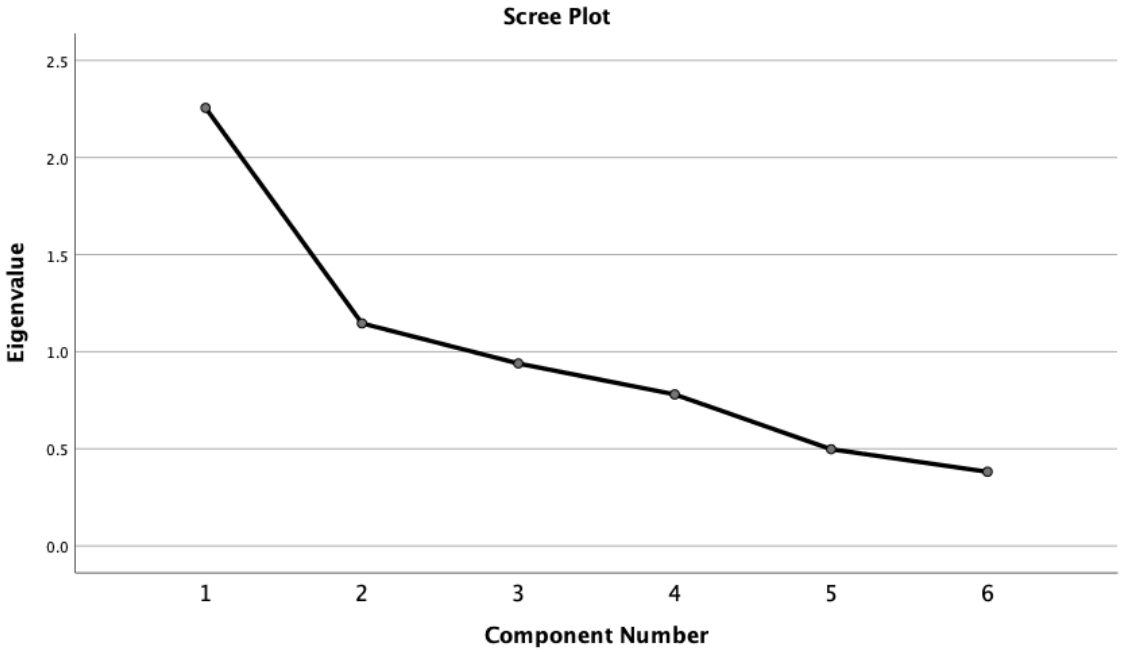

Figure 4.5 Past Behavior Scree plot for six item

Table 4.11 Past Behavior Factor Loadings

Item	Factor Loadings	
	1	**2**
PB31.1	**.754**	.259
PB31.2	**.703**	.322
PB31.3	.242	**.802**
PB32.1	**.668**	-.076
PB32.2	**.650**	.259
PB32.3	.211	**.850**

Reliability

Based on the factor analysis of the 48 items, eight factors were derived. Cronbach's alpha tests were computed to determine if the factor subscales were reliable. Cronbach's alpha tests supported findings from the factor analysis, and overall, data indicated strong internal subscale consistency except for past behavior. The subscale alpha scores were determined as follows: attitude behavioral belief (questions A13-16; α

= 0.816), attitude evaluation (A17-19; α = 0.885), subjective norms normative belief (S20, S24; α = 0.859), subjective norms motivation to comply (S21-23; α = 0.911), perceived behavioral control; control belief (P27; α = 0.853), perceived behavioral control perceived power (P26, P28-30; α = 0.762), behavioral intention (BI33-36; α = 0.830), and past behavior (PB31-32; α = 0.661). Scores 0.80 and above indicated good internal consistency reliability, while scores 0.60 and above indicate adequate consistency. Overall, the data illustrated strong internal reliability on seven of the eight subscales.

Correlation

Pearson correlations were computed on each of the TPB subscales that appeared through factor analysis. The correlation was used to examine the relationships between the subscales and can be found in Table 4.12. The first column shows the correlations of other variables with attitude behavioral belief (factor 1), the second column shows the correlation of other variables with attitude evaluation (factor 2), and so on. Overall, positive correlations were found between behavioral intention and the other TPB constructs. Six out of the seven variables in the TPB model to determine behavioral intention are significantly correlated to behavioral intention. Attitude behavioral belief (.693), subjective norms normative belief (.571), perceived behavioral control perceived power (.550), and past behavior (.649) all have a large relationship with behavioral intention based on Cohen's guidelines outlined in the Methods section. Attitude evaluation (-.265) and perceived behavioral control control belief (-.238) have a medium relationship while subjective norms motivation to comply (.161) shows to have a weak relationship.

Table 4.12 Subscale Bivariate Correlation

Factor	1	2	3	4	5	6	7	8
Attitude Behavioral Belief	1							
Attitude Responsibility	-.274**	1						
Motivation to comply	.094	.046	1					
Normative Beliefs	.602**	-.103	.259**	1				
Control Belief	-.266**	.454**	.003	-.123	1			
Perceived Power	.339**	-.071	.019	.228*	-.125	1		
Past Behavior	.402**	.032	.124	.396**	-.036	.491**	1	
Intention	**.693****	**-.265****	.161	**.571****	**-.238***	**.550****	**.649****	1

***Correlation is significant at the 0.01 level (2-tailed).*

** Correlation is significant at the 0.05 level (2-tailed).*

CHAPTER FIVE: DISCUSSION

The primary goal of this study was to adapt a TPB-based instrument to measure pharmacists' perceptions toward using SBIRT and to test initial reliability and validity. These results offer a foundation for future research to build on the instrument and inform pharmacist readiness in prescription misuse early intervention strategies. This chapter summarizes the findings from the factor analysis of the 48-items for the TPB and implications for exploring an SBIRT pilot in an Idaho pharmacy setting. Limitations of this study as well as suggestions for future research are also addressed in this chapter.

Defining and Refining Underlying Factor Structure

Factor analysis of the theory of planned behavior constructs in the instrument supported the eight-factor solution that was conceptually hypothesized. As mentioned in Chapter 3, items were retained if it loaded onto a factor with an absolute value of 0.40 or more and shared a conceptual meaning.

Attitude

In the Theory of Planned Behavior, the construct attitude is determined by two underlying themes: behavioral beliefs and evaluation. Behavioral belief captures if SBIRT performance is associated with certain attributes or outcomes while evaluation aims to capture values attached to the behavioral outcome (Glanz et al., 1996). Under attitude, six items loaded onto factor one above |0.40| and were developed to characterize behavioral beliefs. Three items loaded onto factor two above |0.80| but appeared to represent who is responsible to screen and intervene more so than the sub-construct

evaluation, which was the original intended latent construct for those items. Factor one items included A13 that captured beliefs if prescription opioid misuse was a problem in their community, A14.1-14.3 that captured if using SBIRT behaviors "…would be useful to use in cases of prescription opioid misuse," and A15-16 that captured if pharmacists considered SBI a professional duty. These items capture if pharmacists consider opioid misuse a problem in their community, if they consider screening and intervening a professional duty, and if they believe it would be useful to use SBIRT in instances where misuse is suspected. Combined, these items appear to measure more than just behavioral beliefs and could measure a more general attitude towards SBIRT and if misuse is a problem in their community.

Three items under attitude loaded onto a second factor well over the established benchmark of |0.40|. The evaluation subtheme in attitude was intended to be measured by instrument items A15-19 to capture if values of professional duty and responsibility would motivate pharmacists to use SBIRT. However, after analysis, it appears items A17-19 appear to capture pharmacists' perception towards who is more responsible in early intervention strategies, which is not a TPB construct in attitude. Therefore, with the items A15-16 loading onto factor one, and the content in items A17-19, the subscales were labeled "attitude" and "responsibility" rather than "behavioral belief" and "evaluation" as outlined in the model.

Subjective Norms

The TPB notes that normative beliefs and motivation to comply make up the construct subjective norms. Normative beliefs capture perceptions towards whether each referent approves or disapproves of the behaviors while motivation to comply captures

the motivation to do what each referent thinks (Glanz et al., 1996). In subjective norms, nine items loaded onto factor one above |0.70| and appeared to represent motivation to comply while six items loaded onto factor two above |0.60| for normative belief. Without being forced into two factors, analysis revealed ambiguous factor loadings for subjective norms with 5-6 interpretable factors. This could mean that pharmacists consider the approval of their supervisor, other pharmacists, and friends/family differently and are motivated to comply with what each referent thinks differently. For example, factor one clustered together for normative beliefs for supervisors and other pharmacists, which aligns well with the TPB. However, factor two hangs together for motivation to comply with other pharmacists, while factor three hangs together for motivation to comply with supervisors. This could mean that pharmacists are motivated differently by their supervisors compared to other pharmacists. Additionally, factor four captures motivation to comply with friends and family and factor five captures normative beliefs for friends and family.

To represent the theory, subjective norms were forced to two factors and explained 57.2% of the variance in the overall construct. When forced to two factors, motivation to comply with each of the three referents clustered onto factor one as originally intended to follow the theory. Items that capture normative beliefs for other pharmacists and supervisors again clustered onto the same factor as predicted in the TPB model. However, item S25.1-25.3 that captures whether respondents believe friends and family think they should use SBIRT revealed to hang on both factors. It is common for items to cross-load onto factors, but the three items loaded onto motivation to comply and normative beliefs at nearly the same level. This variance from the TPB is potentially due

to poor measurement, or that pharmacists answered the items in a similar way between normative beliefs and motivation to comply with friends or family. It could also mean that, to pharmacists, it does not matter what friends and family approve or disapprove of in the workplace. Items S25.1-25.3 were eliminated from the instrument because of ambiguous factor loadings. The themes that emerged in subjective norms were labeled "motivation to comply" and "subjective norms" because they reflected the underlying subconstructs in the TPB model.

Research also indicates that, regarding subjective norms, pharmacists' normative behavior may also be shaped by insurance companies and the provider-pharmacist relationships, potentially more so than friends or family (Fleming et al., 2019; Hagemeier et al., 2014). Pharmacists may also be influenced by regulatory entities such as the Board of Pharmacy or the Drug Enforcement Administration. These referents were not included in the instrument items in this study.

Perceived Behavioral Control

Perceived behavioral control (PCB) is also made up of two underlying constructs: perceived power and control belief. According to the TPB, perceived power aims to capture the perceived effect of a condition that makes performing the behavior easy or difficult, and control aims to capture the likelihood of the occurrence of each facilitating or constraining condition (Glanz et al., 1996). Initial analysis of PBC revealed three interpretable factor structures that appeared to measure ease of performing the behavior, confidence, and control. Since the construct of perceived behavioral control should measure (1) the ease of performing the behavior and (2) whether or not it is within the respondent's control, the third interpretable factor could capture self-efficacy (confidence

to carry out behavior). Yet, when forced to two factors the two PBC subthemes emerged. The PBC construct was left at two factors because items P28 that emerged as the third interpretable factor for self-efficacy could also be considered a condition that makes behavioral performance difficult or easy. An example of this would be low confidence in referring a patient to treatment that would make performing the behavior more difficult. Additionally, P29 asks pharmacists whether having a relationship with the patient would make engaging patients in a discussion about prescription opioid misuse easy. The item asks if a relationship with the patient makes engaging the patient easier or more difficult, which aligns with the perceived power subtheme that captures the perceived effect of conditions that make behavioral perform easy or difficult. The two subscales in PBC were then labeled “perceived power” and “control belief” from the TPB conceptual model.

Behavioral Intention and Past Behavior

The analysis of behavioral intention, which captures the perceived likelihood of performing the behavior, and past behavior showed four interpretable factors based on the eigenvalues and scree plots. The two themes in behavioral intention appeared to delineate wanting to perform the behavior and intending to perform the behavior. This finding may reflect discrepancies in wanting to intervene in prescription misuse but pharmacists may not have the perceived behavioral control to do so. However, five of the six items in behavioral intention cross-loaded onto the two factors above |0.4|. In the TPB model, behavioral intention is a single outcome that is influenced by attitude, subjective norms, and perceived behavioral control. Due to the items cross-loading and following the theoretical model, behavioral intention was left at one factor.

Similarly, the six items in past behavior revealed two factors. Factor one appeared to delineate past the 30 days and ever performing SBI while factor two captured the past 30 days and ever performing referral to treatment. The emergence of two factors is not surprising considering SBIRT is not currently used in a pharmacy setting and therefore past behavior will not be consistent across respondents. Previous studies also revealed that, although SBIRT is not systemically implemented in pharmacies, some pharmacists still appear to occasionally screen, briefly intervene, and/or refer a patient to treatment (Cochran et al., 2014; Hagemeier et al., 2014). Past behavior alpha scores were also lower than the other constructs due to variation in past experiences across the three behaviors. Similar to behavioral intention, past behavior was forced and left at one factor to follow the TPB model and because this factor measures past performances of the behavior and not a belief or attitude towards performing it.

Across all behaviors, the reliability was supported by the internal consistency values for each construct that is reflected in high Cronbach's coefficient alphas.
One interesting finding of this study is that referral to treatment questions emerged differently in analysis than screening and brief intervention, particularly in behavioral intention and past behavior. This may suggest that pharmacists' willingness to actively engage in SUD intervention is different than more passive behaviors like SBI. This concept has also been suggested by previous research that indicated pharmacists' self-efficacy in discussing treatment facility information with patients is low (Hagemeier et al., 2014). Furthermore, pharmacists appear more cautious making the leap from just screening and engaging in a discussion to all three SBIRT behaviors (Riley & Alemagno, 2019).

Lastly, practice setting is supported in the research in potentially influencing perceptions, behavioral performance, and barriers to providing SBIRT in a pharmacy setting (Cochran et al., 2015). Therefore, the demographics questions capturing education level, age, gender, practice setting, and amount of education about this topic remained in the tool. Furthermore, when administering a TPB-based questionnaire, items from each construct should be presented in a non-systemic order rather than by construct like what was done in the pilot instrument.

Correlation

The Theory of Planned Behavior posits that the more favorable attitude and subjective norms and the higher perceived behavioral control are the stronger a person intends to perform the behavior. The Pearson correlation was used to test initial relationships between TPB constructs measured in the instrument and behavioral intention to determine if the items align with the model. The correlation showed significant relationships at 0.01 between behavioral intention and attitude, attitude responsibility, subjective norms normative beliefs, perceived behavioral control perceived power, and past behavior. There was also a significant relationship at the 0.05 level between behavioral intention and perceived behavioral control control belief, but there was no significant relationship between motivations to comply and intention. The motivation to comply subconstruct hangs together well in factor analysis and shows high internal consistency, however it does not have a large influence on behavioral intention or even past behavior. Motivation to comply also does affect any of the constructs (except normative beliefs) or outcomes, which may indicate that it does not have an effect on pharmacists using SBIRT. This could also be due to how the questions were written or, as

mentioned above, was looking at the wrong referents. The previous study used to adapt items asked about “most people who are important to me” and “other pharmacists” for motivation to comply. These items were split between referents believed to influence participants: friends/family, other pharmacists, and supervisors.

Limitations

Limitations of this study include sampling issues. To begin, the distribution list of pharmacists still captured participants working in a hospital. If participants were currently practicing, their responses were left in psychometric testing to maintain an adequate number of responses needed for tests because of the small sample size. Secondly, there was a low response rate. The low response rate could be due to several reasons including fatigue in discussing prescription opioid misuse or responding to opioid-related surveys. There is also a possibility that pharmacists are tired of responding to surveys because of numerous email invitations received to participate in studies. Additionally, the email distribution was sent from a Boise State University address and participants may be more likely to respond had it come from a pharmacy association, the Board of Pharmacy, or the College of Pharmacy at Idaho State University.

Another limitation of this study is adapting the survey items from a previous tool rather than eliciting salient beliefs about the combined SBIRT behaviors before survey development. Although the questions were derived from the TPB tool on utilizing the prescription monitoring program, which could be considered the first step in screening for misuse, the perceptions toward brief intervention and referral to treatment could be much different. The nature of the self-report survey instrument is another limitation in this study. Some caution should be given when using self-report measures when testing

reliability and validity. Using multiple methods such as interviews or focus groups in addition to self-report would provide more measures to ensure validity and reliability. Finally, another limitation in this study could be practicing pharmacists' general understanding of what SBIRT is since they are not typically trained in SBIRT or use it in daily practice. The SAMHSA SBIRT definitions were provided in the survey, however, the interpretation of a universal screening or brief intervention could vary in participants.

Suggestions for Future Research

Future research could take numerous directions following this study. This study developed one of the first TPB-based instruments that look at pharmacists' perceptions toward all three SBIRT behaviors for prescription misuse. The results from this study suggest future research is needed to continue testing the validity and reliability of the tool, such as conducting test-retest reliability or conducting a Confirmatory Factor Analysis to test the TPB. There is also a need to take an in-depth look into the subscales that varied from the TPB model, such as subjective norms and attitude. For example, a deeper dive into motivation to comply and normative beliefs is needed to determine if the referents chosen have the most impactful influence on pharmacists' workplace decisions. A previous study by Fleming et al. (2019) gathered pharmacists' salient normative beliefs towards their willingness to engage patients in a discussion and then refer indicated prescribing physicians as an influential referent in their decision. Other referents that appeared were regulatory agencies like the DEA or pharmacy boards, employers in addition to direct supervisors, and possibly patients. In previous research, pharmacists who felt they had a right to ask about misuse were twice as likely to engage patients in a discussion about it (Cochran et al., 2015). Pharmacists who felt their patients believed the

pharmacists had a right to ask were 88% more likely to discuss misuse. Considering the limitations in the self-report measures, future studies may also consider using other measures to investigate perceptions toward implementing SBIRT. Examples could include qualitative measures such as focus groups or interviews, or piloting the model to gain a more comprehensive understanding.

Future research should also consider the difference in perceptions for implementing SBI and referral to treatment. Initial analysis showed that attitude, subjective norms, and perceived behavioral control toward referral to treatment may be different from screening and brief intervention. This is supported in the research that patients and pharmacists alike are more apprehensive toward referral to treatment for substance use than the other behaviors (Riley & Alemango, 2018). Some research indicates this could be mitigated by more dissemination of prescription opioid-specific continuing education, improving self-efficacy beliefs, and dissemination of addiction treatment information (Hagemeier et al., 2014). Finally, this instrument only focused on early intervention for prescription opioid misuse. However, future studies may want to consider examining other commonly misused controlled substances such as benzodiazepines or sedatives.

REFERENCES

Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behavior. Englewood Cliffs, NJ: Prentice-Hall.

American Pharmacists Association. 2018. *APhA Policy Manual. Policies Adopted y the 2018 APhA House of Delegates.* Retrieved from: https://www.pharmacist.com/policy-manual

American Society of Health-System Pharmacists. (2016). ASHP Statement on the Pharmacist's role in substance abuse prevention, education, and assistance. AM J Health-Syst Pharm. 73:e267-70.

Armitage C.J., Conner M. (2001). Efficacy of the Theory of Planned Behaviour: a meta-analytic review. British Journal of Social Psychology. Vol.40,471-499.

Barbor, T., Del Boca, F., & Bray, J. (2017). Screening, Brief Intervention and Referral to Treatment: implications of SAMHSA's SBIRT initiative for substance abuse policy and practice. Society for the Study of Addiction. Vol. 112, Issue Suppl 2:110-117. DOI: 10.1111/add.13675.

Beich, A., Thorsen, T., & Rollnick, S. (2003). Screening in brief intervention trials targeting excessive drinkers in general practice: Systematic review and meta-analysis. BMJ, 327, 536–542.

Bien, T., Miller, W. R., & Tonigan, J. S. (1993). Brief interventions for alcohol problems: A review. Addiction, 88, 315–336.

Casserlie, L., & Mager, N. (2016). Pharmacists' perceptions of advancing public health priorities through medication therapy management. Pharmacy Practice, 14(3), 792-792.

Centers for Disease Control and Prevention (CDC). (2018) Pharmacists on the Front Lines: Addressing Prescription Opioid Abuse and Overdose.

Cicero, T., Kurtz, S., Surratt, H., Ibanez, G., Ellis, M., Levi-Minzi, M., & Inciardi, J. (2011). Multiple determinants of specific modes of prescription opioid diversion. Journal of Drug Issues, 41(2), 283-304.

Cochran, G. T., Engel, R. J., Hruschak, V. J., & Tarter, R. E. (2017). Prescription Opioid Misuse Among Rural Community Pharmacy Patients: Pilot Study for Screening and Implications for Future Practice and Research. Journal of Pharmacy Practice, 30(5), 498–505. https://doi.org/10.1177/0897190016656673

Cochran, G., Field, C., & Lawson, K. (2015). Pharmacists Who Screen and Discuss Opioid Misuse With Patients: Future Directions for Research and Practice. *Journal of Pharmacy Practice, 28,* 4, 404-12.

Cochran, G., Field, C., Lawson, K., & Erickson, C. (2013). Pharmacists' Knowledge, Attitudes, and Beliefs Regarding Screening and Brief Intervention for Prescription Opioid Abuse: A Survey of Utah and Texas Pharmacists. J Pharm Health Serv Res, 4, 71-9.

Cohen, J. (2003). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences* (3rd ed.). Mahwah, N.J.: L. Erlbaum Associates.

College of Psychiatric and Neurologic Pharmacists (CPNP). (2016). *Opioid use disorders: interventions for community pharmacists.* Retrieved from: *https://cpnp.org/guideline/opioid.*

Drug-Induced Deaths: Idaho Residents, 2016 Summary. (2017). Idaho Department of Health and Welfare, Division of Public Health, Bureau of Vital Records and Health Statistics. Retrieved from: http://healthandwelfare.idaho.gov/Portals/0/Health/Statistics/Misc%20Reports/Drug-Induced%20Death%20Summary/DrugDeaths2016.pdf

Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior : The reasoned action approach*. New York: Psychology Press.

Fleming, M., Bapat, S., & Varisco, T. (2019). Using the theory of planned behavior to investigate community pharmacists' beliefs regarding engaging patients about

prescription drug misuse. Research in Social & Administrative Pharmacy : Rsap, 15(8), 992-999. doi:10.1016/j.sapharm.2018.10.027

Fleming, M., Barner, J., Brown, C., Shepherd, M., Strassels, S., & Novak, S. (2014). Using the theory of planned behavior to examine pharmacists' intention to utilize a prescription drug monitoring program database. *Research in Social & Administrative Pharmacy : Rsap, 10*(2), 285-96. doi:10.1016/j.sapharm.2013.05.009

Gavaza, P., & Bui, B. (2012). Pharmacy students' attitudes toward reporting serious adverse drug events. American Journal of Pharmaceutical Education, 76(10). doi:10.5688/ajpe7610194

Gavaza, P., Fleming, M., & Barner, J. (2014). Examination of psychosocial predictors of virginia pharmacists' intention to utilize a prescription drug monitoring program using the theory of planned behavior. *Research in Social and Administrative Pharmacy, 10*(2), 448-458. doi:10.1016/j.sapharm.2013.06.011

Glanz, K., Lewis, F.M., & Rimer, B. (1996). Health Behavior and Health Education. (2nd Edition) Jossey-Bass Inc.

Hagemeier, N., Alamian, A., Pack, R., & Murawski, M. (2014). Factors associated with provision of addiction treatment information by community pharmacists. *Journal of Substance Abuse Treatment,* 52, 67-72. doi:10.1016/j.jsat.2014.11.006

Hagemeier, N., Tudiver, F., Brewster, S., Hagy, E., Hagaman, A., & Pack, R. (2016). Prescription drug abuse communication: A qualitative analysis of prescriber and pharmacist perceptions and behaviors. Research in Social & Administrative Pharmacy : Rsap, 12(6), 937-948. doi:10.1016/j.sapharm.2015.12.008

Hedegaard, H., Miniño A.M., & Warner, M. (2018). *Drug overdose deaths in the United States, 1999-2017.* NCHS Data Brief, no 329. Hyattsville, MD: National Center for Health Statistics.

Institute of Medicine (IOM). (1990). Broadening the Base of Treatment for Alcohol Problems: Report of a Study by a Committee of the Institute of Medicine,

Division of Mental and Behavioral Health Medicine. Washington DC: National Academies Press; 1990.

Kahan, M., Wilson, L., Wenghofer, E., Srivastava, A., Resnick, A., Janecek, E., & Sheehan, C. (2011). Pharmacists' experiences with dispensing opioids: Provincial survey. Canadian Family Physician Medecin De Famille Canadien, 57(11), 448-54.

Kaner, E.F. S., Beyer, F., Dickinson, H. O., Pienaar, E., Campbell, F., Schlesinger, C., et al. (2009). Effectiveness of brief alcohol interventions in primary care populations. Cochrane Database of Systematic Review, 18(2), CD004148.

Klepser, D., Klepser, M., Smith, J., Dering-Anderson, A., Nelson, M., & Pohren, L. (2018). Utilization of influenza and streptococcal pharyngitis point-of-care testing in the community pharmacy practice setting. *Research in Social and Administrative Pharmacy*, *14*(4), 356-359. doi:10.1016/j.sapharm.2017.04.012

Lafferty, L., Hunter, T. S., & Marsh, W. A. (2006). Knowledge, Attitudes and Practices of Pharmacists Concerning Prescription Drug Abuse. *Journal of Psychoactive Drugs, 38,* 3, 229-232.

Leong, C., Alessi-Severini, S., Sareen, J., Enns, M. W., & Bolton, J. (2016). Community Pharmacists' Perspectives on Dispensing Medications With the Potential for Misuse, Diversion, and Intentional Overdose: Results of a Province-Wide Survey of Community Pharmacists in Canada. *Substance Use & Misuse, 51,* 13, 1724-30.

Manolakis, P., & Skelton, J. (2010). Pharmacists' contributions to primary care in the United States collaborating to address unmet patient care needs: the emerging role for pharmacists to address the shortage of primary care providers. American journal of pharmaceutical education, 74(10), S7. doi:10.5688/aj7410s7

Morgan, G. (2013). *IBM SPSS for Introductory Statistics: Use and interpretation* (Fifth ed.) New York: Routledge. (2013). Retrieved August 6, 2019, from Ebook Central Perpetual Titles.

National Survey on Drug Use and Health: Model-Based Prevalence Estimates (2015 and 2016). SAMHSA, Center for Behavioral Health Statistics and Quality.

Ndiaye, S., Madhavan, S., Washington, M., Shui, I., Tucker, J., Rosenbluth, S., & Richards, T. (2003). The use of pharmacy immunization services in rural communities. Public Health, 117(2), 88-97. doi:10.1016/S0033-3506(02)00022-7

Panesar, K. (2016). Barriers to Counseling Patients With Mental Health Disorders. US Pharm 41(11), 30-33.

Pringle, J., Cochran, J., & Aruru, M. (2019). Role of pharmacists in the opioid use disorder (oud) crisis. Research in Social & Administrative Pharmacy : Rsap, 15(2), 228-229. doi:10.1016/j.sapharm.2018.11.005

Riley, T., & Alemagno, S. (2019). Pharmacist utilization of prescription opioid misuse interventions: Acceptability among pharmacists and patients. Research in Social and Administrative Pharmacy, 15(8), 986-991. doi:10.1016/j.sapharm.2019.01.002

Schuessler, T., Ruisinger, J., Hare, S., Prohaska, E., & Melton, B. (2016). Patient satisfaction with pharmacist-led chronic disease state management programs. Journal of Pharmacy Practice, 29(5), 484-9. doi:10.1177/0897190014568672

Strand, M., Eukel, H., & Burck, S. (2019). Moving opioid misuse prevention upstream: A pilot study of community pharmacists screening for opioid misuse risk. Research in Social & Administrative Pharmacy : Rsap, 15(8), 1032-1036. doi:10.1016/j.sapharm.2018.07.011

Substance Abuse and Mental Health Services Administration (SAMHSA). (2011). Screening, brief intervention and referral to treatment (SBIRT) in behavioral healthcare. Rockville, MD: Substance Abuse and Mental Health Services Administration. Retrieved from: https://www.samhsa.gov/sites/default/files/sbirtwhitepaper_0.pdf

Suhr, D. (2006). Exploratory or Confirmatory Factor Analysis. SAS Users Group International Conference (pp. 1 - 17). Cary: SAS Institute, Inc.

Tai, B., Hata, M., Wu, S., Frausto, S., & Law, A. (2016). Prediction of pharmacist intention to provide medication disposal education using the theory of planned

behaviour. Journal of Evaluation in Clinical Practice, *22*(5), 653-61. doi:10.1111/jep.12511

United States. Office of National Drug Control Policy. (2012). Screening, brief intervention, and referral to treatment (sbirt) (Fact sheet). Washington, D.C.: Office of National Drug Control Policy (ONDCP), Substance Abuse and Mental Health Services Administration (SAMHSA). (2012). Retrieved August 24, 2019, from U.S. Government Documents - Electronic.

Wenthur, C., Cross, B., Vernon, V., Shelly, J., Harth, B., Lienhoop, A., . . . Murawski, M. (2013). Opinions and experiences of Indiana pharmacists and student pharmacists: The need for addiction and substance abuse education in the united states. Research in Social & Administrative Pharmacy : Rsap, 9(1), 90-100. doi:10.1016/j.sapharm.2012.03.003

World Health Organization. (1988). *The Role of a Pharmacists in the Health Care System.* Report prepared by a WHO consultative group. PHARM/94.569. New Delhi, India.

Zahradnik, A., Otto, C., Crackau, B., Löhrmann, I., Bischof, G., John, U., & Rumpf, H. (2009). Randomized controlled trial of a brief intervention for problematic prescription drug use in non-treatment-seeking patients. Addiction, 104(1), 109-117. doi:10.1111/j.1360-0443.2008.02421.x

APPENDIX A

Boise State University Institutional Review Board Approval

The research was conducted with the approval of the Institutional Review Board, Boise State University, protocol #186-SB19-006

APPENDIX B

Introductory Letter and Informed Consent

Pharmacists' Perceptions Toward Prescription Opioid Misuse: Development of a valid and reliable survey questionnaire

From: Boise State University, College of Health Sciences
Subject line: Invitation: Participate in Idaho Pharmacy Survey
Feedback Requested: Idaho Pharmacy Survey

Good morning,

A graduate student at Boise State University is conducting a pilot research study designed to develop a valid and reliable survey questionnaire. The purpose of this pilot study is to explore Idaho pharmacists' perceptions toward screening patients for prescription opioid misuse, briefly intervening with feedback and advice, and referring patients to treatment if needed.

Your responses are voluntary and will be kept confidential. This survey should take approximately 15-20 minutes to complete. You must be a pharmacist who is currently practicing in the state of Idaho. We appreciate your response by **April 18, 2019**.

If you consent to participate, please complete the following survey.

If you have any questions regarding the survey or its purpose, please send inquiries to:

Tara Fouts
Community & Environmental Health
tarafouts@u.boisestate.edu

Dr. Sarah Toevs
Community & Environmental Health
stoevs@boisestate.edu

If you have questions about your rights as a research participant, you may contact the Boise State University Institutional Review Board (IRB), which is concerned with the protection of volunteers in research projects. You may reach the board office between 8:00 AM and 5:00 PM, Monday through Friday, by calling (208) 426-5401 or by writing: Institutional Review Board, Office of Research Compliance, Boise State University, 1910 University Dr., Boise, ID 83725-1138.

We appreciate your participation in this survey.

APPENDIX C

Theory of Planned Behavior Construct Matrix and Key

Construct	**Behavior 1** Screen patients for risky substance use behaviors	**Behavior 2** Engage patients in a short discussion about substance misuse and opioid use disorder (OUD)	**Behavior 3** Referral to Treatment
Attitude			
	Q13 Prescription opioid misuse is a problem in my community.		
Behavioral Belief: *Belief that behavioral performance is associated with certain attributes or outcomes*	**Q14.1** When the validity of an opioid prescription is in question, I believe it would be useful for a pharmacist to: screen patients for prescription opioid misuse.	**Q14.2** When the validity of an opioid prescription is in question, I believe it would be useful for a pharmacist to: briefly intervene by providing feedback and advice.	**Q14.3** When the validity of an opioid prescription is in question, I believe it would be useful for a pharmacist to: advise patients to consult their prescriber
Evaluation: *Value attached to a behavioral outcome or attribute*	**Q15** I believe it is a pharmacist's professional duty to screen patients for prescription opioid misuse.	**Q16** I believe it is a pharmacist's professional duty to briefly intervene with feedback and advice when patients show risky prescription opioid use.	
	Q17 Overall, prescribers are more responsible than pharmacists are to engage patients in a short discussion about prescription opioid abuse and misuse.	**Q18** Overall, prescribers are more responsible than pharmacists are to screen for prescription opioid abuse and misuse.	**Q19** Overall, prescribers are more responsible than pharmacists are to refer to treatment for prescription opioid misuse and abuse.
Subjective Norms			
Normative Belief: *Belief about whether each referent approves or disapproves of the behavior*	**Q20.1** Considering pharmacists whose opinions you value, to what extent do you agree they would: screen patients for	**Q20.2** Considering pharmacists whose opinions you values, to what extent do you agree they would: briefly intervene with	**Q20.3** Considering pharmacists whose opinions you values, to what extent do you agree they would: refer patients

	prescription opioid misuse?	feedback and advice about opioid misuse?	to treatment resources if needed?
	Q24.1 How much do you agree that your supervisor thinks you should screen patients for prescription opioid misuse?	**Q24.2** How much do you agree that your supervisor thinks you should briefly intervene with feedback and advice about prescription opioid misuse?	**Q24.3** How much do you agree that your supervisor thinks you should refer a patient to treatment if needed.
Motivation to comply: *Motivation to do what each referent thinks*	**Q21.1** When it comes to screening patients for prescription opioid misuse, I want to do what my supervisor thinks I should do.	**Q22.1** When it comes to providing patients feedback and advice about prescription opioid misuse, I want to do what my supervisor thinks I should do	**Q23.1** When it comes to referring patients to additional treatment resources, I want to do what my supervisor thinks I should do.
	Q21.2 I want to do what other pharmacists who opinions I value think I should do	**Q22.2** I want to do what my friends/family think I should do	**Q23.2** I want to do what my friends/family think I should do.
	Q21.3 I want to do what my friends/family think I should do	**Q22.3** I want to do what other pharmacists whose opinions I value think I should do	**Q23.3** I want to do what other pharmacists whose opinions I value think I should do
Perceived Behavioral Control			
Control belief: *Perceived likelihood of occurrence of each facilitating or constraining condition*	**Q27.1** The decision to screen patients for prescription opioid misuse is beyond my control.	**Q27.2** The decision to briefly intervene with feedback and advice is beyond my control.	**Q27.3** The decision to refer patients to treatment is beyond my control.
Perceived power: *Perceived effect of each condition in making behavioral performance difficult or easy*		**Q26** How much do you agree with this statement: Engaging patients in a discussion relating to prescription opioid misuse would be easy for me.	
	Q28.1 I am confident in my	**Q28.2** I am confident in my	**Q28.3** I am confident in my

	ability to screen patients for prescription opioid misuse	ability to briefly intervene with feedback and advice	ability to refer a patient to treatment if needed.
		Q29 For me, questioning a patient with whom I **have a** relationship with about the legitimacy of a PO would be easy/difficult	
		Q30 For me, questioning a patient with whom I **have no strong** relationship with about the legitimacy of a PO would be easy/difficult	
Past Behavior			
	Q31.1 In the past 30 days, have you screened a patient for prescription opioid misuse?	**Q31.2** In the past 30 days, have you Briefly intervened with feedback and advice?	**Q31.3** In the past 30 days, have you Referred a patient to additional treatment resources?
	Q32.1 In your pharmacy practice, have you ever screened a patient for prescription opioid misuse?	**Q32.2** In your pharmacy practice, have you ever briefly intervened with feedback and advice?	**Q32.3** In your pharmacy practice, have you ever referred a patient to additional treatment resources?
Behavioral Intention			
Perceived likelihood of performing the behavior	**Q33** How much, if any, do you intend to screen patients for prescription opioid misuse?	**Q34** How much, if any, do you intend to briefly intervene with feedback and advice for prescription opioid misuse?	**Q35** How much, if any, do you intend to refer patients to additional treatment resources if needed?
	Q36.1 I want to screen patients for prescription opioid misuse	**Q36.2** I want to briefly intervene with feedback and advice for prescription opioid misuse	**Q36.3** I want to refer patients to additional resources if they need it.

APPENDIX D

Piloted Instrument

Q1 Do you currently provide patient care in a community pharmacy setting?

___Yes
___No

Q2 On average, how many hours per week do you work in a community pharmacy?

Q3 Approximately how many years have you been practicing pharmacy?

Q4 What best describes your **primary** practice site?

___Grocery or drug store chain (i.e. Sav-on, Rite-Aid)

___Independent pharmacy

___Mass merchandiser (i.e. Walmart)

___Outpatient/clinic pharmacy

___Health system pharmacy

___Other (please specify)

Q5 Please select the Idaho county in which you primarily practice.

▼ Ada ... Washington

Q6 Please indicate your highest level of education completed.

___Bachelor

___Master

___PharmD

___Other (please specify)

Q7 What year did you graduate with your highest pharmacy degree?

Q8 Since graduation, approximately how many Continuing Education training hours have you completed for opioid use disorder?

Q9 On average, how many opioid prescriptions do you fill in a week?

Q10 Please indicate your sex.

___Male

___Female

___Other (please specify)

Q11 What year were you born?

Q12 Please consider your community pharmacy practice and the definitions below when answering the following questions.

Prescription opioid misuse: using a prescription in a manner other than directed by a doctor including using in greater amounts than prescribed, more often, or for longer periods than instructed.
Screening: a healthcare professional assessing a patient for risky substance use behavior using a standardized screening tool.

Brief intervention: engaging a patient showing risky substance use behaviors in a short conversation providing feedback and advice. Depending on the severity or risk for adverse consequences, a 5-10 minute discussion or longer 20-30 minute discussion provides the patient with personalized feedback showing concern over prescription use.

Referral to treatment: providing a referral to brief therapy or additional treatment to those who screen in need of additional services.

Q13. How much do you agree with this statement: Prescription opioid misuse is a problem in my community.

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Q14. When the validity of an opioid prescription is in question, I believe it would be useful for a pharmacist to:

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
Screen patients for prescription opioid misuse	O	O	O	O	O	O	O
Briefly intervene by providing feedback and advice	O	O	O	O	O	O	O
Advise patients to consult their prescriber	O	O	O	O	O	O	O

Q15 I believe it is a pharmacist's professional duty to screen patients for prescription opioid misuse.

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Q16 I believe it is a pharmacist's professional duty to briefly intervene with feedback and advice when patients show risky prescription opioid use.

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Q17 Overall, prescribers are more responsible than pharmacists are for screening patients for prescription opioid misuse.

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Q18 Overall, prescribers are more responsible than pharmacists are for briefly intervening with feedback and advice on prescription opioid misuse.

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Q19 Overall, prescribers are more responsible than pharmacists are for referring people to treatment for prescription opioid misuse.

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Q20 Considering pharmacists whose opinions you value, to what extent do you agree they would:

	Strongly agree	.	.	Neither agree nor disagree	.	.	Strongly disagree
Screen patients for prescription opioid misuse?	O	O	O	O	O	O	O
Briefly intervene with feedback and advice?	O	O	O	O	O	O	O
Refer patients to treatment resources if necessary?	O	O	O	O	O	O	O

Q21 When it comes to screening patients for prescription opioid misuse,

	Strongly agree	.	.	Neither agree nor disagree	.	.	Strongly disagree
I want to do what my supervisor thinks I should do	O	O	O	O	O	O	O
I want to do what other pharmacists whose opinions I value think I should do	O	O	O	O	O	O	O
I want to do what my friends/family think I should do	O	O	O	O	O	O	O

Q22 When it comes to providing patients feedback and advice about prescription opioid misuse,

	Strongly agree	.	.	Neither agree nor disagree	.	.	Strongly disagree
I want to do what my supervisor thinks I should do	O	O	O	O	O	O	O
I want to do what my friends/family think I should do	O	O	O	O	O	O	O
I want to do what other pharmacists whose opinions I value think I should do	O	O	O	O	O	O	O

Q23 When it comes to referring patients to additional treatment resources,

	Strongly agree	.	.	Neither agree nor disagree	.	.	Strongly disagree
I want to do what my supervisor thinks I should do	O	O	O	O	O	O	O
I want to do what my friends/family think I should do	O	O	O	O	O	O	O
I want to do what other pharmacists whose opinions I value think I should do	O	O	O	O	O	O	O

Q24 How much do you agree that your supervisor thinks you should:

	Strongly agree	.	.	Neither agree nor disagree	.	.	Strongly disagree
Screen patients for prescription opioid misuse	O	O	O	O	O	O	O
Briefly intervene with feedback and advice about opioid misuse	O	O	O	O	O	O	O
Refer a patient to treatment if needed	O	O	O	O	O	O	O

Q25 How much do you agree that your friends/family think you should:

	Strongly agree	.	.	Neither agree nor disagree	.	.	Strongly disagree
Screen patients for prescription opioid misuse	O	O	O	O	O	O	O
Briefly intervene with feedback and advice about opioid misuse	O	O	O	O	O	O	O
Refer a patient to treatment if needed	O	O	O	O	O	O	O

Q26 How much do you agree with this statement: Engaging patients in a discussion relating to prescription opioid misuse would be easy for me.

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Q27 How much do you agree with each statement?

	Strongly agree	.	.	Neither agree nor disagree	.	.	Strongly disagree
The decision to screen patients for prescription opioid misuse is beyond my control	O	O	O	O	O	O	O
The decision to briefly intervene with feedback and advice is beyond my control	O	O	O	O	O	O	O
The decision to refer patients to treatment is beyond my control	O	O	O	O	O	O	O

Q28 I am confident in my ability to do the following:

	Strongly agree	.	.	Neither agree nor disagree	.	.	Strongly disagree
Screen patients for prescription opioid misuse	O	O	O	O	O	O	O
Briefly intervene with feedback and advice about opioid misuse	O	O	O	O	O	O	O
Refer a patient to treatment if needed	O	O	O	O	O	O	O

Q29 Questioning a patient with whom I **have a relationship** about the legitimacy of an opioid prescription would be easy for me.

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Q30 Questioning a patient with whom **I have no strong relationship** about the legitimacy of an opioid prescription would be easy.

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Q31 In the past 30 days, have you:

	Yes	No
Screened a patient for prescription opioid misuse?	O	O
Briefly intervened with feedback and advice?	O	O
Referred a patient to additional treatment resources?	O	O

Q32 In your pharmacy practice, have you ever:

	Yes	No
Screened a patient for prescription opioid misuse?	O	O
Briefly intervened with feedback and advice?	O	O
Referred a patient to additional treatment resources?	O	O

Q33 How much, if any, do you intend to screen patients for prescription opioid misuse?

Extremely likely	O	O	O	O	O	O	O	Extremely unlikely

Q34 How much, if any, do you intend to briefly intervene with feedback and advice for prescription opioid misuse?

Extremely likely	O	O	O	O	O	O	O	Extremely unlikely

Q35 How much, if any, do you intend to refer patients to additional treatment resources when needed?

Extremely likely	O	O	O	O	O	O	O	Extremely unlikely

Q36 Please indicate how much you agree with each statement.

	Strongly agree	.	.	Neither agree nor disagree	.	.	Strongly disagree
I want to briefly intervene with feedback and advice for prescription opioid misuse	O	O	O	O	O	O	O
I want to screen patients for prescription opioid misuse	O	O	O	O	O	O	O
I want to refer patients to additional resources if they need it	O	O	O	O	O	O	O

Q37 What, if anything, prevents you from screening for opioid misuse, briefly intervening, referring to treatment? (Please select up to three)

___Lack of time with other job-related duties

___Lack of privacy to discuss with patients

___Lack of reimbursement/compensation

___Repercussions from employer

___Language barrier with patients

___Workflow does not allow

___Lack of knowledge about opioid misuse

___Lack of knowledge about available treatment resources

___Fear of prescribers' response

___Fear of personal harm from the patient

___Limited information about patient's medical history

___Fear of legal liability or litigation

___Fear of losing rapport with patients

___Fear of accidentally stigmatizing patients as addicts

___Not enough rapport with patient

___Too little or no training

___Patients unwilling to talk/listen

___Do not know how to initiate conversation

___Other (please specify)

APPENDIX E

Finalized Theory of Planned Behavior Items

Q13. How much do you agree with this statement: Prescription opioid misuse is a problem in my community?

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Please indicate how much you agree or disagree with each s

Q14. When the validity of an opioid prescription is in question, I believe it would be useful for a pharmacist to:

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
Screen patients for prescription opioid misuse	O	O	O	O	O	O	O
Briefly intervene by providing feedback and advice	O	O	O	O	O	O	O
Advise patients to consult their prescriber	O	O	O	O	O	O	O

Q15 I believe it is a pharmacist's professional duty to screen patients for prescription opioid misuse.

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Q16 I believe it is a pharmacist's professional duty to briefly intervene with feedback and advice when patients show risky prescription opioid use.

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Q17 Overall, prescribers are more responsible than pharmacists are for screening patients for prescription opioid misuse.

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Q18 Overall, prescribers are more responsible than pharmacists are for briefly intervening with feedback and advice on prescription opioid misuse.

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Q19 Overall, prescribers are more responsible than pharmacists are for referring people to treatment for prescription opioid misuse.

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Q20 Considering pharmacists whose opinions you value, to what extent do you agree they would:

	Strongly agree	.	.	Neither agree nor disagree	.	.	Strongly disagree
Screen patients for prescription opioid misuse?	O	O	O	O	O	O	O
Briefly intervene with feedback and advice?	O	O	O	O	O	O	O
Refer patients to treatment resources if necessary?	O	O	O	O	O	O	O

Q21 When it comes to screening patients for prescription opioid misuse,

	Strongly agree	.	.	Neither agree nor disagree	.	.	Strongly disagree
I want to do what my supervisor thinks I should do	O	O	O	O	O	O	O
I want to do what other pharmacists whose opinions I value think I should do	O	O	O	O	O	O	O
I want to do what my friends/family think I should do	O	O	O	O	O	O	O

Q22 When it comes to providing patients feedback and advice about prescription opioid misuse,

	Strongly agree	.	.	Neither agree nor disagree	.	.	Strongly disagree
I want to do what my supervisor thinks I should do	O	O	O	O	O	O	O
I want to do what my friends/family think I should do	O	O	O	O	O	O	O
I want to do what other pharmacists whose opinions I value think I should do	O	O	O	O	O	O	O

Q23 When it comes to referring patients to additional treatment resources,

	Strongly agree	.	.	Neither agree nor disagree	.	.	Strongly disagree
I want to do what my supervisor thinks I should do	O	O	O	O	O	O	O
I want to do what my friends/family think I should do	O	O	O	O	O	O	O
I want to do what other pharmacists whose opinions I value think I should do	O	O	O	O	O	O	O

Q24 How much do you agree that your supervisor thinks you should:

	Strongly agree	.	.	Neither agree nor disagree	.	.	Strongly disagree
Screen patients for prescription opioid misuse	O	O	O	O	O	O	O
Briefly intervene with feedback and advice about opioid misuse	O	O	O	O	O	O	O
Refer a patient to treatment if needed	O	O	O	O	O	O	O

Q25 How much do you agree with this statement: Engaging patients in a discussion relating to prescription opioid misuse would be easy for me.

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Q26 How much do you agree with each statement?

	Strongly agree	.	.	Neither agree nor disagree	.	.	Strongly disagree
The decision to screen patients for prescription opioid misuse is beyond my control	O	O	O	O	O	O	O
The decision to briefly intervene with feedback and advice is beyond my control	O	O	O	O	O	O	O
The decision to refer patients to treatment is beyond my control	O	O	O	O	O	O	O

Q27 I am confident in my ability to do the following:

	Strongly agree	.	.	Neither agree nor disagree	.	.	Strongly disagree
Screen patients for prescription opioid misuse	O	O	O	O	O	O	O
Briefly intervene with feedback and advice about opioid misuse	O	O	O	O	O	O	O
Refer a patient to treatment if needed	O	O	O	O	O	O	O

Q28 Questioning a patient with whom I **have a relationship** about the legitimacy of an opioid prescription would be easy for me.

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Q29 Questioning a patient with whom **I have no strong relationship** about the legitimacy of an opioid prescription would be easy.

___Strongly agree

___Agree

___Somewhat agree

___Neither agree nor disagree

___Somewhat disagree

___Disagree

___Strongly disagree

Q30 In the past 30 days, have you:

	Yes	No
Screened a patient for prescription opioid misuse?	O	O
Briefly intervened with feedback and advice?	O	O
Referred a patient to additional treatment resources?	O	O

Q31 In your pharmacy practice, have you ever:

	Yes	No
Screened a patient for prescription opioid misuse?	O	O
Briefly intervened with feedback and advice?	O	O
Referred a patient to additional treatment resources?	O	O

Q32 How much, if any, do you intend to screen patients for prescription opioid misuse?

Extremely likely	O	O	O	O	O	O	O	Extremely unlikely

Q33 How much, if any, do you intend to briefly intervene with feedback and advice for prescription opioid misuse?

Extremely likely	O	O	O	O	O	O	O	Extremely unlikely

Q34 How much, if any, do you intend to refer patients to additional treatment resources when needed?

Extremely likely	O	O	O	O	O	O	O	Extremely unlikely

Q35 Please indicate how much you agree with each statement.

	Strongly agree	.	.	Neither agree nor disagree	.	.	Strongly disagree
I want to briefly intervene with feedback and advice for prescription opioid misuse	O	O	O	O	O	O	O
I want to screen patients for prescription opioid misuse	O	O	O	O	O	O	O
I want to refer patients to additional resources if they need it	O	O	O	O	O	O	O